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THEME:
MULTIDISCIPLINARY APPROACHES AND CHOICES OF INNOVATION AND TECHNOLOGY IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

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WELCOMING SPEECH

BY RECTOR OF DWIJENDRA UNIVERSITY

Om Swastyastu,

It is with great honor and profound appreciation that I welcome all participants, scholars, researchers, and esteemed guests to this International Conference on “Multidisciplinary Approaches and Choices of Innovation and Technology in Achieving Sustainable Development Goals.” This conference represents an important platform for exchanging knowledge, ideas, and collaborative insights that are essential to addressing the complex challenges of sustainable development in today’s rapidly evolving world.

The Sustainable Development Goals (SDGs) demand integrated and forward-looking strategies. No single discipline can address these global priorities on its own; instead, meaningful progress requires the synergy of science, technology, social sciences, humanities, policy, and community engagement. In this regard, the theme of this conferece underscores the urgency of fostering interdisciplinary collaboration and investing in innovations that empower societies, protect the environment, and improve the quality of life for present and future generations.

Dwijendra University is committed to support academic excellence and contribute to global dialogues that encourage transformative solutions. Through this conference we hope to inspire new perspectives, strengthen international partnerships, and promote research that aligns with sustainable and inclusive development. I extend my deepest appreciation to the organizing committee, partners, keynote speakers, and all contributors whose dedication has made this event possible. May the discussions and knowledge shared in this conference enrich our collective understanding and inspire meaningful action toward achieving the SDGs.

Thank you.

Om Santhi, Santhi, Santhi Om

Denpasar, November 28th, 2025.

Rector of Dwijendra University,
Prof. Dr. Ir. Gede Sedana, M.Sc., M.M.A

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Organic Rice Farming Development: Principles, Challenges, and Strategies: The Case of Subak Jatiluwih, Bali Province, Indonesia

Gede Sedana
Department of Agribusiness, Faculty of Agriculture and Business, Dwijendra University, Bali-Indonesia
gedesedana@gmail.com

Abstract

In Bali province, a green revolution program has been introduced to increase rice productivity, but resulted in environmental degradation, including soil, water, and air, which is detrimental and endangers human health. One of the programs that has been implemented is organic rice farming practices, and encouraged to back to nature. This study has objectives to to determine the application of organic rice farming principles by farmers, the challenges faced by farmers in developing organic rice farming and the implications of developing organic rice farming. Subak Jatiluwih was selected by purposively selected as a research site. There are 60 farmer samples were taken by using simple random sampling. The collected data were then analyzed using qualitative descriptive methods.

The results pointed out that principles of organic rice farming applied by farmers are environmental and cultural friendly, integrated system, non-synthetic materials, utilization of local resources, and justice. The challenges faced by farmers in developing organic rice farming, namely: (i) farmers' perception toward highly-cost for production; (ii) relative low productivity; (iii) number of consumers are limited; (iv) pest and disease risks; (v) farmers' dependence on synthetic chemical fertilizers; (vi) program of rice self-sufficiency; (vii) uncertainty market of organic rice; and (viii) limited organic materials. Government's strategic efforts needed are: (i) increasing the production; (ii) empowering farmers; (iii) developing and implementing organic farming practices; (iv) strengthening institutions of farmers; and (v) establishing a market for rice organic.

Keywords: Organic rice, farming, integrated system, non-synthetic materials, production, market

1. INTRODUCTION

The agricultural sector plays a crucial role in economic development in developing countries, including Indonesia (Yogi et al, 2025, Ricciardi *et al* 2018; Praburaj, 2018; Scheidel *et al* 2014). The agricultural sector is developed by utilizing new technologies to manage natural resources to increase productivity (Sedana et al., 2025; Sedana and Astawa 2019; Amato et al., 2022). The agricultural sector's role is to provide food for people in both urban and rural areas, provide raw materials for the industrial sector, consume or use products produced by the industry, and provide employment opportunities (Anríquez and Stamoulis 2007; Holcer et al., 2013; Sertoğlu et al., 2017; Sedana et al., 2021; Ferreira et al., 2022; Till 2022).

In rice farming, for example, a green revolution program has been introduced to increase rice productivity and faster harvest periods (Kaur et al., 2022). This program introduced the use of new or hybrid seed varieties, agricultural mechanization, and the use of synthetic chemical fertilizers and pesticides, supported by the provision of sufficient irrigation water through the construction of irrigation networks (Cassman and Grassini, 2013). Subsistence agriculture shifted to commercial agriculture, requiring technological advances and knowledge of the market for agricultural products (rice) (Gómez-Baggethun and Naredo 2015).

However, the success of the Green Revolution also resulted in environmental degradation, including soil, water, and air, which is detrimental and endangers human health. This condition occurs because the use of chemical fertilizers, pesticides, and herbicides has detrimental environmental impacts, as well as the widespread use of chemical fertilizers, pesticides, and herbicides, as well as the exploitation of agricultural land (Lenton et al. 2019).

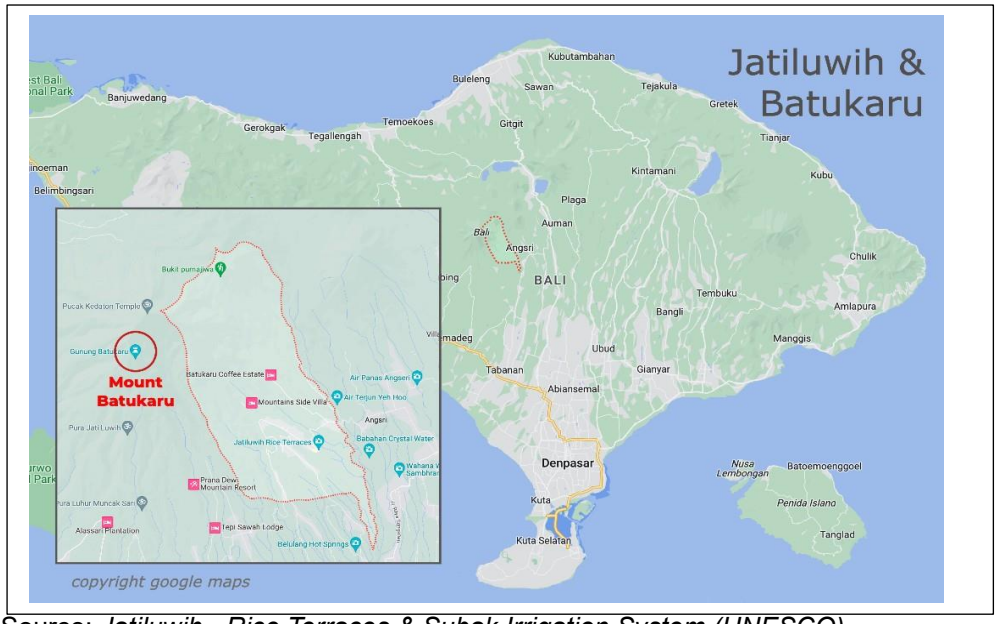
As a province in Indonesia, Bali has participated in the Green Revolution program for the past five decades and has even achieved rice self-sufficiency. Like other provinces, Bali has also experienced environmental degradation, particularly in land and water, due to agricultural development, particularly in rice paddy fields. Therefore, over the past five years, Bali has been making efforts to restore nature (water and land) to its former state, ensuring sustainable land quality and fertility. The Bali provincial government has implemented various programs to restore environmental health and ensure a healthier and better quality of life for all living things through the development of organic farming systems. One such program is the development of organic rice farming. In several areas of Bali, particularly in mountainous areas or highlands, farmers are encouraged to return to nature,

adopting organic farming practices. The aim of this study is to determine the application of organic rice farming principles by farmers, the challenges faced by farmers in developing organic rice farming and the implications of developing organic rice farming.

2. RESEACH AND METODOLOGY

This research was conducted in Subak Jatiluwih which was selected by purposive sampling with the consideration that Subak Jatiluwih is a world cultural heritage area that has been recognized by UNESCO since 2012. Another consideration is that most farmers in the Subak Jatiluwih area have developed organic rice farming since long ago even though the government introduced the green revolution program that applies synthetic chemical fertilizers and pesticides. The location of Subak Jatiluwih can be seen in Figure 1. In this study, 60 farmer samples were taken from the farmer population in Subak Jatiluwih. The sample selection was carried out by simple random sampling. The data collected were primary data and secondary data obtained from surveys, interviews, focus group discussions and documentation. The collected data were then analyzed using qualitative descriptive methods.

Figure 1 Map of Jatiluwih



Source: *Jatiluwih - Rice Terraces & Subak Irrigation System (UNESCO)*

3. RESULTS AND DISCUSSION

Subak Jatiluwih is located in Jatiluwih Village which has clear boundaries, where to the North is state forest, to the East is Senganan Village, to the South is Babahan Village, and to the West is Wongaya Gede Village. The Jatiluwih village area is a highland or mountainous area suitable for agriculture, and the majority of its residents are farmers who are members of an organization called Subak, Subak Jatiluwih. Subak Jatiluwih is led by one leader called Pekaseh and has 7 subsubak called tempek as presented in Table 1.

Table 1 Subsubak in Subak of Jatiluwih

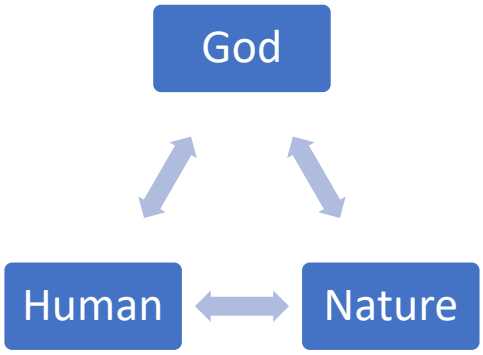
No	Subsubak	Areal (ha)	Members (people)
1	Umakayu	21.94	49
2	Gunungsari	48.48	115
3	Kedamaian	22.06	50
4	Besikalung	37.53	96
5	Kesamba	13.86	37
6	Telabah Gede	65.00	140
7	Umadewi	18.53	58
	Total		

Source: Primary data, 2025

In the Subak Jatiluwih area there are important temples as holy places for Hinduism, namely Puncak Petali Temple, Batu Karu Temple, Puncak Sari Temple, Tamba Waras Temple, and Besi Kalung Temple. The main products of Jatiluwih Village are Balinese rice, Red Sandalwood Rice for the agricultural sector. In addition, farmers in the Subak Jatiluwih area also raise livestock, such as cows, chickens, pigs, and raise fish.

As a world cultural heritage area, the Subak Jatiluwih area has an attraction for tourists to enjoy the diversity of agricultural culture and the natural beauty of terraced rice fields. These terraced rice fields are one of the manifestations of farmers since thousands of years ago in maintaining the balance of nature, namely making rice fields according to the natural contour or natural topography (Sholeh et al, 2020; wang et al, 2024). Maintaining balance or harmony in the relationship between farmers and nature is one form of implementation of the Balinese philosophy, namely tri hita karana (three causes of happiness), which consists of three components (see Figure 2). These three components are the harmony of the relationship between humans and God, the relationship between humans and humans, and the relationship between humans and nature (Sedana, 2023).

Figure 2 Tri hita karana



Based on the study, it is found that the farmers have been applying the principles of organic rice farming comprising: making environmental and cultural friendly, having integrated system, avoiding synthetic materials, utilizing local resources, and ensuring a justice. Regarding environmentally friendly, farmers implement rice farming practices that emphasize ecological principles to maintain and improve the health of soil, plants, animals, humans, and the environment, such as water quality, as an inseparable whole. They recognize that environmental balance is crucial to ensuring the sustainability of their rice farming, as passed down from their ancestors. Interviews with farmers indicate that soil quality, including degradation of soil fertility, and low water quality, will disrupt plant growth, ultimately reducing yields. Therefore, preserving the natural environment is crucial for farmers in their production. The culturally friendly practices implemented by farmers in their rice farming include a close adherence to the belief that the land used for planting rice is a manifestation of Dewa Sri, the God of Fertility. Maintaining soil fertility is believed to honour and worship Dewa Sri. Research shows that the land or rice fields they cultivate are a blessing from God, producing food that is beneficial for the lives of farmers, their families, and the wider community.

Integrated system implemented by farmers in the research site is an integrated production management system that prioritizes ecological recycling and minimizes negative impacts. This is related to avoiding the use of synthetic chemicals in the rice farming. The farmers as members of subak organization have agreed and made internal regulations stipulating that they are prohibited from using synthetic chemical fertilizers, pesticides, herbicides, and fungicides in their rice farming activities. Interviewed farmers revealed that the use of synthetic chemicals has killed certain insects and eliminated biodiversity within the rice fields or Subak. These synthetic chemicals are highly toxic to flora and fauna, which are essential for rice plant growth and impact rice production.

Regarding the use of local resources, farmers in the study locations stated that the organic fertilizers they use are derived from natural materials available in the Subak area, such as green manure, manure, and compost from agricultural waste (leaves, livestock manure, straw). Organic fertilizers are produced independently and also obtained through government assistance, which improves soil structure and fertilizes the soil. The concept of justice referred to in this study is the view of farmers who always maintain harmonious relations with their environment, and provide opportunities for current and future generations to benefit from the agricultural practices they have implemented. The principle of justice is also related to inclusive agricultural practices which include production, distribution

and trade systems that are transparent, fair, beneficial to various parties and take into account sustainable social, cultural and environmental aspects (Purwantini and Sunarsih. 2019).

Challenges in Developing Organic Rice Farming

Based on survey results at the study sites, it was discovered that farmers face several challenges in developing organic rice farming, including: (i) farmers' perception about higher production costs; (ii) lower productivity; (iii) the small number of consumers; (iv) risk of pest and disease attacks; (v) farmers' dependence on synthetic chemical fertilizers; (vi) food self-sufficiency program; (vii) uncertainty market of organic rice; and (viii) limited availability of organic materials. According to farmers, the high-cost stems from the high use of organic fertilizer compared to synthetic chemical fertilizers. Organic fertilizer requires 1,000 kg/ha, while synthetic fertilizers only require around 300 kg/ha (including urea, phosphate, and potassium). This assumption, of course, remains a factor for farmers considering organic fertilizer use. However, farmers who have already implemented organic rice farming do not consider the high use of organic fertilizer a problem because it is cheaper than synthetic chemical fertilizers.

Farmers initially experienced lower rice productivity from organic fertilizer use compared to those using synthetic chemical fertilizers. However, some farmers also noted that organic fertilizer use has long-term benefits, such as improved soil health and fertility. Research results show that the number of consumers consuming organic rice, particularly in Bali, is still relatively small, leading farmers to worry about low demand for organic rice. Therefore, these concerns should be addressed by reassuring farmers that organic rice can be marketed through sales promotions in supermarkets and even outside Bali. Research conducted at the study site also indicates that farmers experience a higher risk of pest and disease attacks in organic rice farming compared to those using synthetic chemical fertilizers. According to farmers, the main risk of pest and disease attacks in organic rice is the potential for higher damage compared to conventional rice due to the limited use of chemical pesticides. Pests such as brown planthoppers (BPH), rats, golden apple snails, and stem borers can damage plants and cause reduced yields, even crop failure. Furthermore, diseases such as tungro, leaf spots, and stem rot are also high risks, especially if environmental conditions are unfavorable, such as high humidity or poor land sanitation.

The dependence of farmers in Bali is similar to that of farmers elsewhere in Indonesia, where they are highly dependent on synthetic chemical fertilizers due to their long-standing adoption of green revolution-based agricultural technologies and practices. Under the green revolution program, farmers receive a technology package that includes superior seeds, synthetic chemical fertilizers, and synthetic chemical pesticides each planting season. Therefore, this dependency remains a challenge in the development of organic rice farming in the study area and for other farmers in Bali.

The central government program currently being promoted by the President is to achieve food (rice) self-sufficiency in order to reduce, or even eliminate, rice imports. This situation is clearly at odds with the development of organic rice farming in regions such as Bali. Achieving rice self-sufficiency requires the application of relatively large amounts of synthetic chemical fertilizers and pesticides, posing a challenge for farmers in Bali to develop organic rice farming, as agricultural extension workers in the field recommend using the technology package established by the central government.

Research conducted at the study sites indicates that organic rice marketing is relatively unstable, given its higher price compared to conventional rice. Consumers still prefer conventional rice, which they are accustomed to consuming. The organic rice market still targets a small number of consumers, and demand remains volatile. The use of organic fertilizer for rice farming requires locally available organic materials. According to farmers, they still face limitations in obtaining organic materials locally for use and processing into organic fertilizer, resulting in relatively limited fertilizer production. Meanwhile, government assistance or subsidies are not commensurate with the needs of organic rice farming.

The challenges mentioned above require more serious government attention to achieve broader and more sustainable development of organic rice farming. Strategic government efforts are a crucial component of organic rice farming development, alongside independent efforts from farmers and other stakeholders involved in organic rice production.

Implications of the studies: Strategies

The Bali provincial government has a vision, locally known as Nangun Sat Kerthi Loka Bali (building a harmonious Bali and moving towards the well-being of the Balinese people), to maintain harmony and balance between nature, people, culture, and God. One of the missions formulated in developing this vision is the development of an organic farming system. Bali, as a small island teeming

with tangible and intangible cultures, must maintain balance to ensure sustainable development across various sectors and aspects as a manifestation of tri hita karana.

The subaks in the Jatiluwih area, considered a world cultural heritage, must be maintained and preserved from a cultural, economic, and environmental perspective. Farmers, as key actors in the subak system, must be protected to maintain the area through sustainable agricultural management, namely cultivating organic rice farming. The government is obligated to undertake various efforts to increase the success of organic rice farming development in the study area. Some of these efforts include: (i) increasing production capacity; (ii) empowering farmers; (iii) developing and implementing organic farming technology; (iv) strengthening farmer institutions; and (v) building a market for organic products.

Increasing production capacity is one of the strategic efforts that needs to be undertaken to provide confidence to farmers that organic rice farming has higher productivity than the use of synthetic chemical fertilizers or conventional rice farming. In the Jatiluwih area, all rice fields meet the requirements for organic farming development, specifically rice cultivation, due to adequate water availability and favourable soil conditions. Developing organic rice production capacity is achieved by increasing the number of farmers willing to adopt organic farming. Efforts to encourage and motivate farmers to adopt organic rice farming include the provision of subsidized seeds and fertilizers from the government.

Farmer Empowerment should be done by the government at the provincial and regency levels. Providing agricultural extension and training on organic farming practices, such as the use of compost, green manure, and homemade botanical pesticides. Besides, encouraging farmers to be independent in managing and producing organic inputs. The government provides infrastructure and facilities, including equipment for producing organic fertilizer on a large scale. Besides, developing local institutions to support organic farmers, for example through support from universities or research and development institution. The farmers and their groups should be introduced technological and methodological innovation relating to the utilization of the potential of local resources, such as azolla, as a nutrient-rich organic fertilizer and animal feed. Using decomposer technology to process livestock waste into organic fertilizer is also needed for the farmers. The government provides processing equipment to produce organic fertilizer on a sufficient scale for farmer groups. Strengthening farmer institutions and encouraging active community participation includes facilitating farmer groups or subak (farmer groups) to obtain organic certification through the certification process. Organic certification is a crucial component in providing consumer assurance that products are organic. Therefore, the government provides financial assistance for completing the certification process, sometimes free of charge. Farmer incentives for implementing organic fertilizers include providing agricultural inputs and product management.

Market and institutional strengthening meant is building a strong marketing network for organic products, both for domestic and international markets. Organic product promotion should be done through expanding networks and market access for organic products. Aside from this, the effort needed is product marketing partnerships to ensure a market.

4. CONCLUSION

The principles of organic rice farming which have been applied by farmers in Subak of Jatiluwih are environmental and cultural friendly, integrated system, non-synthetic materials, utilization of local resources, and justice. Farmers face challenges in developing organic rice farming, namely: (i) farmers' perception toward highly-cost for production; (ii) relative low productivity; (iii) number of consumer are limited; (iv) pest and disease risks; (v) farmers' dependence on synthetic chemical fertilizers; (vi) program of rice self-sufficiency; (vii) uncertainty market of organic rice; and (viii) limited organic materials. The strategic efforts that should be done by government are: (i) increasing the production; (ii) empowering farmers; (iii) developing and implementing organic farming practices; (iv) strengthening institutions of farmers; and (v) establishing a market for rice organic.

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Maintaining Positive Mental Health in a Turbulent World

Prof. Dr. Parin Somani[1]

[1] *CEO: London Organisation of Skills Development, London, United Kingdom*

ABSTRACT

A turbulent modern environment including the COVID-19 pandemic, wars, climate crises, and rising societal tensions, have provoked a worldwide mental health crisis, disrupting social connections and psychological well-being. Such events create significant mental health processes, and the ability to identify proactive strategies to maintain optimal psychological functioning is paramount. Positive Psychology investigates phenomena enabling individuals and communities to flourish. A systematic review of the literature indicates that specific Positive Psychology strategies promote mental health in troubled circumstances. These strategies include gratitude, meaningfulness and purpose, tragic optimism, human connection, kindness, self-compassion, and nature contact. Evidence of their effectiveness during crises is presented. Their adoption is encouraged in personal and professional development and organisational training, individually and collectively. Though consistent use of the recommended strategies can optimise psych fortitude, the thorough recommendations remain preliminary until further analyses and confirmatory study designs provide more definitive guidance.

Keywords: *Mental Health, World, Wellbeing, Turbulent, Positive*

1. INTRODUCTION

In a momentous year that has witnessed profound and fundamental changes to relationships, economies, communities, and political systems, maintaining and prioritising positive mental health has become a significant and growing challenge. An effective and comprehensive way to approach mental health is to tackle the issues holistically and in a manner that integrates various aspects of well-being rather than merely focusing on treating individual problems through isolated interventions. Public and private stakeholders, including government agencies and non-profit organisations, are actively seeking innovative solutions to improve the emotional well-being of clients and individuals they serve. The prevalence of mental health problems has been steadily and alarmingly increasing over recent years. Current research suggests that symptoms of mental health disorders emerge before the age of 15 in approximately 75% of the cases tracked and studied. Therefore, it is crucial that governments, organizations, and society as a whole work together to help clients facing mental and emotional stress by following sound recommendations that are backed by scientific research and evidence. Furthermore, topics related to mental health have become increasingly relevant in schools and educational settings, where they have been linked to academic performance and overall student success. Academic institutions have developed several comprehensive sets of recommendations aimed specifically at tackling emotional and psychological issues to prevent them from growing into severe mental illness during both the early and late stages of studies. Through proactive and informed strategies, it is possible to create a supportive environment conducive to mental well-being(Przybylko, Peter Morton, & Elise Renfrew, 2021)(Wagner, et al., 2016).

Between the months of March and August in the year 2020, a total of 564 adults living in 40 different countries participated in a comprehensive survey designed to measure various aspects

such as perceived emotional support, the amount of social contact, different indicators related to mood, and the duration of time that had passed between the initial lockdown at one's home and the eventual completion of the survey. Before the onset of the pandemic, a notable 43% of individuals reported experiencing at least one symptom indicative of depression. However, during the pandemic period, even though older individuals have generally been regarded as having relatively stable mental health due to their retirement from the workforce, survey results revealed that approximately 50% of this demographic exhibited symptoms of depression.

Aim

Evidence-based recommendations for deliberate shifts in perspective are emerging from research into maintaining positive mental health, defined here as the manifestation of strengths, virtues, and resilience, even in the presence of adverse situations and stressors. As a contribution toward the development of a comprehensive model of mental health, this research integrates a systematic examination of the literature on maintaining positive mental health in adults, children, and young people. The findings form the basis for a refined set of five practical applications, initially distilled from multiple therapeutic modalities and supportive populations, that respond to continuing turbulence in the external environment by decreasing habitual tendencies to give attention to negativity, redundancy, or uncertainty, and by increasing attention to aspects of life that can be characterised as positive, new, or certain.

The research addressed a challenge from burgeoning economic disparities between nations, generally favouring the affluent few, and the mental illnesses correlated with disadvantage but not confined to deprived populations. Hood's model-based generalisation to all therapeutic techniques and conceptual framework of the underlying symptom representational hermeneutic evolution of positive therapeutic applications can be traced into three contemporary taxonomies stressing the same five fundamental principles. A comprehensive study of techniques suitable for maintaining positive mental health adds a set of practical applications to Russ's strong empirical support for the efficacy of simple deliberate acts.

2. RESEARCH METODOLOGY

Today's world presents a of myriad challenges, resulting in increased pressure and demands on individuals and organisations. The pandemic has unveiled the fragility of personal resilience, with mental health crises becoming prevalent at alarming levels. Seven evidence-based factors have emerged as essential components of personal mental health support programmes. The increasingly demanding pace of life has amplified the pressure on individuals to combat major mental health issues, including depression, anxiety, and stress(Przybylko, Peter Morton, & Elise Renfrew, 2021).

Research encompasses scholarly papers in accessible journals and respected publications. The collected literature highlights seven contributory foundations that constitute an asset-based approach to personal mental health. Each factor is described, detailing how it contributes to a person's flourishing(Gorbeña, et al., 2021). The findings have the potential to inform practical programmes within organisations to build the mental capital of their representatives (Wagner, et al., 2016).

Systematic Literature Review

Positive mental health is receiving increasing recognition as a fundamental component of overall mental health, especially for the youth population. In order to gain a deeper understanding

of what constitutes positive mental health, a systematic literature review was undertaken with several key objectives. Firstly, the research aimed to identify various definitions, concepts, and determinants related to positive mental health. Secondly, it sought to compare the limits, definitions, and terminology that are utilised across different studies in this area. Lastly, the review aimed to highlight significant studies published in the last two decades that specifically focus on the theme of youth positive mental health. The search process was focused on peer-reviewed articles, which included a diverse range of formats such as journal papers, conference papers, and doctoral theses. These were specifically published in English within the timeframe from 2000 to 2025. The literature available on this topic has experienced remarkable growth over the years, reflecting an increasing awareness and interest in the subject. Despite this growing body of work, numerous discrepancies and variations continue to exist in defining and conceptualising youth positive mental health. Issues remain regarding the creation of appropriate indicators that can effectively measure this construct, and there is considerable variability in the scope of studies that have been undertaken, as well as the terminology that researchers choose to employ. This ongoing struggle to establish a clear and consistent framework for understanding youth positive mental health underscores the need for further research and dialogue in this important field(Ajit Vaingankar, et al., 2022).

3. RESULTS AND DISCUSSION

Mental health is a vital topic that continuously remains at the forefront of global attention, especially as we navigate the transition back to a semblance of normal life following the unprecedented disruptions caused by the COVID-19 pandemic(Somani, 2021). This ongoing transition raises significant issues and concerns surrounding mental well-being that urgently need to be addressed in a comprehensive manner. Since the onset of the outbreak, interest in the subject of mental health has surged, demonstrating a notable and growing recognition of its pivotal role in our daily lives. With a specific reference to a thorough theoretical framework for the definition of positive mental health as proposed by Keyes, a systematic literature search was conducted across three major databases that house significant academic resources. This methodical search yielded approximately sixty relevant scientific journal articles that delve into various intricate aspects of this crucial and pressing field. Each of these articles was meticulously analysed through the lens of three complementary criteria: i) the thoroughness and completeness of the required methodological sections, which is vital for accurately assessing the robustness and validity of the findings; ii) compliance with a rigorously specified set of explicit maximum and minimum standards; and iii) conformity to a comprehensive list of standard items that are essential for maintaining academic rigor and integrity in research outputs. As a result of this exhaustive review process, it becomes apparent that interest in this vital topic may have begun to wane, suggesting that the focus has shifted back toward seeking normality rather than retaining the emphasis on positivity and holistic well-being, which are essential for human flourishing. Given these observations and reflections, further elaboration of this theme through diverse and varied examples of positive mental health is necessary, and the identification of additional emerging issues related to mental health is therefore indicated as possible, promising avenues for continued exploration and investigation in this critical field of mental health. Through sustained effort and dedication, we can strive to maintain and even enhance our understanding and support for mental health as a fundamental component of human experience, particularly in these challenging times (Gorbeña, et al., 2021).

4. PRACTICAL IMPLICATIONS

Maintaining positive mental health is a significant challenge for many individuals due to the alarming and escalating effects of pollution, the devastating impact of war on families and communities, the ongoing threats posed by climate change, and the pervasive consequences of the COVID-19 pandemic(Somani, Post Covid-19 Effects on the Future of Students in Higher. , 2021). The weight of academic, personal, spiritual, and various other duties can crumble under the intense tension and disquiet that arises from these negative influences. The Psychology tools discussed in this paper can play a crucial role in mitigating Mental Health issues and facilitating the opportunity for a more Positive outcome. Additionally, Masters students at Goldsmiths College, located in the same city as London University, reported encouraging and remarkably similar findings, highlighting the importance of addressing these mental health challenges in an ever-changing world filled with pressures and uncertainties.

Gratitude serves as a powerful catalyst that allows individuals to progress rather than regress in various aspects of their lives. It not only enables moments of deep reflection but also enriches personal growth in profound ways that can lead to transformative experiences. When individuals are encouraged to embrace gratitude within their daily routines, it fosters resilient dispositions that not only help in cultivating a positive mindset but can significantly lead to activating creativity. This newfound creativity, in turn, serves to enhance professional improvement and overall job satisfaction, which can have a ripple effect on various spheres of one's life.

Live painting events not only gratify onlookers by providing them with a feast for the eyes and a delightful visual experience; they also serve a significant role in promoting Public Health initiatives, especially in community-oriented settings. In recent times, the prevalent challenges faced when attending sports events, largely due to confusing restrictions and exorbitantly priced tickets, have led many people to acquire bespoke canvases and paints. This shift has thus created unique opportunities for Indoor Exercise, encouraging both physical motion and artistic expression, which can be invigorating for the body and mind alike. Additionally, the practice of gratitude circles is currently being embraced as an innovative method to accelerate personal growth and development among individuals who are genuinely seeking positive change and a sense of fulfilment. Family members from regions like Egypt express their gratitude in unique yet meaningful ways, including the heartfelt tradition of inviting everyone to share food during festive Office Meetings. This practice not only creates stronger bonds among family members but also fosters a greater sense of community spirit. Furthermore, the notion of collective gratitude is being actively practiced by organizations such as Wu Wei Studio, which emphasizes the importance of constructive participation in shared endeavours. By surrounding ourselves with warm comrades and supportive friends during our life journeys, we not only create a nurturing and encouraging environment but also contribute significantly to improving the overall mental health of individuals in the context of the lingering effects of Covid-19. This interconnectedness, coupled with the recognition of the immense value of gratitude in our lives, resonates deeply. It serves as a powerful reminder of its vital role in enhancing our overall well-being and building stronger, more cohesive communities.

Wide-reaching interventions that utilise Positive Psychology strategies have been shown to significantly alleviate stress during times of crisis. The STRONG programme effectively integrates Physical, social, and Spiritual activities into individuals' daily routines, fostering a holistic approach to well-being. Additionally, similar two-minute-strategy streams work to help embed essential Mental Hygiene practices into various professional contexts, ensuring that mental health becomes a priority at work. Another multi-component Positive intervention is designed to cultivate

overall Mental Well-Being, addressing various aspects of an individual's psychological health. Remarkably, participants in these programmes retained noticeable improvements in their Mental Health for more than six months after completing the interventions. Selected and carefully designed interventions that aligned with the STRONG system emerged following lengthy Public engagements and extensive Questionnaire consultations, proving to be quite helpful in bridging the existing gap between Theory and Practice in the field of mental health. This underscores the importance of evidence-based approaches in implementing effective strategies that promote resilience and well-being (P. Mead, Fisher, J. Tree, T. P. Wong, & H. Kemp, 2021)(Gorbeña, et al., 2021).

4.1. Limitations

A systematic literature review reveals three key elements underpinning the maintenance of positive mental health(Dray, 2021). First, three major protective factors including: self-regulation, self-determination and social support, all operate in tandem to maintain positive mental health and prevent the deterioration of psychological wellbeing. Secondly, positive mental health in individuals, small groups and communities is inter-related; efforts to enhance the wellbeing of one of these levels will bolster the wellbeing of the others. Thirdly, three groups of factors beyond those directly related to positive mental health have an influence (indicative, but not complete): socio-economic; factors relating to future change (rising or dwindling hope); and environmental (proximal, eg. housing, workspace, local area; macro, eg. wellbeing of the biosphere and climate).

Three practical implications stem from a systems perspective on the maintenance of positive mental health in the turbulent context of near-global economic recession and the pandemic crisis of COVID-19. The three implications advocate for: (i) strengthening the collective base of three major protective factors; (ii) investing in housing as a precondition for the maintenance of positive mental health; and (iii) launching and promoting coordinated campaigns to take intelligent collective action that will enhance progress towards the UN Sustainable Development Goals (SDG 2030). Policy and programme-makers in governmental and non-governmental service agencies are a priority target group for engagement in these initiatives.

5. CONCLUSION

Life has never been simple, but it is fair to say that the 21stcentury has brought previously unimagined challenges. The war in Europe, geopolitical tensions, a threatening China, rising prices, the threat of climate change, mega-droughts, pandemics, cyber warfare, fake news and natural disasters are just a small selection of issues that occupy our minds. Strategies for coping with such an unprecedented level of stress are now a priority.

This research paper, through a detailed and systematic review of existing literature, has successfully identified several key strategies that significantly enhance mental health outcomes. Three primary strategies emerged prominently from this comprehensive examination: mindfulness, physical activity, and social capital. Each of these strategies merits a thorough consideration and exploration in the context of promoting mental well-being. Mindfulness, which involves the conscious practice of defining and appreciating the present moment rather than becoming consumed by worries about the past or anxieties about the future, offers an array of both practical and psychological benefits. Numerous studies have indicated that engaging with mindfulness practices can lead to substantial improvements in overall well-being, both objectively and subjectively, across all age demographics. A particularly important recommendation within the mindfulness discourse is the concept of enjoying the active present moment, often referred to as

“joyful presence,” a notion that has garnered increasing support in psychological and therapeutic circles. It is crucial to note that a variety of important resources for effectively engaging with mindfulness practices are readily accessible.

Physical activity stands out as one of the most universal influences on enhancing health and well-being. However, the unprecedented circumstances of the pandemic have restricted many forms of activity, inadvertently facilitating an increase in sedentary behaviour among various populations. Despite these challenges, maintaining an active lifestyle remains essential for both mental health and general physical health. Research suggests that individuals who find enjoyment in their physical activities tend to experience greater benefits compared to those who merely strive to meet recommended levels of exertion. Engaging in simple forms of activity, particularly walking in nature without the interference of digital devices, can yield both enjoyment and health benefits.

Public health recommendations emphasise the importance of frequent engagement in a range of little and large activities. This includes immersing oneself in physicality by undertaking mildly strenuous walks outdoors, which foster a deeper connection to the environment while promoting overall fitness. Social capital is another key element identified in this review, encompassing perceived social support, effective forms of support, and a sense of belonging to a community. Regular engagement in social interactions has been shown to protect well-being, with social connections that are both supportive and focused on growth being associated with experiences of post-traumatic growth. The impact of both natural and built environments further plays a significant role in influencing feelings of connection and belonging within various communities. It is essential for everyone to be aware of the potential hazards to their mental health and actively strive to maintain healthy behaviour patterns. Furthermore, building and nurturing supportive relationships within one's networks significantly strengthens individual and collective resilience, offering an additional layer of protection against mental health challenges.

Although the number of institutional resources aimed at enhancing mental health has notably multiplied in recent years, an integrated and cohesive account detailing which specific practices or interventions actually improve mental health outcomes remains patchy, fragmented, and inconsistent. Many factors that demonstrate a significant influence on mental health are widely recognized and documented; thus, enhancing the promotion and implementation of these factors is hoped to lead to better overall mental health outcomes across diverse populations.

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Advancing Forest Management through Collaboration between Government and Local Communities: Case Study in West Bali KPH

Jun Ichihara[1)], Gede Sedana[2)]

(*Institute for Global Environmental Strategies (IGES)*

(Dwijendra University)

ABSTRACT

Indonesia's social forestry program and the establishment of Forest Management Units (Kesatuan Pengelolaan Hutan, KPH) aim to enhance sustainable forest management (SFM) through decentralized governance and community participation. This study analyzes forest management practices in the West Bali Forest Management Unit (KPH Bali Barat), focusing on Pulukan and Pendem villages in Jembrana Regency, where community forest management rights have been granted since 2017–2018. Using qualitative methods—including interviews with local leaders, social forestry groups, customary (adat) authorities, KPH officials, and other stakeholders, as well as site observations conducted from August 2024 to April 2025—the research examines institutional arrangements, socio-economic conditions, and cultural contexts shaping forest governance. Findings show that agroforestry development, ecotourism initiatives, and multi-stakeholder collaboration contribute to livelihood improvement and conservation outcomes, supported by the Balinese Hindu philosophy of *Tri Hita Karana*, which sacralizes forest spaces and reinforces community stewardship. However, limited financial resources, legal and managerial capacity gaps, and constraints on KPH authority hinder long-term sustainability. The study highlights the need for flexible governance that harmonizes cultural norms with formal regulations, strengthens KPH's intermediary role, builds community capabilities across the value chain, and expands sustainable financing mechanisms. These insights contribute to understanding how cultural values, institutional frameworks, and collaborative governance interact in advancing SFM within Indonesia's social forestry system

1. INTRODUCTION

Indonesia contains some of the world's most important tropical forests, which play a pivotal role in global climate mitigation and biodiversity conservation. Over recent decades, however, accelerated logging, land conversion, and plantation development have placed sustained pressure on forest ecosystems, with island-wide analyses for Borneo documenting extensive selective logging, fire, and conversion since the 1970s (Gaveau et al., 2014). The land-use

sector—especially peat fires—alongside the energy sector accounts for a significant share of Indonesia's national greenhouse gas (GHG) emissions. During the 2015 fire crisis, an estimated 2.6 million ha burned nationwide and emissions were on the order of ~1.75 Gt CO_2e, underscoring the scale of land-based emissions (World Bank, 2016). The Indonesian government reported that GHG emissions from peat fires in the same year were 808 Mt CO_2e, about 34% of national GHG emissions (Ministry of Environment and Forestry, 2018). In 2019, total GHG emissions were approximately 1.87 Gt CO_2e and Indonesia ranked fourth globally, reflecting combined energy- and land-use sources (Climate Watch). Indonesia also has the largest forest area in Southeast Asia, with around 120.5 million ha—about 64% of the national land area—designated as state forests; despite policy efforts, deforestation pressures and associated CO_2 emissions have remained salient (Ministry of Environment and Forestry, 2018).

Against this backdrop, Indonesia introduced Forest Management Units (*Kesatuan Pengelolaan Hutan*, KPH) as a decentralized forest management system and expanded social forestry (*Perhutanan Sosial*) to strengthen local stewardship while improving livelihoods (Ministry of Environment and Forestry, 2018). The Social Forestry Master Plan 2020–2045 positions local residents as central to forest management, aiming to sustain ecosystem services and reduce poverty, while the promotion of Sustainable Forest Management (SFM) has been elevated as both a domestic and international policy priority (FAO, 2016; ITTO, 1997). In practice, decentralized management centered on KPH is intended to balance objectives of local participation, livelihood improvement, and forest conservation, with recent analyses emphasizing KPH's role as a key field-level implementer (Golar et al., 2023).

Research on decentralized SFM and KPH in Indonesia is extensive, and documents obstacles in system design, governance, and local implementation. Identified challenges include legal and regulatory complexity, unclear tenure, centralized administrative cultures, and weak coordination with local governments, all of which hinder effective KPH operation (Kim et al., 2017). Additional constraints—such as limited funding, human resources, technical support, and market access—affect KPHs and social forestry groups and can undermine managerial capacity and economic sustainability on the ground (Eno, 2020; Uda et al., 2020). While the nationwide granting of community use rights under social forestry has progressed, aggregate evidence indicates that the rollout of community titles has not yet translated into nationwide deforestation reduction, highlighting implementation gaps and the need for supportive institutions and incentives (Santika et al., 2021). Trade-offs among policy goals (e.g., biodiversity conservation versus production objectives) and heterogeneous conservation effects across regions further complicate outcomes (Gaveau et al., 2014).

At the same time, studies identify enabling factors for SFM, including community-based participatory planning, capacity building for farmer groups (*Kelompok Tani Hutan*, KTH) and village organizations, and leadership by local actors (Kim et al., 2017). Public–private partnerships, multi-agency collaboration, and flexible, context-responsive implementation have also proven important; interventions such as forest certification, benefit-sharing under participatory schemes (e.g., PHBM), non-timber forest product development, and integration with regional development have supported both welfare and conservation in specific settings (Miteva et al., 2015). Traditional self-governance, culturally grounded values, and voluntary conservation by residents have been highlighted as additional success factors (Sitorus et al., 2022). Moreover, initiatives that combine climate action and community participation—such as REDD+ and mangrove restoration—offer pathways to reconcile diverse local values with conservation and livelihood objectives (Uda et al., 2020).

Building on this literature, this study examines the current conditions, institutional arrangements, and socio-economic challenges of forest management in West Bali, focusing on the West Bali Forest Management Unit (KPH Bali Barat)in Jembrana Regency, where social forestry permits underpin village-level management adjacent to state forest and where agroforestry and ecotourism activities are developing with KPH support. We analyze the interaction between administrative systems and Balinese Hindu cultural values—particularly Tri Hita Karana, which sacralizes forest spaces—and identify the social, economic, and institutional conditions that enable mutual understanding, consensus building, and cooperation between local residents and external actors. As a conceptual framework, we draw on international SFM guidance that emphasizes strengthening meso-level management systems, multi-stakeholder cooperation, and respect for cultural values—principles that align with Indonesia's forest policy architecture (FAO, 2016; ITTO, 1997).

2. RESEARCH METODOLOGY

2.1 Study area and case selection

We conducted a qualitative case study in the West Bali Forest Management Unit (KPH Bali Barat), focusing on Pulukan and Pendem villages in Jembrana Regency, Bali Province. Both villages have been formally granted community-based forest management rights under Indonesia's social forestry program since 2017, under which local residents manage village-adjacent state forest areas. Case selection considered: (i) environmental vulnerability in parts of Jembrana (e.g., flood risk); (ii) livelihood potential for agroforestry and other economic uses by local residents; (iii) strong commitment of both social forestry groups (SFGs; *Kelompok Tani Hutan*, KTH) to forest

development; and (iv) suitability as a complex sustainable forest management (SFM) case given adjacency to state forest, technical support from KPH, progress in multi-stakeholder collaboration, coexistence with traditional religious values, and ongoing regional development initiatives linked to agroforestry and ecotourism.

2.2 Study design and data collection

We combined documentary analysis and institutional analysis with field-based qualitative research. Fieldwork was undertaken from August 2024 to April 2025. We conducted semi-structured interviews with more than 20 informants, including village heads, leaders of social forestry groups, religious leaders of customary (adat) villages, West Bali KPH officials, and officials from the Tourism Office and Statistics Office. Interviews covered current forest management practices, perceived challenges, institutional constraints, and the state of inter-organizational cooperation. We also conducted site visits to SFG-managed areas and related facilities to observe the progress of agroforestry and the status of tourism infrastructure development. In addition, we interviewed researchers and central/provincial officialsbased in Jakarta, Yogyakarta, and Pekanbaru regarding revisions to laws and regulations related to KPH and broader sectoral trends.

3. RESULTS AND DISCUSSION

Forest Management in West Bali and Local Initiatives

2.1 Overview of the surveyed area – forest management system and institutional framework

The subjects of this study were the West Bali Forest Management Unit (KPH Bali Barat) located in western Bali Province, Indonesia, and Jembrana Regency (Pulukan and Pendem villages) under the jurisdiction of the KPH. The West Bali Forest Management Unit was established by decision of the Ministry of Environment and Forestry based on the Indonesian Forest Law (Law No. 41/1999), Government Regulations (PP No. 6/2007, PP No. 3/2008), and the Regional Government Law (Law No. 23/2014) as part of the decentralized forest management system promoted by the Indonesian government. Its main objectives are to achieve multi-purpose forest management, such as sustainable management of state forests, collaboration with local residents and social forestry groups (Kelompok Tani Hutan: KTH, or SFG), and control of illegal logging, biodiversity conservation, and regional economic development. The West Bali KPH management area spans three regencies in western Bali, namely Jembrana, Buleleng, and Tabanan Regencies, covering a total area of about 66,763 ha as of 2024.

Pulukan and Pendem villages in Jembrana Regency are both rural areas adjacent to state forests and are highly dependent on forest resources. Jembrana has a total forest area of 41,307 ha, including protection forests (32,975 ha), production forests (2,993 ha) and conservation forests (5,339 ha), the management of which is the responsibility of KPH West Bali (Suryawan et al., 2024). Pulukan village belongs to Pekutatan District, with a village area of about 635 ha, of which about 372 ha have been designated as protection forests. As for land use, agricultural land, residential land, and public facility land are mixed, and durian-based agroforestry is being developed. The climate is tropical, with a clear division between the dry season (Apr–Sep) and the rainy season (Oct–Mar), with an average temperature of 25–29 °C. The population is approximately 4,712 (as of 2023) and consists of six sub-villages (hamlets). Among them, Arca Dwipa is the closest to the forest, with about 206 ha of forest managed by the Social Forestry Group based on the decision of the Minister of Environment and Forestry in 2017 (SK.5885/MENLHK-PSKL/PKPS/PSL.0/10/2017).

On the other hand, Pendem Village belongs to Negara District and has a location that allows access to both the town center and the wooded area. The entire village has a population of about 10,217 (as of 2023) and consists of four sub-villages. Only Dewasana is close to the forest, while the others are adjacent to the urban area of the capital of Jembrana Regency. As for forest conservation activities, conservation-oriented forestry is being promoted through reforestation/enrichment planting with non-timber forest product (NTFP) species, and 130 ha of forest are managed by the social forestry group “Puncak Mawar.” This activity was officially authorized by the Decision of the Minister of Environment and Forestry of 2018 (SK.887/MENLHK-PSKL/PKPS/PSL.0/12/2018).

Thus, since 2017, the two villages have been officially granted village forest management rights (Izin Usaha Pengelolaan Hutan Desa: IUPHD) by the Minister of Environment and Forestry, and about 206 ha of forest in Pulukan and about 130 ha in Pendem are managed by their respective social forestry groups. Ownership remains with the state, and village forests cannot be transferred or converted in use; local residents hold use and management rights under the social forestry framework. In addition, KTH in Pulukan and Pendem are developing a variety of activities—such as agroforestry, tourism resource development, and forest monitoring—with support from KPH, and these are attracting attention as local initiatives that balance sustainable forest management and residents’ welfare. In both villages, the village head and the social forestry group play leading roles, and the acquisition of forest management rights is a formal procedure that involves applying to the Governor of Bali Province (for areas in Jembrana), coordinating with the Forest and Environment Office, and formulating and mapping the use plan. As a result, a forest management

model centered on local residents is being built, and practices are underway to balance conservation and livelihood.

Status and Challenges of the West Bali Forest Management Unit

West Bali KPH (UPTD KPH Bali Barat) is operated under the jurisdiction of the Bali Provincial Forestry Office, and has a subordinate organization headed by the head of the KPH (Kepala KPH), as well as staff responsible for forest protection and monitoring duties such as forestry engineers, forest rangers, forest police, and social forestry personnel. As an intermediate support organization, West Bali KPH provides a variety of support to these KTH, including support for the formulation of management plans, technical advice, promotion of public–private partnerships, and training. Key activities include conservation activities such as illegal logging and fire patrols, as well as the promotion of agroforestry, ecotourism, environmental education, and biodiversity conservation (e.g., the conservation of 19 wild orchid species in the Dewasana forest area) (Dodo & Hartini, 2019). In addition to patrols to combat illegal logging and forest fires, counseling and training at the village level are also conducted. There is a shortage of personnel relative to the forest area, and legal measures (criminal procedures) for illegal logging and related offenses are entrusted to the police and prosecutors (Suryawan et al., 2024).

According to interviews with KPH officials, KPH's budget is limited to the minimum for the management and operation of offices (staff personnel costs, administrative expenses, etc.), and in recent years there has been no budget for capacity-building activities, events, or other specific projects. Due to these budget constraints, KPH is promoting cooperation with relevant stakeholders and efforts to expand collaborative activities and projects such as ecotourism, agroforestry, and capacity building. At the field level, forestry engineers and social forestry personnel are assigned to subordinate organizations, but shortages of personnel, budget, and equipment remain an issue. In addition, while the KPH philosophy previously emphasized carrying out economic activities independently and becoming financially self-sufficient, the legal amendment at the central government level—the Job Creation Law (UU Cipta Kerja; "Omnibus Law") enacted in 2020—has had a significant impact on KPH authority and economic activities in Indonesia. Specifically, implementation of the Omnibus Law has weakened the legal basis for KPH to independently carry out revenue-generating activities, and the role of KPH has tended to be limited to forest management and technical assistance. Interviews confirmed that this represented a major turning point in the operation of the system in the field of social forestry and forest governance in recent years. Therefore, in order to maintain and strengthen KPH functions, it is important to reinforce KPH budget allocations and deepen cooperation among stakeholders.

Relevant stakeholder status

In the survey area, a cooperative system is being formed with various actors such as KPH West Bali, village governments, customary village (adat) leaders, as well as the military, Tourism Office, and BPS-Statistics Indonesia (Jembrana Office). KPH conducts training on forest management at the village level and also advises on matching with businesses and financing. In addition, the village government allocates part of the budget necessary for forest management activities to the development of tourism infrastructure and is cooperating with the Tourism Office. The following are examples of key stakeholders related to the activities of the West Bali KPH and the surrounding forest area.

In the West Bali KPH management area, several non-governmental organizations (NGOs) and educational institutions are involved in forest conservation and community development. The main stakeholders are IDEP Selaras Bali Foundation, based in Gianyar Regency, Bali, and BASE (Bisnis Alternatif untuk Sosial dan Ekologi) in Jembrana Regency. IDEP works to strengthen the resilience of local communities through education, disaster response, and sustainable resource management. BASE Bali, on the other hand, aims to promote civic participation among young people and is committed to community development using local languages and digital media. As an example of their activities, the two organizations jointly opened a “Learning Forest” in Mendoyo District, Jembrana Regency in March 2021. This facility aims to balance forest conservation and environmental education, and serves as a learning place to raise awareness of the importance of forests among local residents. It is also positioned as a practical base for sustainable forest use models that emphasize environmental, social, economic, and cultural harmony. As part of the activities, tree planting is also carried out to coincide with World Forest Day, focusing on local native species, and a variety of tree species are planted, including Balinese nutmeg, durian, and akar wangi (vetiver).

In addition, as an example of an educational and research institution, Udayana University is also actively involved in forest management and community development in Pulukan Village. In August 2024, community service activities for residents on the “Creative Village” and agrotourism were carried out, and lectures and discussions were held by students and experts. The activity raised awareness about the maintenance of sustainable forests through local agriculture and the effective use of economic resources, and was attended by village office officials, village-run companies, and local residents. The lecture introduced strategies for creative local economies, agrotourism products, and linkages with sustainable forests.

In addition, in the West Bali KPH jurisdiction, the Indonesian National Armed Forces (Tentara Nasional Indonesia, TNI) are also actively involved in forest conservation activities as one of the

important stakeholders. In December 2024, a forest planting activity was carried out in collaboration with local residents in the management area of the Social Forestry Group (KTH) “Puncak Mawar,” located in Dewasana, Pendem Village, Jembrana Regency, under the leadership of the Jembrana District Military Command. At the event, a total of 500 saplings such as avocados, durian, mangoes, and star fruit were planted by soldiers and residents. This activity is part of the national reforestation program promoted by the TNI headquarters, which aims to preserve the natural environment, prevent floods and landslides, and reduce disaster risks such as controlling soil erosion, especially during the rainy season. At the same time, afforestation centered on fruit trees is expected to contribute to the economic interests of local residents, and cases of military cooperation in social forestry efforts aimed at balancing livelihood improvement and forest conservation were confirmed.

In this way, forest conservation in the West Bali region is supported by the collaboration of various actors such as NGOs, universities, and the military, as well as KPH and social forestry groups, and the practice of forest management through multi-actor cooperation is being developed.

Improving livelihoods through agroforestry and other activities based on Bali’s cultural values

In Pulukan Village, agroforestry centered on durian (Musang King cultivar) is attracting attention. Under the leadership of the village head, seedling distribution and afforestation activities using the village budget are being carried out, and in the future it is planned to promote agrotourism using orchards. Conference facilities and simple toilets have already been built around the forest, and a guidance system for external visitors is being established.

Meanwhile, the Social Forestry Group (Puncak Mawar) in Pendem Village envisions the use of forests using NTFPs and the development of meditation-based ecotourism using waterfalls. In particular, there is a strong tendency to view forest space as a spiritual and cultural resource, which is an opportunity to attract tourists and at the same time transmit the cultural values of the region. Afforestation activities are also being carried out in cooperation with the above-mentioned military.

An essential part of talking about forest management in Bali is the existence of the idea of Tri Hita Karana. This is the central idea of Balinese Hindu culture, which emphasizes the trinity of harmony between God (Parahyangan), humans (Pawongan), and nature (Palemahan), and the forest is positioned as a “sacred space.” For example, there are many water sources and temples in the forest, and it is considered “a place where no one should harm it.” If logging or pollution is discovered, it may be accompanied by purification by religious ceremonies and sanctions within

the village community. These cultural values serve as a stronger deterrent than administrative regulations and can be said to support local residents' awareness of forest conservation.

The above points that are attracting attention as a practice of social forestry in West Bali are that the inter-stakeholder collaboration model is emerging while crossing administration, economy, and culture. For example, it has been confirmed that KPH and villages have collaborated to formulate an agroforestry plan, and the village provided funds, and the results were shared with the villagers. Of course, issues remained, and some residents reported a lack of understanding of forest laws and management rules, as well as cases of illegal logging and violations of regulations. There is also a lack of skills within KTH—such as fund management, income-expenditure planning, and commodity processing—which limits the commercial use of forest resources. In addition, a certain budget is required to develop the equipment and facilities necessary for forest management, but it is currently difficult for KTH alone to secure funding, and the KPH budget is limited; therefore, continuous external support and further collaboration among stakeholders are expected to strengthen forest management.

4. CONCLUSION

This study investigated the current state of forest management in Pulukan Village in western Bali, Indonesia, and neighbouring areas, and clarified how local residents use and conserve forests under the social forestry system. Analysing multifaceted factors—institutional support, cultural context, stakeholder engagement, and livelihood-enhancement initiatives—in light of international guidelines on Sustainable Forest Management (SFM) led to the following key findings.

First, durian-based agroforestry in Pulukan and forest use linked to tourism assets in Pendem demonstrate the potential for livelihood-improving community forest management, consistent with social forestry objectives. Technical support and administrative cooperation from KPH Bali Barat, together with the value of forests as sacred spaces rooted in Bali's religious culture (Tri Hita Karana), supported local conservation actions from both institutional and cultural perspectives.

Second, although social-forestry groups have achieved certain results, the sustainability of management remains uncertain due to limited understanding of the legal framework, weaknesses in technical and managerial capacities, and financial constraints. Cooperation with external stakeholders exists but remains at an early stage; a more systematic and institutional foundation is needed.

Third, the implementation of socio-cultural values, namely Tri Hita Karana by village communities is an important factor in forest management in the two villages.

Taken together, practices in Pulukan and other sites reveal both the possibilities and the limitations of local governance under social forestry, and they pinpoint specific challenges for future policy design and implementation.

Policy recommendations. Based on the results of this study, we present the following four policy implications.

(1) Harmonise cultural norms and institutions. In areas such as Bali where forests have spiritual and religious value, flexible forest management is required—not a legal framework alone. System operation should explicitly recognise how concepts like Tri Hita Karana shape local norms, and promote cooperation with Adat (customary villages) in administrative rule-making and monitoring.

(2) Strengthen KPH as an intermediary support organisation. KPH should function not only as an administrative forest management unit but also as an intermediate support organisation that brokers cooperation among resident organisations, firms, governments, and cultural bodies. This requires strengthening KPH human resources, budgets, and discretion, and revisiting the allocation of authorities and support frameworks at local-government and ministeriallevels.

(3) Build community capabilities along the value chain. Beyond agronomic and silvicultural techniques, KTHs require comprehensive capacity-building programmes in product processing, marketing, tourism development, and financial management. Matching with external experts and establishing reinvestment models based on periodic business assessments should also be supported.

(4) Develop PPPs and sustainable financing schemes. Current KPH and local-government budgets are insufficient to cover infrastructure and outreach essential for forest management. A multifaceted financing approach is needed, including PPPs with companies and NGOs, reinvestment of tourism revenues into forests, and access to results-based climate finance (e.g., REDD+).

This study analysed cases in Pulukan and other locations; future research should expand in three directions. First, comparative studies across multiple regions should clarify how differences in institutional operation and cultural background affect forest management. Second, evidence-based policy recommendations require the measurement and reporting of concrete environmental and economic outcomes (e.g., changes in carbon sequestration, biodiversity

indicators, and livelihood levels). Third, further work should deepen the institutional-economics and legal-sociology analysis of social-forestry system design.

In sum, this study clarified the realities of SFM where cultural norms and institutional frameworks intersect under Indonesia's social forestry system. Practices in Pulukan demonstrate the potential of resident-led management and governance, and they identify concrete issues and directions for institutional design and support systems. To advance SFM, it is essential to design flexible systems that respect local cultures, continuously develop community capabilities, activate intermediate support organisations, and cooperate effectively with external resources.

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CLIMATE CHANGE, BLUE ECONOMY, AND SUSTAINABLE SOLUTIONS

Dr. P. K. Kaleena

[1)] *Principal, Viswaksenaa Arts and Science College for Women, Tiruvallur*

ABSTRACT

Climate change has evolved from a distant threat into an urgent global crisis, with rising greenhouse gas emissions driving ocean warming, acidification, and deoxygenation. These changes endanger marine ecosystems, fisheries, and coastal communities worldwide. In response, the Blue Economy offers a transformative framework that integrates economic growth, social inclusion, and environmental sustainability. India, with its extensive coastline and large coastal population, exemplifies how science-based ocean management, sustainable fisheries, renewable offshore energy, and community-led initiatives can foster resilience and prosperity. Initiatives such as the Sagarmala Programme, Pradhan Mantri Matsya Sampada Yojana (PMMSY), SHORE Project, and seaweed cultivation demonstrate innovative approaches to marine conservation, circular economy models, and climate adaptation. By aligning national strategies with global commitments like the Paris Agreement and the UN Sustainable Development Goals, India is emerging as a leader in sustainable ocean governance. The convergence of climate action and the Blue Economy presents a critical opportunity to restore ocean health, empower coastal communities, and secure a sustainable future for generations to come.

Keywords: *Blue Economy, Climate Resilience, Sustainable Ocean Governance, Coastal Communities.*

We meet today at a pivotal time in human history, confronted by the undeniable realities of climate change and the urgent need for sustainable solutions. Our oceans, which cover over 70% of the Earth's surface, play a central role in regulating climate, supporting biodiversity, and sustaining livelihoods. It is within this vast marine expanse that the concept of the Blue Economy emerges as both a challenge and an opportunity for transformative change.

Climate change is no longer a distant threat; it is a present crisis. Rising greenhouse gas emissions drive ocean warming, acidification, and deoxygenation—threatening coral reefs, fish stocks, and coastal communities. The World Meteorological Organization warns that without rapid action, global temperatures could rise between 3 to 5 degrees Celsius by the end of this century, pushing ecosystems and societies to the brink of collapse.

Yet, amid this crisis, the Blue Economy offers hope. It envisions a future where economic growth, social inclusion, and environmental sustainability go hand in hand. Imagine a world where renewable offshore energy powers homes and industries; where sustainable fisheries and aquaculture provide nourishment without depleting marine stocks; where marine biotechnology yields new medicines and advances human health.

India, with its 7,500+ kilometres of coastline, stands at the crossroads of an ocean-driven transformation. Our Blue Economy vision, rooted in sustainability, innovation, and people-centric growth, promises not only flourishing industries but also resilient, inclusive coastal communities.

Let's begin with a critical fact: one out of every five Indians lives within 50 kilometres of the coast, and over 250 million people depend directly on marine ecosystems for their homes and livelihoods. Fisheries, transport, tourism, and new marine sectors sustain these communities and drive national prosperity. But coastal erosion, overfishing, pollution, and climate threats jeopardize these resources—a challenge the Blue Economy is designed to address.

A shining example of Blue Economy innovation is the development of sustainable aquaculture in Southeast Asia. By adopting environmentally friendly fish farming techniques, local communities have boosted incomes while reducing pressures on wild fish populations. Similarly, the greening of shipping through the adoption of cleaner fuels and optimized routes reduces carbon footprints and preserves air quality essential to coastal populations.

Critical to the Blue Economy's success is science-based ocean management. The United Nations' Decade of Ocean Science for Sustainable Development aims to fill vast knowledge gaps in ocean health, enabling evidence-based policies that balance use and conservation. Countries are now developing Sustainable Ocean Plans to align development with ecosystem protection—an ambitious and necessary step toward resilience.

One hallmark initiative is the Strengthening Coastal Resilience and the Economy (SHORE) Project, recently launched with World Bank support for the states of Tamil Nadu and Karnataka in India. SHORE will help conserve 30,000 hectares of seascapes by planting mangroves, restoring sand dunes, and reviving coral reefs. Projects like these blend green and grey infrastructure—living barriers with engineered solutions—to buffer against storms, improve fisheries, and protect endangered species such as dugongs, turtles, and shorebirds.

India's Sagarmala Programme is a national model for sustainable port-led development, modernizing shipping infrastructure and integrating "soft" solutions like digital twin technologies. In Kochi, the Smart Port Transformation project uses real-time data, AI, and virtual maps to optimize operations, reduce emission footprints, and support marine environmental monitoring—a leap toward operational efficiency and eco stewardship.

Let's explore the "blue revolution" in India's fisheries sector. Through the Pradhan Mantri Matsya Sampada Yojana (PMMSY), India emphasizes sustainable harvesting, marine protected areas, and eco-certification. India is now the world's second-largest fish producer, with robust growth in exports, jobs, and women's empowerment. Women form up to 72% of the coastal fisheries workforce, and targeted grants have moved many into value-added processing, seaweed farming, and eco-tourism—creating new income streams and a stronger voice in decision making.

Seaweed cultivation has flourished along Odisha and Tamil Nadu's coasts. Small-scale, community-led initiatives have grown to 5,000 tons of annual output, supplementing incomes for thousands of households. Environmentally, seaweed farms absorb dissolved carbon dioxide, improve water quality, and alleviate

pressure on stressed fish stocks—a model for climate resilience and biodiversity support.

The transformation of Alang in Gujarat from a high-impact shipbreaking port to a circular economy model is another shining example. Alang now meets international standards for safe, eco-friendly ship recycling, supporting resource recovery and creating local jobs while mitigating pollution.

A model for sustainable marine tourism, the Andaman and Nicobar Islands combine Blue Flag beach certifications, marine spatial planning, and community-led infrastructure to boost job creation and cut tourist-zone waste by 40%. Initiatives such as responsible dolphin watching, kayaking in mangroves, and coral trail walks empower local stakeholders and protect fragile habitats

Tackling plastic pollution, Tamil Nadu, the first Indian state to ban single-use plastics, now leads awareness campaigns and private-sector collaborations improving solid-waste management. Coastal cleanups and recycling programs have benefited over 120,000 people—and fostered ties between cities, NGOs, and businesses.

To sustain the momentum, strategic investments in green technologies, skill development, and financing models—like blue bonds and public-private partnerships—will mobilize capital, foster competitiveness, and assure long-term resilience. India's Deep Ocean Mission pushes the frontiers of deep-sea exploration, extracting strategic resources, advancing marine biotechnology, and developing cutting-edge ocean monitoring.

However, the path forward requires collective commitment. Governments, businesses, scientists, and civil society must collaborate globally and locally to implement the Paris Agreement's goals and the UN Sustainable Development Goals. Education and awareness are equally vital, fostering ocean literacy and building inclusive governance to protect marine commons for future generations.

The projects unfolding across India's coasts reflect the Blue Economy's triple promise: economic prosperity, ecosystem stewardship, and equitable opportunity. These blueprints for action have global relevance, and position India as a leader in sustainable ocean governance.

In closing, the convergence of climate action and the Blue Economy represents one of the most significant opportunities of our time. By embracing sustainable solutions grounded in science, equity, and innovation, we can restore ocean health, bolster economies, and secure a livable planet. Together, let us invest in resilient coasts, empower our communities, and shape a future worthy of our ocean heritage.

REIMAGINING PEDAGOGY IN HIGHER EDUCATION THROUGH INQUIRY AND COGNITIVE ENGAGEMENT: A BLOOM'S TAXONOMY AND SDG-ALIGNED APPROACH

Dr. Mujeera Fathima
Principal (Retired)
Government Arts and Science College,
Vanur, Villupuram, India

ABSTRACT

The need for pedagogical transformation in higher education has never been greater. As global challenges demand creative, competent, and critical thinkers, educators must adopt frameworks that transcend rote memorization and passive learning. By integrating Bloom's Revised Taxonomy with the innovative approaches of Inquiry-Based Learning (IBL) and Process-Oriented Guided Inquiry Learning (POGIL), this keynote explores how higher education can empower learners to become active co-constructors of knowledge. The pedagogical alignment with the United Nations Sustainable Development Goals, particularly SDG 4 (Quality Education), positions inquiry-driven teaching as a tool for equitable, inclusive, and sustainable educational reform.

1. INTRODUCTION

Higher education today stands at crossroads. Traditional didactic models centered on content delivery no longer meet the needs of a rapidly changing world (Barnett & Coate, 2005). During my postgraduate training in academic practice at King's College, London, I was introduced to the transformative pedagogical frameworks of IBL and POGIL. These approaches reshaped my view of teaching as not merely the transmission of knowledge but as the facilitation of inquiry, collaboration, and higher-order thinking.

2. RESEARCH METODOLOGY

Bloom's Taxonomy as a Framework for Cognitive Engagement

First developed in 1956 and revised in 2001, Bloom's Taxonomy provides a hierarchical model for cognitive development, evolving from *Remember* and *Understand* as lower order goals to *Apply*, *Analyze*, *Evaluate*, and *Create* (Krathwohl, 2002) which qualify as the higher order goals. Yet, as Anderson and Krathwohl emphasize, learning is most impactful when learners actively move toward the higher-order domains (Anderson & Krathwohl, 2001).
In higher education, this can be achieved by redesigning questions, activities, and assessments to encourage synthesis, evaluation, and original knowledge construction.

3. RELATED RESEARCH/LITERATUR REVIEW

Inquiry-Based Learning (IBL) is an approach in which students explore meaningful questions, engage in systematic investigation, and construct conceptual understanding through active inquiry (Prince & Felder, 2006). Rooted in constructivist learning theory, IBL aligns closely with the higher levels of Bloom's Taxonomy—particularly *Analyze* and *Create*—where learners synthesize knowledge, test hypotheses, and generate original ideas.

A good Example for this can be taken that applies for the Life Sciences: Instead of simply describing the process of photosynthesis, students could be challenged to design an experiment investigating the effects of environmental variables on chloroplast function. Such a shift transforms learning from passive recall to active discovery.

Beyond deepening conceptual understanding, IBL cultivates autonomy, reflective habits, and engagement—attributes that are central to achieving SDG 4 (Quality Education), which promotes

inclusive and equitable learning opportunities, and SDG 10 (Reduced Inequalities), which emphasizes accessible and participatory education for all learners (UNESCO, 2017).

Through IBL, education becomes a platform for empowerment—enabling diverse learners to question, explore, and co-create knowledge that addresses real-world challenges.

4. RESULTS AND DISCUSSION

Process-Oriented Guided Inquiry Learning (POGIL) builds upon the principles of inquiry by integrating structured teamwork and defined student roles—such as manager, recorder, and presenter—to guide learning through collaborative exploration (Moog & Spencer, 2008). Within each POGIL session, students navigate content-specific inquiry cycles that develop both conceptual understanding and process skills, including communication, leadership, and metacognition.

POGIL not only supports the upper cognitive domains of Bloom's taxonomy but also nurtures interpersonal competencies essential for the modern workforce, aligning strongly with SDG 5 (Gender Equality)—by ensuring inclusive participation and equitable voice in group settings—and SDG 8 (Decent Work and Economic Growth)—by cultivating teamwork, problem-solving, and adaptability required in sustainable economies.

By emphasizing collaboration and reflection, POGIL transforms the classroom into a microcosm of a sustainable society—one where shared responsibility, empathy, and inquiry coexist as core learning values.

Pedagogy and the UN Sustainable Development Goals

The integration of **inquiry-based approaches** such as **Inquiry-Based Learning (IBL)** and **Process-Oriented Guided Inquiry Learning (POGIL)** in higher education extends far beyond classroom innovation—it embodies a powerful commitment to the **United Nations Sustainable Development Goals (SDGs)**. These pedagogies cultivate reflective, autonomous, and socially responsible learners who are equipped to engage with the complex challenges of the 21st century. Through inquiry, collaboration, and critical reflection, education transforms from the transmission of knowledge to the *co-construction of understanding for sustainable global progress.*

SDG 4 – Quality Education

Inquiry-based pedagogies directly advance **SDG 4: Quality Education**, which aims to ensure inclusive and equitable access to learning opportunities for all. By encouraging students to question, explore, and create, IBL and POGIL shift education from rote memorization toward deep, conceptual learning rooted in *critical thinking and problem-solving.*
These methods foster **learning environments where students actively construct meaning** and link disciplinary knowledge to real-world contexts—exactly the kind of transformative learning UNESCO identifies as essential for sustainability education.
Thus, educators not only teach content but also nurture *lifelong learners* capable of addressing social, environmental, and ethical challenges.

SDG 5 – Gender Equality

IBL and POGIL classrooms promote **gender inclusivity and equity**, fulfilling the vision of **SDG 5: Gender Equality.** In POGIL's structured group model, every student assumes an active role—such as manager, recorder, or presenter—ensuring balanced participation and equal voice.This framework dismantles traditional hierarchies and empowers all learners, particularly women and marginalized groups, to engage as leaders and collaborators.By modeling**equitable participation, respect, and**

shared responsibility, educators foster attitudes that transcend the classroom—helping to build workplaces and communities grounded in fairness and mutual respect.

SDG 8 – Decent Work and Economic Growth

Inquiry-driven learning prepares students for the rapidly changing demands of the global workforce, directly supporting **SDG 8: Decent Work and Economic Growth.**
By developing **transferable 21st-century skills**—communication, creativity, collaboration, adaptability, and ethical reasoning—students become equipped for meaningful employment and entrepreneurship in knowledge-based economies.
Moreover, inquiry-based classrooms mirror professional environments, emphasizing teamwork, leadership, and innovation—skills essential for building a sustainable and inclusive economic future.

SDG 10 – Reduced Inequalities

Both IBL and POGIL create spaces for **equitable learning experiences**, thus contributingto**SDG 10: Reduced Inequalities.**Through inquiry, diverse learners engage with content at their own pace and from their own perspectives, ensuring that learning is inclusive rather than hierarchical.POGIL's team-based approach encourages the exchange of diverse ideas, helping students recognize the value of varied cultural, social, and intellectual contributions.By cultivating empathy, respect, and collaboration, educators help bridge gaps between learners—promoting not only academic equity but also a mindset of social justice and inclusion.

SDG 17 – Partnerships for the Goals

Inquiry-based pedagogies inherently promote **collaboration and global partnership**, which align closely with **SDG 17: Partnerships for the Goals.**
Educators and institutions that adopt IBL and POGIL often engage in **interdisciplinary and international collaborations**, sharing best practices, co-developing curricula, andbuildingpedagogicalcapacityacrossborders.These collaborative frameworks create a **global community of practice**, uniting educators, researchers, and policymakers in advancing transformative education for sustainable development.In essence, inquiry-based teaching exemplifies the SDG 17 spirit: partnerships rooted in shared knowledge, innovation, and mutual empowerment.

Pedagogy as a Pathway to Sustainable Transformation

By implementing **Bloom's Taxonomy** through **IBL** and **POGIL**, higher education becomes a **catalyst for social and environmental transformation**. These approaches engage the *head* (cognition), *heart* (values and empathy), and *hands* (action and practice), nurturing graduates who think critically, act ethically, and innovate sustainably.In this way, pedagogy itself becomes a **driver of the SDGs**—empowering students not only to understand the world but to improve it.

5. CONCLUSION

Today's learners do not merely need information—they need engagement, reflection, and opportunities to create. Through deliberate pedagogical design based on Bloom's Taxonomy and informed by inquiry models such as IBL and POGIL, educators can reimagine higher education as a process that does not "fill empty vessels," but instead "ignites minds" capable of critical and creative

thought. Such a transformation is not only desirable but necessary for the achievement of the global education and sustainability agendas of the 21st century.

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IOT BASED DATA ACQUISITION FOR TERRACE GARDENING

Dr. M. Dhinakaran [1], Prof. P. Deepthi [2], and Prof. R. Yoganapriya [3]

[1]Associate Professor, Department of Electronics and Communication Engineering, Government College of Engineering, Salem, Tamil Nadu, India
dhinakaran@gcesalem.edu.in
[2],[3]Assistant Professor, Department of Electronics and Communication Engineering, Government College of Engineering, Salem, Tamil Nadu, India
deepthiparamasivam@gmail.com
yogana1102@gmail.com

ABSTRACT

The Internet of Things is used in current age of creative computing and it's providing opportunities to communicate around the world. IoT describes a system where items in the real world, and also sensors within or attached to these items, are connected to the Internet via wireless and wired connections. M2M communications and intelligence drawn from the devices and therefore the network can enable businesses to alter bound basic tasks while not looking at central or cloud-based applications and services. The Aim of this paper is to monitor the environment of the plants in terrace garden. This can be done by measuring parameters such as temperature, humidity, soil moisture and light intensity of the garden. Here in this paper, the data of these parameters are collected and viewed in the form of graph by using thing speak website (online platform, in which data is represented graphically). The data displayed as an output can be observed and forecasted. Now a day's terrace gardening is developing in cities. The terrace garden is helpful for a family to meetup at least some of the vegetable needs. Thus, this project is used for monitoring environmental data of the plants in order to improve the effectiveness of terrace gardening.

Keywords: *IoT – Internet of Things, M2M – Machine to Machine*

1. INTRODUCTION

Technology has changed our lives day by day. The system that was done manually is now developed into an automated system that can save time and energy. In this system, temperature, humidity, soil moisture and light intensity values of the environment will be monitored, stored and displayed on the Cloud web via the Internet. The stored old values can also be used for predictions. An article on the automated water supply system for urban residential areas showed that their system can be used to effectively manage water resource. The physical factors that are required, are hard to control manually inside a greenhouse so there is a need for the automated system. Many smart irrigation systems have been proposed and devised through Evapotranspiration, thermal imaging, capacitive methods, and neutron scattering method and gypsum blocks are some of the technologies that enable moisture sensing.

The prototype we used comprises of moisture sensor, temperature & humidity sensor, LDR sensor and NodeMCU. Soil moisture sensor (YL 69) is installed near the roots and temperature & humidity (DHT11) sensor is installed further away to detect the temperature and humidity (Tanu Saha & Ashok Verma, 2017). A changing climate is leading to more occurrences of extreme events such as droughts and floods, which have a negative impact on crop growth and yields. Plants require an optimum soil-water-air environment in the root zone to maintain

physiological response to growth, photosynthetic functions, and productive vegetative capacity for high yield response (D.Veera Vanitha et al., 2017)

Rising air temperatures also have a deleterious effect on crop production, as heat stress limits the optimum productive capability of our current commercial plant species on which the population depends for food security. A changing climate is also affecting other aspects of crop production such as increased pests and disease in some situations, changes and even losses in biodiversity. Greenhouses are controlled area environment to grow plants. As the limitation of existing greenhouse plants is that it is not operated automatically and has to be operated manually with different records. In order to achieve the optimum growth of plants, the continuous monitoring and controlling of environmental parameters such as temperature, humidity, soil moisture, light intensity etc. are necessary for our greenhouse system. This paper demonstrates a checking and control system for nursery through Internet of Things (IOT).

The combination of IoT and embedded technology has helped in bringing solutions to many of the existing practical problems over the years. The sensors used here are YL69 moisture sensor and DHT11 sensor and LDR sensor (F. S. Zazueta & J. Xin, 2004).

The recorded temperature and humidity are stored in a cloud database (ThingSpeak), and the results are displayed in a webpage, from where the user can view them directly. The system will screen the undeniable common conditions, for instance, moistness, soil immersion, temperature, closeness of fire, etc. All the environment parameters data are send to cloud using WiFi module NodeMCU esp8266. If any condition crosses certain limits related actuator will be turned ON. The microcontroller will as such turn on the motor if the earth stickiness isn't generally a particular worth. The user can screen and control parameters through mobile and computer. The model was attempted under various blends of obligations to our examination office and the test outcomes were found as expected.

2. EXISTING SYSTEM

It consists of Manual Monitoring of the agricultural field parameters and the use of the GSM technology, which will take more time to get the required results. So in order to overcome that we have proposed more organized and automated monitoring of the crops by controlling different parameters inside the greenhouse. The Internet of Things is regarded as the third wave of information technology after Internet and mobile communication network (www.wplawinc.com).

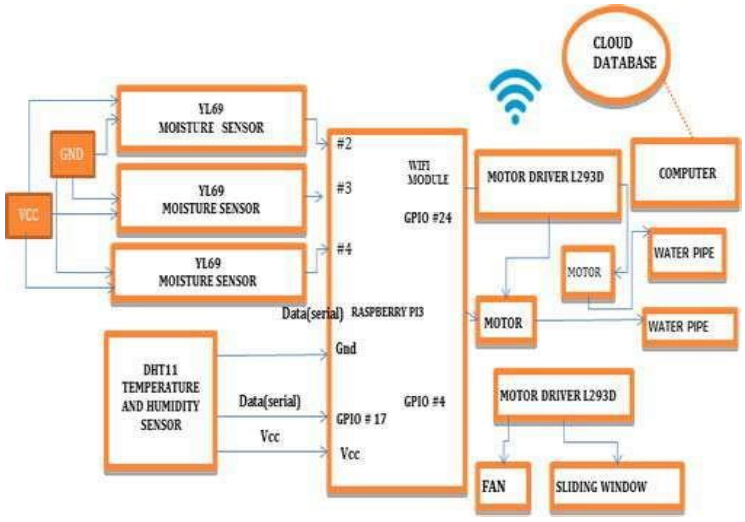

Figure 1. Block Diagram for Existing Monitoring Model

DISADVANTAGES

The controlling section leads to misbehave while there was a network error.

3. PROPOSED SYSTEM

Our proposed system is mainly for Monitoring the plants condition which involves temperature and humidity of the environment, moisture level of the soil and the amount of light present in the garden (www.pwc.com).

These three parameters are received from the sensors and stores these values in the cloud database enabling them to be accessed from anywhere, anytime. The prototype we used comprises of moisture sensor, temperature & humidity sensor, and LDR sensor. Moisture sensors (YL 69) are installed near the roots. Temperature & humidity (DHT11) and LDR sensor is installed further away to detect the temperature & humidity and Light. These sensors send their data to the NodeMCU to analyze the results (Rawal, 2017).

With the help of ThinkSpeak web application, the analysed result can be shown/ viewed in the form of Graph. Thus, the graph will clearly states the condition of the plants present in the garden.

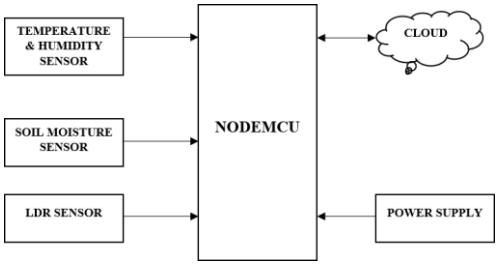

Figure 2. Block Diagram for Proposed Model

3.1 METODOLOGY

To always sustain a suitable climate inside the Terrace garden and to retain appropriate moisture content in the soil we have to frequently monitor them first. So, we have designed a system for monitoring the parameters such as temperature, humidity, soil moisture content and the light intensity using the temperature & humidity sensor (DHT11), moisture sensor (YL69) and LDR sensor respectively. These parameters are sent to thinspeak website using NodeMCU with the help of internet connection.

3.1.1 REMOTE MONITORING

Internet of things is a concept where each device is assigned an IP address and through that address, anyone makes that device identifiable on the internet.

The major element of IoT based monitoring systems is NodeMCU. This removes human interaction with machines and makes it technically possible and desirable in various domestic processes by replacing it with programmed electronic systems.

3.1.2 COMMUNICATION WITH THING SPEAK

With the help of inbuilt Wi-Fi module, the data collected are uploaded to the ThingSpeak cloud platform. We can visualize the data in the form of charts which features real-time updates. Using ThingSpeak IoT platform, we can continuously upload and monitor real- time data which will be very useful.

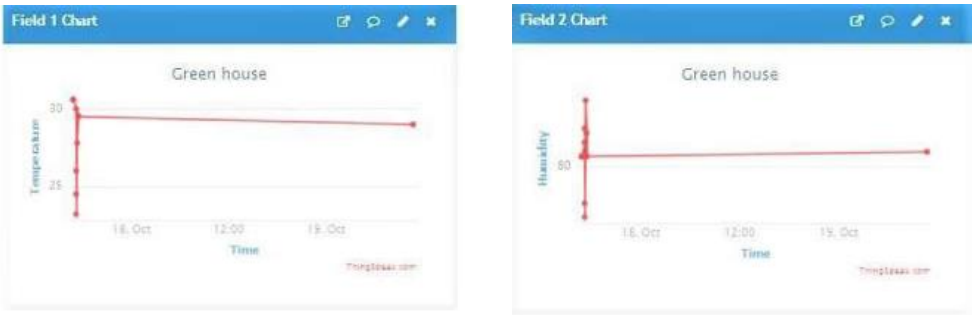

Figure 3. Results from THINKSPEAK site

3.1.3 THINGSPEAK CLOUD

It is an IoT platform that is designed to enable meaningful connections between people and things. It features real-time data collection, data analysis, data processing, data visualization using a connected Social Networking Service (SNS) via an open source API to support various platforms (thingspeak.com).

Figure 4. Current results from THINKSPEAK cloud

```
Humidity: 82.00%
MOISTURE LEVEL : 42.82
INTENSITY : 0.00
Temperature: 29.50 degrees Celcius
Humidity: 82.00%
MOISTURE LEVEL : 42.91
INTENSITY : 0.00
Temperature: 29.50 degrees Celcius
Humidity: 81.00%
MOISTURE LEVEL : 42.82
INTENSITY : 0.00
Temperature: 29.30 degrees Celcius
Humidity: 79.00%
MOISTURE LEVEL : 42.82
INTENSITY : 0.00
Temperature: 28.80 degrees Celcius
Humidity: 76.00%
MOISTURE LEVEL : 42.72
INTENSITY : 0.00
Temperature: 27.80 degrees Celcius
Humidity: 74.00%
MOISTURE LEVEL : 42.72
INTENSITY : 0.00
Temperature: 27.20 degrees Celcius
Humidity: 74.00%
MOISTURE LEVEL : 42.72
INTENSITY : 0.00
Temperature: 26.80 degrees Celcius
Humidity: 75.00%
MOISTURE LEVEL : 43.11
INTENSITY : 0.00
```

Figure 5. Previously obtained results from THINKSPEAK cloud

4. CIRCUIT DESCRIPTION

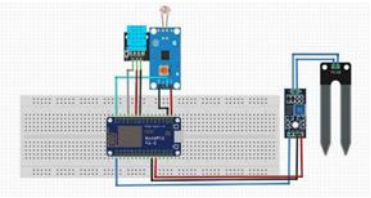

Figure 6. Circuit Diagram for Proposed Model

4.1 EXPLANATION

The components are connected to form a circuit as per the circuit diagram.

- In which the pins of soil moisture sensor namely A0, Vcc and GND are connected to A0,3.3V and GND pins of NodeMCU respectively.
- Then the pins -output, Vcc and GND of LDR sensor is connected to NodeMCU pins- D0,3V3 and GND respectively.
- Finally, in case of DHT11, its output, Vcc and GND pins are connected to D3, 3V3 and GND pins of NodeMCU respectively.

5. CONCLUSION

Here, proposed design is implemented with NodeMCU platform for monitoring temperature, humidity, soil moisture and light intensity with the help of Web server using IOT in terrace garden. It does not require any human intervention. This is particularly an important factor because the presence and availability of the human cannot always be trusted on. we need a more dependable and reliable way for its management which is easily achieved by this project.

They are very important as they are responsible for the efficient growth of crops that are either necessary to feed the population or necessary for the economic growth of any country.The Future Scopes of this paper are,

- As a next step, we are planning to control the temperature, humidity, soil moisture and light intensity of the plants.
- By controlling, we can make sure that plants grow in a healthy way.

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BUILDING EARLY CHARACTER THROUGH LITERATURE CREATIVITY IN *"WAYANG"*

Nyoman Yulio Kardona[1], Yohanis Umbu Pingge[2]

[1)]Dwijendra University
nyoman.yulio.k@gmail.com
[2)]Dwijendra University
yohanisumbupingge@gmail.com

ABSTRACT

While character education is still a hot topic for the government and remains a frequently discussed topic, its implementation remains suboptimal, particularly in terms of supporting media. Character itself is a very essential element in a person's environment, even in the life of a nation and state However, there is still a medium for understanding and implementing the values contained in character education that is under-explored: Wayang, a part of literature, namely oral literature. Wayang can be used as a medium for understanding various life values, one of which is the value of character education. In practice, it can be used in schools and the surrounding environment. One example is in Bali, which still maintains the Wayang tradition. Wayang in Bali is one of the sacred means in life, which is marked by the Tumpek Wayang Feast Day (Rahinan). It has been a hereditary and ingrained tradition for Hindus to carry out various mandatory activities during Rahinan Tumpek Wayang. One of these is the Sapuh Leger Wayang Performance. Because it is obligatory, Wayang performances in Bali are familiar to children from an early age. Therefore, Wayang can become a literary medium from an early age, especially oral literature with the function of educating and implementing all kinds of values, including the values contained in character education.

Keywords: *character education, literature, wayang*

1. INTRODUCTION

When the Indonesian people agreed to proclaim Indonesian independence on August 17, 1945, the founding fathers of the nation realized that there were at least three major challenges to be faced. The first was establishing a united and sovereign state, the second was building the nation, and the third was building character. These three things are clearly visible in the concept of the nation state and national character building. In its implementation, efforts to establish a state are relatively faster when compared to efforts to build a nation and build character (Samani. 2011:1). Today, character education has become a hot topic among education practitioners. In Indonesia, the implementation of character education is indeed felt to be urgent. The situation of society and even the world of education in Indonesia is the main motivation for mainstreaming implementation of character education in Indonesia.

Character education in Indonesia is felt to be in dire need of development considering the increasing number of brawls between students, as well as other forms of juvenile delinquency, especially in big cities, extortion/violence (bullying), the tendency for seniors to dominate juniors, and so on. Even more worrying, the desire to build honesty in children through Honesty Canteens in a number of schools, many have failed. Many Honesty Canteen businesses have gone bankrupt because honesty has not yet been fostered in children. And what is quite astonishing is the revelation of Tempo Interaktif Magazine (27/8/2009) in Samami (2011: 2) that according to the National Narcotics Agency, almost 10% of drug users are still minors. Therefore, this character education emerged due to

dissatisfaction with the implementation of education, especially regarding the quality of character output schools. Current education is considered to have failed to create individuals with character because it focuses too much on increasing knowledge and overemphasizes intellectual intelligence. However, it is weak in intellectual and spiritual intelligence, preventing the development of a virtuous nation. This is what has led to increasing moral decay, even though education is now accessible to all.

Therefore, the loss of character will lead to the loss of future generations. For example, this loss of moral and social character can be seen in rampant corruption, drug use, anarchism, and so on. Character also serves as a driving force and strength, preventing this nation from drifting. Furthermore, character doesn't emerge spontaneously; it must be developed and molded to shape individuals and a nation into a dignified nation. This character must be concretely realized through specific stages.

One of the steps that can be taken is building character through education, which is considered the most effective medium in developing the potential to strengthen character, both in the form of skills and insight. Therefore, education is continuously built and developed so that the implementation process produces the desired generation. Character education is a term that is still not accurately interpreted by parents, teachers, and the general public. For example, it is interpreted as a subject of citizenship, character education, a new subject due to the new curriculum, or even only interpreting this character education as the task of teachers in schools alone.

2. RESEARCH METODOLOGY

This study uses a qualitative-descriptive approach with a humanistic and constructivist paradigm. This approach was chosen because the purpose of the study is not to measure quantitative variables, but rather to understand the meaning of character education built through creative literary expression in the *wayang* medium. In other words, this study interprets wayang as a literary and cultural medium that instills moral, social, and spiritual values through a creative process—both in performances, story creation, and students' reception of the characters and stories. This type of research is descriptive-analytical qualitative research in the context of education and children's literature. It is called descriptive because this study describes the facts, practices, and creative processes that occur in *wayang* based literary activities and is called analytical because the researcher does not stop at descriptions, but analyzes the character values (morality, responsibility, honesty, empathy, and discipline) that emerge in these activities. The qualitative method was chosen because character and moral values cannot be measured numerically, but are understood through meaning, narrative, and action. This approach allows researchers to capture the process of character formation contextually, not just the end result. *Wayang* as a medium of literacy is symbolic and semiotic, so it requires cultural interpretation, not just observation of behavior.

Data analysis was conducted interactively and cyclically, following the Miles & Huberman (1994) model, namely data reduction by selecting relevant data (children's narratives, teacher statements, quotes from *wayang* texts) and compiling character value categories. Data presentation by presenting data in the form of tables, value maps, or narrative quotes to show the relationship between literary creativity and character formation. Conclusion Drawing and Verification, namely interpreting the meaning of the findings, for example how the characters of Arjuna, Srikandi, or Semar function as moral and intellectual role models for children. This analysis is interpretative-hermeneutic, because it views literary works (*wayang*) as meaningful texts that are read in a cultural and educational context.

3. RELATED RESEARCH/LITERATUR REVIEW

Character itself is a very essential element in a person's environment, even in the life of a nation and state. Essentially, character has been defined by many experts from different perspectives. Etymologically, character originates from the Greek character "karasso" which means the essential "fingerprint" owned by every human being (Maksudin, 2013: 1). From here it is understood that every human being has a different fingerprint which automatically shows that every human being has a different character. According to the Big Indonesian Dictionary (Kamus Besar Bahasa Indonesia (KBBI)), character is the psychological traits, morals or manners that distinguish one person from another. Character is also a way of thinking and behaving that is unique to each individual to live and work together both within the family, society, nation, and state (Samami 2011: 42). The meaning of character is also often associated with the meaning of character, noble morals, morals, and even with multiple intelligences (Maksudin. 2013: 3). A little understanding is aimed at the meaning of character, morals, and morals are the same and clearly interrelated.

Quoted from the book by Dharma Kesuma (2012), character education according to Ratna Megawangi is an effort to educate children to be able to make wise decisions and practice them in everyday life, so that they can make a positive contribution to their environment. There is also Fakry Gaffar interpreting character education as a process of transforming life values to be developed in a person's personality so that they become one with that person's life behavior. From the explanation above, it can be concluded that character education is a form of activity to educate a person/individual in which there is an action intended for the next generation with the hope of becoming a better generation in various aspects and has the function and purpose of character education to remind, strengthen, to form self-improvement and train the ability to live better in the future. The characters that are expected to strengthen a person through this character education start from the characters of honesty, discipline, caring, politeness, responsibility, cooperation, religiousness, independence, dignity, integrity, and nationalism.

Character education is being promoted everywhere, both in schools and in the general community. However, a problem arises: the lack of character education media. Media are tools used by teachers to teach character to students. These media are essential because they help students understand and implement the character traits taught by teachers. The solution to this lack of learning media is actually right before our eyes: Wayang. Wayang is a cultural heritage of our ancestors that contains valuable moral messages for life. Wayang stories contain character values full of kindness and heroism, which are excellent examples for character education for the nation's future generations.

So why must be Wayang? Because Wayang included in one type of literature, namely oral literature and Wayang is also included in one of the histories in Indonesia. This is in accordance with Marianna Richardson in Maksudin (2013: 68) there are several ways that can be used to convey character education, namely through literature, history, Natural Sciences (IPA), Mathematics. The phenomenon of oral literary traditions includes many genres of oral activities such as oral literary performances, speeches or traditional narratives, oral stories, spells, and children's play songs (Amir, 2013: 142). The concept of character education that is native to Indonesia can be explored from various customs and cultures in Indonesia, the teachings of various religions in Indonesia and leadership practices that have long been implemented in Indonesia (Samani. 2013: 59). The educational tradition in Indonesia seems not yet mature enough to embrace character education as a cultural and religious performance in community life (Maksudin. 2013: 65). It is stated that culture also clearly plays a role in educating a person's character. This is because culture has an impact on how people think and can also impact

behavior. However, unlike human genetic traits, it is inherited socially, not biologically (Coleman, 2005: 6).

4. RESULTS AND DISCUSSION

From the background in the introduction, we know that character education whose main goal is to form a character that is tough, competitive, noble, moral, tolerant, cooperative, patriotic, dynamically developing, science and technology oriented, all of which are inspired by faith and piety to God Almighty based on Pancasila (Muslich. 2011:67). So the conclusion of character education itself has the main goal of developing a person's basic potential, both in thinking and behaving in society, besides that character education functions as an enhancer of competitive national civilization in world relations.

Every moment, society is faced with the reality of the spread of moral decadence that affects teenagers, students, society in general, and even government officials. The most obvious signs of moral decadence in society include the spread of acts of violence, mass brawls, murder, rape, behavior that leads to pornography, etc. Thus, it is understandable that the demand for character education is increasingly being discussed with the aim of making the future generation become human beings with character, who are able to behave positively in all things.

Character education aims not only to develop moral, ethical, and ethical individuals, but also to develop intelligent and rational individuals who make sound decisions and utilize their potential intelligently. Intelligence in utilizing one's potential and acting rationally are the hallmarks of a person with character and personality. Character education is a values education designed to instill a spirit of hard work, discipline, creativity, and innovation in individuals, which is expected to become ingrained in their character and personality. Therefore, character education aims to shape individuals into innovative and hardworking individuals.

Efforts to ensure society utilizes intelligence and rationality in its actions involve instilling these personality values in future generations from an early age. Therefore, they must be equipped with character education now, so that Indonesia's future generation will no longer be irrational and characterless. Optimism and self-confidence are qualities that should be instilled in children from an early age. Implementing character education is a crucial step in shaping an individual into an optimistic and confident individual. It's not just about pursuing grades, but also about providing them with insight into how to behave within their environment, family, and society. One of the principles of character education is the development of a love of one's country. The most essential element of this attitude is the willingness to fight, make sacrifices, and be ready to provide assistance to those in need. This is where character education becomes crucial, ensuring that individuals truly understand that the knowledge they acquire must be utilized for the benefit of others.

Character education should be developed with a variety of implementation options, including approaches, strategies, methods, and techniques, integrated and comprehensive (Gunawan, 2012: 184). The effectiveness of character education does not always require the addition of a separate program, but can be achieved through cultural and life transformation both inside and outside the school environment. Through character education, all are committed to developing a generation into whole individuals who internalize virtue (know and want to), and are accustomed to embodying that virtue in their daily lives. The solution to this lack of learning media is actually right before our eyes: Wayang. Wayang is a cultural heritage of our ancestors that contains valuable moral messages for life. Wayang stories contain character values full of kindness and heroism, which are excellent examples for character education for the nation's future generations..

Figure 1: Childrens playing Wayang and traditional Balinese music

Potential Wayang as a communication medium for disseminating information is explained in detail in a book published by the Ministry of Communication and Information of the Republic of Indonesia. Starting from Wayang as a value reference, story Wayang which can be used as a teaching tool, conveying information, changing behavior and healing. Wayang is a national cultural heritage that should be preserved by the Indonesian people. Its use as a medium for character education is a supporting component in the formation of the nation's children's character while maintaining its existence as a literary culture. There are several advantages to this. Wayang as a medium for character education. First, Wayang nature acceptable. It means, wayang itself is part of the nation's cultural heritage and can be accepted by all groups. Second, Wayang nature timeless which means timeless. The story of Wayang is a story that has similarities from time to time. The existence of this characteristic makes Wayang as a character learning medium that can be used from generation to generation. Third, the media Wayang this does not require a lot of costs like other media and is practical and efficient.

The next discussion is Wayang. There are two opinions about the origin of Wayang. First, Wayang originated and was first born on the island of Java, specifically in East Java. This opinion is not only held and put forward by Indonesian researchers and experts, but also the result of research by Western scholars. Among the Western scholars in this group are Hazeau, Brandes, Kats, Rentse, and Kruyt. Their reasons are quite strong. Among them, art Wayang is still closely related to socio-cultural and religious conditions. Meanwhile, the second opinion says that Wayang originated from India, brought with Hinduism to Indonesia. They included Pischel, Hidding, Krom, Poensen, Goslings, and Rassers. Most of this second group were scholars from England, a European country that had colonized India (Soetarno: 7). However, since the 1950s, books of Pewayangan as if it had been agreed that Wayang it actually originates from Java Island, and is not imported from any other country. Wayang it is estimated that he was born in Indonesia at least during the reign of King Airlangga, King of Kahuripan, namely when the kingdom in East Java was at its most prosperous.

The value of character education in culture Wayang, encompassing values derived from ancient ethical systems, Hinduism, Islam, Buddhism, faith/spirituality and others. Teaching Wayang greatly influences the way of thinking and behavior of its fans. An observer of Wayang in Yogyakarta, Tjipto Haribowo looks at the arts of Wayang can be used as a medium for learning about life starting from sensitivity, sensibility, ethics, democratization, or even learning how to live in an atmosphere of pluralism. Wayang also plays a significant role in Pancasila as the nation's philosophy of life and as the foundation of the state/state ideology is a consciousness, meaning that we believe in the values contained therein with full awareness. This also means the awareness that our existence as a very diverse nation and state is a potential, if managed well by implementing the values of Pancasila in various fields: arts, science, technology, education, law, history,

economics, industry and so on, it will undoubtedly make us a great nation and state (Soetarno: 19).

When we start to pay attention and describe the performance of Wayang, we can also clearly see the connection between society and oral literature. First, oral literature exists before an audience, because without an audience, there is no performance. If there is a performance without an audience, it is called practice, playing, or joking. Second, the beliefs of the society that sustain oral literature. Therefore, we will find certain conditions provided for the smooth running of the performance. These conditions relate to the society's belief in the supernatural in the performance. Wayang grandly to avoid disturbing magical elements. Third, it relates to societal values. Fourth, the presence of an audience gives special meaning to the Wayang or wayang performer. All of these things are related to oral literature and society (Amir, 2013: 142).

Here, we can take the example of the island of Bali, especially for those who embrace Hinduism. It has become a deeply ingrained tradition with many customs, culture, and religious ceremonies considered as feast day (Rahinan). Balinese arts and culture are a very important part of religious life (Hinduism) in Bali. All religious ceremonies in Bali utilize elements of art such as percussion, dance, visual arts, decorative arts, and literary arts as sacred arts (Department of Education and Culture, 1978: 175). One of these religious ceremonies is Hari Raya Tumpek Wayang. Tumpek Wayang is a manifestation God Iswara which serves to illuminate the darkness, provide enlightenment to life in the world and is able to awaken the power of art and beauty and create Satyam/Aikyam (truth), I'm here (holiness/glory), Sundaram(beauty/harmony). Tumpek Wayang is a reflection of a world filled with darkness, humans filled with stupidity, arrogance, and anger. Therefore, Shiva sent SangHyang Samirana descends to the world to give power to humans who will later become mediators in carrying out their activities. The person who becomes this mediator is called a carrying or Samirana. SangHyang Iswara provide this power to be able to awaken artistic taste and attraction that can provide suggestions to other people, namely the audience.

This power is what is called taksu or body, because in the performance of Wayang, a person carrying or Samirana able to convey stories filled with philosophical humor, criticism, suggestions, and the realities of everyday life. Eventually, the audience can be captivated by their thoughts, and the power of suggestion emerges within each individual. Therefore, human life on earth is not merely about maintaining the physical, but requires a balance between the physical and the spiritual, which is often reflected in the implementation and celebration of the event. Tumpek Wayang for Hindus celebrated every six months.

There is also a story that says that if a child is born on the same day Wuku Wayang this is a day that is considered sacred, Balinese people believe that those born on this day should be given a ceremony. Melukat/Crucifixion (ruwatan) big which is called Sapuh Leger. For children whose birth is celebrated at that time, it is intended to protect them from disturbances (hunting). Time God according to Sapuh Leger Palm Leaf And Lord Kala, Batara Siwa give permission to Time God to prey on children/people born on Wuku Wayang (cf. Gedong Kirtya, Va. 645). Based on the content Palm leaf said, if any of his children were born on Wuku Wayang, for the safety of his son, semeton (friends-citizens) Bali tried to carry out the ceremony by first performing a performance Sapuh Leger Wayang the following apparatus is prepared much more (heavier) than the equipment offerings/banten type Wayang other.

Tumpek Wayang also means "Arts Day", because that day is ritually celebrated as the birth of various types of arts such as Wayang, Barong, Rangda, masks, and all kinds of gamelan. These ritual activities are a form of gratitude towards SangHyang Taksu which is often symbolized by artistic ceremonies Wayang, because it contains various elements of art or total theater. In this art, all the existence and essence of art are encompassed. Ceremony presented before SangHyang Iswara, worshipped in front of all art objects and arts for safety and good luck in performing, attracting and captivating the hearts of each audience. For

art lovers and practitioners, the thanksgiving ceremony consists of offerings restrained: sesayut tumpeng guru, prayascita, penyeyeng and fragrant incense smoke, while begging to receive serious attention in creating the advancement of art and literature (oral literature).
Tumpek Wayang is literary data in the Lontar manuscript. One of them Lontar Kala Purana reads:

Figure 2: Example of a Lontar containing Balinese letters and language

> *"… Muwah binuru sang Pancakumara; katekang ratri masa ning tengah wengi. Hana dalang angwayang, nemoning tumpek wayang, sang anama Mpu Leger. Sampun angrepakena wayang, saha juru redep genderne, wus pada tinabeh, merdu swarane, manis arum….".*

It means, *"… After being chased by the Pancakumara by the God Kala, until midnight, a man/wayangeer named Mpu Leger performed wayang during the Tumpek Wayang. After facing the screen, the gender player immediately played his gamelan, his voice melodious and clear….."*

That's a little knowledge about Rahinan Tumpek Landep in Bali, where it is introduced to children from childhood, along with dozens of religious ceremonies that have become traditions and must be carried out from generation to generation. In particular, the introduction to the Tumpek Wayang ceremony. From an early age, it plays a significant role in educating the next generation to love culture through literature, which includes character education values. In addition to being a means of character education, Wayang it can also be a means of obtaining religious education as well as classical entertainment with cultural arts played by Dalang and accompanying songs by sinden or singers of songs that accompany the stories in Wayang with a background of soothing, seductive gamelan music.

For example, in Hindu literature, namely Sloka Bhagavadgita the following is Sri Krishna's advice to Arjuna, which describes his character as follows:

> *"O Arjuna, be fearless, living a life of purity, wisdom, and unity with God. Be steadfast, strong, generous, honest, willing to make sacrifices while still obeying the prohibitions. Fully understand the Scriptures while maintaining control over your desires."* (Bhagavadgita - Daivasura Sampad Yoga)

However, it is necessary to understand that the use of media Wayang. This isn't just for Hindus, especially those on the island of Bali. All religions, such as Muslims, can use it as a means of character education. On the island of Java, almost all Muslims regularly hold performances. Pewayangan every activity such as weddings, inaugurations, etc. However, on the island of Java there is no obligation for young people from an early age to maintain, continue and preserve Pewayangan this is like on the island of Bali. Therefore, there is nothing wrong if Pemawayangan can also be included in the world of school education through

extracurricular activities as a form of delivering character education in the school environment. In Bali, it is common for many children to play Wayang in various forms, and it is not uncommon for there to be competitions Wayang between schools. It is also clear that Wayang besides being a literary medium (oral literature), it also serves as a medium for character development from an early age. It also serves as a means of preserving literary culture, especially oral literature, which is on the verge of extinction

5. CONCLUSION

Character education should be developed with an integrated and comprehensive approach. Effective character education doesn't always require adding a separate program; it can be achieved through cultural and lifestyle transformation, both inside and outside the school environment. Through character education, everyone is committed to developing a generation into whole individuals who internalize virtue (know and want to) and habitually embody it in their daily lives.

Wayang is a national cultural heritage that should be preserved by the Indonesian people. Its use as a medium for character education is a supporting component in the formation of the nation's children's character while maintaining its existence as a culture in the context of oral literature. There are several advantages to oral literature. Wayang as a medium for character education. First, wayang is acceptable. This means that Wayang itself is part of the nation's cultural heritage and can be accepted by all groups. Second, wayang is timeless because the story of Pewayangan a story that has similarities from time to time. The existence of this characteristic makes Wayang as a character learning medium that can be used from generation to generation. Third, the media of Wayang this does not require a lot of costs like other media and is practical and efficient.

On the island of Bali, especially those who embrace Hinduism, they have known and always implemented traditions Rainan Tumpek Wayang Ceremony. Introduction and application the Tumpek Wayang resurrection since early childhood it has become a guideline for maintaining and cultivating traditions of Wayang and all its aspects, including oral literature itself. By promoting Wayang performances everywhere, it is hoped that this will have a positive impact, including:

1. Maintain religious faith in God Almighty
2. Respect and maintain Indonesian traditions/customs
3. Able to reflect on oneself to improve oneself to become an educated individual with good character and morals.
4. Preserving culture as a regional culture that supports the strength of national culture.
5. Can filter incoming foreign cultures, where good foreign cultures mean those that are in accordance with our culture, we accept and those that are not in accordance, we do not accept.
6. Protect the Indonesian generation from being contaminated by bad foreign culture.
7. Improve the behavior of the Indonesian people because Wayang performances always contain true life teachings in accordance with conscience.
8. The feeling of love and pride for the homeland and nation will increase in the minds of the Indonesian generation in particular and Indonesian society in general, so that it will have an impact on the smooth development of Indonesia into a better country.

Thus, Wayang can survive and thrive in its own country and truly become a dynamic character education medium. Although there may be some obstacles that may occur if children have to be changed to be simpler so as not to be scary, also taught starting with simple advice, to a large scale such as at the time of the

performance which is usually held all night long enough to make the audience bored and sleepy, the language that certainly uses the local language so that it causes confusion for the audience, and the audience reach with a radius of ± 500 meters is enough to make the audience have to be observant to see the various forms of the characters. However, there are still solutions that are initiated, including collaboration Pewayangan through print media, radio media, television media, film, and the internet (Ministry of Communication and Information of the Republic of Indonesia). These are the steps for preservation, although they seem modern, but in their implementation, it is hoped that every individual will truly understand what they are. Pewayangan along with all its aspects in real terms and all the hopes mentioned above can really be realized.

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THE USE OF RICE POLISHING MACHINE TOSHI KINHE MPGV 50 IN INCREASING RICE YIELD IN RMU AT SUBAK BENGKEL, TABANAN

[1)]Pande Made Ari Ananta Paramarta and [2)]Ni Ketut Karyati
[1)] Agribusiness Study Program, Faculty Of Agriculture and Business, Dwijendra University
arianantа230@gmail.com
[2)]Master's Study Program In Agricultural Extension, Faculty Of Agriculture and Business, Dwijendra University
niketutkaryati60@gmail.com

ABSTRACT

Rice (Oryza sativa L.) is a major commodity that determines national food security, with rice yield as an important indicator of post-harvest success. Rice yield in Subak Bengkel, Tabanan is still low (45–50%) due to the use of conventional Rice Milling Units (RMUs) that are less efficient. This study aims to analyze the adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine innovation and its effect on increasing rice yield. The research method uses SEM-PLS to analyze innovation adoption factors and multiple linear regression to examine the effect of technology on yield. The results show that innovation adoption is significantly influenced by relative advantage (0.42), observability (0.40), compatibility (0.36), and trialability (0.31), while complexity (-0.28) has a negative effect. The regression model with $R^2 = 0.71$ shows that machine adoption, usage intensity, grain moisture content, operator experience, and RMU capacity explain 71% of the variation in rice yield. The Toshi Kinhe MPGV 50 machine has been proven to increase yield by more than 5% and improve the physical quality of rice. Consequently, machine adoption needs to be supported by operator training, grain moisture management, and field demonstration programs to expand its application and improve farmer welfare.

Keywords: Rice, Yield, Machine, Innovation, Subak

1. INTRODUCTION

Rice (Oryza sativa L.) is a major food commodity in Indonesia, playing a strategic role in supporting national food security. More than 90% of Indonesia's population relies on rice as a staple food, so the sustainability of its production and distribution is crucial for socio-economic stability. Tabanan Regency, known as the "rice granary of Bali," contributes significantly to regional rice supply(Tseng *et al.*, 2022). Rice productivity in this region is relatively high, but a classic problem in the post-harvest chain remains related to the low efficiency of processing unhulled rice into quality milled rice. A key indicator of post-harvest success is milled rice yield, the percentage of whole rice produced from a given amount of unhulled rice. Low yield reduces the efficiency of unhulled rice utilization and impacts the economic value received by farmers and Rice Milling Unit (RMU) managers. Yield is influenced by many factors, including rice variety, grain moisture content, drying techniques, and milling technology(Alfred *et al.*, 2021). In practice, traditional RMUs often produce low yields due to high levels of broken rice (menir), uneven milling degrees, and rice quality that does not meet consumer preferences.

The conditions in Subak Bengkel, Tabanan, still show the dominance of conventional machinery. This use of machinery results in significant yield losses during the husking and polishing processes. National rice yields range from 55–65% depending on the condition of the raw materials and milling technology. Rice mills with limited technology often produce yields at the lower end, even less than 55%. This significant potential yield loss results in significant economic losses for farmers and

millers(Satpathi *et al.*, 2023). Developments in post-harvest technology have resulted in modern rice processing machines capable of increasing both yield and quality. One such innovation is the Toshi Kinhe MPGV 50 Rice Polishing Machine, a high-tech rice polishing machine that relies on the principle of controlled friction to produce optimal quality rice(Granić, 2022). This machine has the advantage of reducing the number of broken rice, maintaining grain integrity, and improving the gloss and appearance of rice, making it more attractive in the market.

The rice polishing process occurs at the final stage of milling after the grain has undergone husking and whitening. Polishing not only removes the aleurone layer and remaining fine bran on the surface of the rice, but also affects its physical quality, nutritional quality, and final yield(Sheng *et al.*, 2022). Conventional machines often produce many broken grains due to uncontrolled processing. The Toshi Kinhe MPGV 50 is equipped with a precise pressure and speed control system so that polishing is carried out evenly, resulting in intact rice grains with a better level of brightness. Increasing rice yield has significant economic implications. Every 1% increase in milled rice yield can be translated into savings of thousands of tons of grain on a regional scale(Kashem *et al.*, 2024). Increased yield means an increase in the amount of rice that can be marketed without the need to increase the area of planted land. The availability of agricultural land in Bali is increasingly pressured by land conversion, making post-harvest efficiency a strategic step to increase productivity. Rice quality is becoming an increasingly important aspect for modern consumers. Rice with a shiny white appearance, a whole texture, and minimal grit has a higher selling value than lower-quality rice. The use of the Toshi Kinhe MPGV 50 machine has increased both the quantity and quality of rice produced by the Subak Bengkel Rice Mill(Tseng *et al.*, 2022). Quality is a key factor in expanding market access, both locally and nationally.

Increasing rice yield through the use of modern machinery provides significant added value for farmers and RMU managers. Farmers obtain better selling prices because the rice produced is of higher quality. RMU managers obtain larger profit margins from more efficient milling. Increased income supports the sustainability of the Subak system as a cultural heritage and traditional Balinese irrigation system recognized by UNESCO. The adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine is in line with the agenda of agricultural modernization and rural industrialization. Post-harvest modernization narrows the productivity gap between production centers such as Tabanan and other regions that have previously adopted advanced technology. Increased efficiency at the RMU scale contributes to national food security, as every grain of rice can be utilized more optimally.

Innovation in rice post-harvest can be explained through the framework of technical efficiency and economic efficiency. Technical efficiency is achieved when a rice milling unit (RMU) is able to produce high yields with minimal losses. Economic efficiency occurs when rice products are of high quality, allowing them to be sold at a higher price. The Toshi Kinhe MPGV 50 machine meets both of these aspects. Technically, the machine is capable of increasing yields. Economically, better rice quality increases market value(Yusuf and Oladipo, 2025). This machine has the potential to be a strategic technology in Bali's rice agro-industry system.

Subak Bengkel, with an area of 320 hectares and 500 farmers, faces significant challenges in processing unhusked rice. The previously used Rice Mill (RMU) had low efficiency, resulting in a rice yield of only 45–50%, below the ideal efficiency standard of 55%. This low yield is caused by a suboptimal milling process, including a lack of polishing capability, resulting in many damaged grains or remaining husks. Scientifically, rice polishing plays a crucial role in improving the quality, moisture content, and shelf life of rice, as well as maximizing yield. The implementation of the Toshi Kinhe MPGV 50 Rice Polishing Machine offers a more efficient polishing technology with a multi-stage system that can reduce grain damage and improve husk separation. With this machine, the rate of grain loss is reduced, rice quality is improved, and the yield can approach the ideal efficiency of 55%(Paramarta, 2024). The implementation of the Toshi Kinhe MPGV 50 at the Subak Bengkel RMU is expected to be a scientifically based technical solution to address unhusked rice

processing issues, increase rice productivity, and support farmer welfare by optimizing harvest yields. Based on the problems above, the purpose of this research is how to adopt the innovation of the Toshi Kinhe MPGV 50 Rice Polishing Machine and how the influence of the Toshi Kinhe MPGV 50 Rice Polishing Machine in increasing rice yield at the RMU in Subak Bengkel, Tabanan.

2. RESEARCH METHODOLOGY

2.1. Research Location

This research was conducted at Subak Bengkel, the largest subak in Kediri District, with an area of approximately 320 hectares and approximately 500 farmers. This location was chosen due to significant challenges in processing unhusked rice into rice, particularly during the milling stage at the Rice Milling Unit (RMU). The previously used RMU had low efficiency, resulting in a rice yield of only around 45–50%, still below the ideal efficiency standard of around 55%. This condition indicates the need for technological innovation to improve the quality of milled rice. Therefore, the research focused on the application of the Toshi Kinhe MPGV 50 Rice Polishing Machine, which is expected to increase rice yield while improving the physical quality of the milled rice. The research was conducted from August 2025 to September 2025, which included initial observation, field data collection, yield measurement, and analysis of the results of using the innovative machine compared to conventional machines(Paramarta, 2024).

2.2. Data Types and Sources

The data used in this study consisted of quantitative, qualitative, primary, and secondary data. Quantitative data are numerical data that can be measured and analyzed statistically, such as the weight of dry milled rice, the weight of milled rice, the yield percentage, and the level of broken rice produced by the machine. This data is important to see the real difference between the use of innovative polishing machines and conventional machines. Meanwhile, qualitative data is descriptive information obtained from interviews with RMU managers, farmers, and Subak members regarding their experiences, obstacles, and perceived benefits of using the machine. Primary data were obtained directly from the field through observation, milling measurement, and interviews, thus reflecting the actual conditions at the research location(Yusuf and Oladipo, 2025). Conversely, secondary data were obtained from various supporting sources such as rice production reports from the Department of Agriculture, Subak Bengkel profiles, the technical specifications of the Toshi Kinhe MPGV 50 machine, and relevant literature or previous research. By combining these four types of data, this study can provide a more comprehensive picture from both technical, quantitative, and socio-qualitative perspectives in assessing the effectiveness and acceptance of innovative rice milling machine technology at Subak Bengkel.

2.3. Data analysis

The first research objective will be analyzed using the Partial Least Square (PLS) method with a Structural Equation Model (SEM) approach. SEM-PLS was chosen because it does not require a normal distribution, is able to work on small samples, and is prediction-oriented. The model consists of an outer model that assesses the validity and reliability of indicators, and an inner model that tests the relationship between latent constructs through R^2, Q^2 values, and bootstrapping significance tests. In this study, SEM-PLS was used to analyze the effect of the adoption of the Toshi Kinhe MPGV 50 Rice Polishing machine on rice efficiency and yield(Henseler and Schuberth, 2025).

The second research objective used a multiple linear regression approach. Data analysis in this study also used the multiple linear regression method to determine the effect of several independent variables on rice yield as the dependent variable(Jannah, 2025). The regression model was constructed by including the

variables of the adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine, grain moisture content, RMU operator experience, and the level of grain cleaning. Estimation was carried out using the Ordinary Least Squares (OLS) method, then tested using the t-test for partial significance and the F-test for simultaneous significance. The valueR^2used to see the proportion of yield variation explained by the model, with classical assumption tests carried out to ensure the validity of the analysis results.

3. LITERATURE REVIEW

3.1. Rice Milling Unit (RMU)

A Rice Milling Unit (RMU) is a post-harvest rice processing facility that converts dry milled rice into edible rice. RMU efficiency can be measured by the resulting rice yield, which is the ratio of the weight of rice to the weight of dry milled rice(Cinar and Koklu, 2022). A good rice yield standard ranges from 55–65%, while conventional RMUs generally only achieve 45–50%. Low yields can be caused by machine condition, grain moisture content, and operator skill(Yusuf and Oladipo, 2025).

3.2. Rice Yield

Rice yield is one indicator of the success of a rice milling process. A high yield indicates an efficient milling process, producing large quantities of good quality rice. A low yield indicates significant yield losses, which can impact farmer income and reduce rice quality(Chiang and Ton, 2025). Therefore, increasing yield is a crucial aspect of improving rice processing technology(Kashem *et al.*, 2024).

3.3. Rice Polishing Machine

A rice polishing machine is an innovation designed to improve the quality of milled rice. Its primary function is to reduce bran residue, improve color, minimize broken grains, and improve rice hygiene. One of the modern machines used is the Toshi Kinhe MPGV 50 Rice Polishing Machine(Sheng *et al.*, 2022). This machine features more efficient polishing technology, increasing yields by 3–5% compared to conventional machines and producing whiter, cleaner, and higher-quality rice(Tseng *et al.*, 2022).

3.4. Adoption of Technological Innovation

Adoption of technological innovation in agriculture is the process of acceptance and use of new technology by farmers or farm managers. The decision to adopt is influenced by economic benefits, suitability to needs, ease of use, and tangible results(Paramarta, 2024). In the context of rice milling, the adoption of modern polishing machines is seen as a crucial step to increase efficiency, improve rice quality, and support food security.

4. RESULTS AND DISCUSSION

4.1 Adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine Innovation at Subak Bengkel, Tabanan

Innovation adoption theory is influenced by five main characteristics: relative advantage (perceived relative advantage compared to the old method), compatibility (suitability to user needs and conditions), complexity (level of complexity of use), trialability (possibility to try before full use), and observability (level of visibility of the innovation's results). These factors determine the speed of the adoption process. Adopter categories such as innovators, early adopters, early majority, late majority, and laggards also influence the spread of innovation within a community or organization.

Table 1. Path Coefficient

Indicator	Original Sample (O)	Sample Mean (M)	t-statistics	p-value	Information
Relative Advantage→Adoption	0.42	0.41	7.85	0,000	Significant positive
Compatibility→Adoption	0.36	0.35	6.12	0,000	Significant positive
Complexity→Adoption	-0.28	-0.27	4.95	0.001	Significant negative
Trialability→Adoption	0.31	0.30	5.40	0,000	Significant positive
Observability→Adoption	0.40	0.39	7.20	0,000	Significant positive

Based on Table 1, it shows that the most influential factor on the adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine innovation in Subak Bengkel is Relative Advantage with an Original Sample value of 0.42 and a Sample Mean of 0.41 ($p < 0.05$). This indicates that the higher the relative advantage felt by farmers, especially the increase in rice yield and milling quality, the higher the level of machine adoption(Hair *et al.*, 2024). Furthermore, Observability also makes a large contribution with an Original Sample value of 0.40 and a Sample Mean of 0.39 ($p < 0.05$), which means that the clearer the results that can be observed by farmers, such as whiter rice and higher yield, the higher the adoption of the innovation.

The Compatibility factor has a positive influence of 0.36 (Original Sample) and 0.35 (Sample Mean), indicating that the suitability of the machine to the RMU conditions and farmers' needs greatly determines the acceptance of innovation. Similarly, Trialability has a positive influence of 0.31 and 0.30, indicating that the opportunity to test the machine before full use can increase farmers' confidence in adopting it(Tseng *et al.*, 2022). Conversely, the Complexity factor shows a significant negative influence with a value of -0.28 (Original Sample) and -0.27 (Sample Mean), so that the more complicated the machine is to understand or operate, the lower the farmers' interest in implementing the technology.

Field implications indicate that successful adoption is heavily influenced by strategies for demonstrating tangible results, providing limited pilot programs, and training operators to reduce complexity barriers(Alfred *et al.*, 2021). Therefore, agricultural extension services at Subak Bengkel need to emphasize economic benefits and better visualization of results, while ensuring the machines used are appropriate for local production scales(Sheng *et al.*, 2022). This is expected to increase widespread adoption of polishing machines, ultimately supporting improved rice yields and farmer welfare.

4.2 The Effect of the Toshi Kinhe MPGV 50 Rice Polishing Machine in Increasing Rice Yield at the RMU in Subak Bengkel, Tabanan

Table 2. Coefficient

Variables	Coefficient (β)	Std. Error	t-statistic	Sig. (p)	VIF
(Constant)	38.50	2.10	18.33	0,000	-
Machine Adoption (X1)	5.20	1.05	4.95	0,000	1.12
Intensity of Use (X2)	0.85	0.32	2.65	0.009	1.18
Grain Moisture Content (X3)	-0.42	0.15	-2.80	0.007	1.21
Operator Experience (X4)	0.30	0.12	2.50	0.013	1.10
RMU Capacity (X5)	0.18	0.09	2.00	0.048	1.15

Table 2 shows that the model used is significant overall, with a coefficient of determination (R^2) of 0.71. This means that the variables of machine adoption, machine usage intensity, grain moisture content, operator experience, and RMU capacity are able to explain 71% of the variation in rice yield produced at Subak Bengkel. This finding shows that technological and technical factors play a significant role in increasing milling efficiency(Silva *et al.*, 2025). The adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine has the strongest influence on rice yield, with a positive coefficient of 5.20. This indicates that the use of the new machine can increase rice yield by an average of more than 5% compared to RMUs that do not use it. The intensity of machine use also contributes positively, meaning that the more frequently the machine is operated, the more optimal the results achieved. Conversely, grain moisture content has a negative effect, so that grain with a high moisture content tends to produce a lower yield(Kashem *et al.*, 2024). The factors of operator experience and RMU capacity also contribute positively, although with smaller coefficient values. Practically, these results imply that the implementation of polishing machine innovation needs to be supported by the management of grain moisture content and increasing operator capacity through training, so that rice yield can increase sustainably.

5. CONCLUSION

The adoption of the Toshi Kinhe MPGV 50 Rice Polishing Machine innovation at Subak Bengkel, Tabanan, was influenced by five main factors of the diffusion of innovation theory. Relative advantage was the most dominant factor, followed by observability, compatibility, and trialability, while complexity had a negative effect. The regression results with $R^2 = 0.71$ showed that machine adoption, usage intensity, grain moisture content, operator experience, and RMU capacity were able to explain 71% of the variation in rice yield. This proves that the application of polishing technology has a significant impact on increasing rice yield and quality.
The implication is that the adoption of polishing machines needs to be supported by operator training, optimal management of grain moisture content, and field trial programs to strengthen farmer confidence. Based on these findings, it is recommended that: (1) Farmers and RMU managers participate in technical training to minimize complexity barriers, and (2) Local governments, through agricultural extension workers, provide field demonstration programs and financial support so that machine adoption can be expanded and provide real benefits for improving farmer welfare.

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TRANSFORMING SOCIAL LIFE IN BALINESE SOCIETY THROUGH PANCASILA VALUES IN THE ERA OF DIGITALIZATION

I Gusti Ngurah Santika[1)], I Wayan Kandia[2)], Heliyarko Koba Natara[3)], Yohanes Nagel[4)]

[1)] Universitas Dwijendra
ngurahsantika88@gmail.com
[2)] IKIP Saraswati
kandiaiwayan@yahoo.com
[3)] Universitas Dwijendra
nataraheli649@gmail.com
[4)] Universitas Dwijendra
yohannagel378@gmail.com

ABSTRACT

This study explores the transformation of social life in the communities of Klungkung and Karangasem, Bali, based on the values of Pancasila amidst the rapid digitalization era. Utilizing a qualitative case study approach, data were collected through interviews, focus group discussions, participant observation, and document analysis involving community leaders, youth, elders, digital content creators, and local government officials. The findings reveal that Pancasila remains a fundamental ideological foundation for social cohesion and cultural identity, manifested through traditional rituals and communal practices. At the same time, digital platforms serve as new spaces for expressing and adapting Pancasila values, especially among younger generations. However, intergenerational differences in perspectives and emerging ethical challenges such as misinformation and cyberbullying indicate the need for digital literacy programs grounded in Pancasila principles. This study concludes that sustaining Pancasila values in Bali's social life requires integrated efforts encompassing cultural preservation, ethical digital adaptation, and multi-generational dialogue to ensure social harmony in the digital era. The results contribute to broader understandings of how national ideology interacts with local culture and technology in contemporary Indonesian society.

Keywords: *Transforming Social, Balinese Society, Pancasila Values*

1. INTRODUCTION

In the digital age, the social fabric of communities around the world is undergoing profound transformation. In Indonesia, rapid advances in information and communication technologies have reshaped how people interact, access information, and participate in civic life. The emergence of social media platforms, digital public services, e-commerce ecosystems, and mobile connectivity has blurred physical boundaries and enabled new forms of social engagement. However, along with opportunities, the era of digitalization also presents serious challenges such as the proliferation of misinformation, erosion of social trust, and the weakening of normative values in virtual spaces (Hashifatun Nisa, Kusumawati, & Purnama, 2023).

Against this backdrop, the Indonesian ideology of Pancasila remains central to national identity and social cohesion. Pancasila, encompassing five fundamental principles—belief in one supreme God, just and civilized humanity, the unity of Indonesia, democracy through deliberation and representation, and social justice for all—serves not only as the constitutional foundation of the state but also as a moral compass for public life. In the context of digital transformation, scholars contend that Pancasila must be revitalized and reinterpreted so that its values

continue to provide ethical guidance in social interactions online (The Strategy of Strengthening Pancasila Ideology in the Digital Age, 2021).

Prior studies emphasize that digital citizenship education should root its ethical foundation in Pancasila values, to foster responsible online participation. Yusuf, Wibowo, and Budiono (2024) argue that Pancasila serves as an essential source of digital ethics, guiding how individuals behave, communicate, and deliberate in cyberspace. Their work stresses the need for educational institutions to integrate Pancasila-based norms into curricula to counteract the risks of polarization, cyberbullying, and identity fragmentation.

In Indonesia, the implementation of Pancasila in digital domains faces multiple obstacles. For instance, Kholillah and Dewi (2020) document how social media misuse and lack of digital literacy lead to ethical breaches, and suggest that Pancasila principles must be more deeply internalized to address these digital problems. Similarly, Dewi (2021) explores the application of Pancasila in digital contexts, highlighting the need to translate foundational values into actionable norms that govern cyberspace behaviour—especially in confronting disinformation, ensuring respect for religious diversity, and promoting participatory democracy.

While considerable work has addressed digital ethics at the national level, less attention has been given to how Pancasila values operate in localized cultural contexts—particularly in Bali, where local wisdom, communal structures, and unique social norms intersect with digital transformations. Bali, as a region rich in cultural heritage and community institutions (banjar, adat system, temple networks), faces distinctive dynamics in how digitalization is absorbed into everyday social life. For example, Subanda, Muna, Sarjana, and Prayana (2025) observe that “bale banjar” (community halls) have evolved into hybrid spaces, functioning as both cultural gathering grounds and co-working hubs in the digital age (p. 570). This shift illustrates how traditional community infrastructure in Bali is adapting to the demands of modernity, bridging customary practices with digital interaction.

Moreover, studies on cross-cultural adaptation between Balinese communities and digital nomads reveal additional layers of social complexity. Kirana Medhawi Tenaya and Husain (2023) find that communication patterns, social norms, and value negotiation between locals and migrants are influenced by both traditional expectations and digital culture, creating new modes of hybridity in everyday social life. Their analysis suggests that local social systems in Bali are under negotiation in the face of global digital flows.

Given these developments, exploring how Pancasila values inform and shape social life in Bali amid digitalization is of significant theoretical and practical relevance. The challenge lies not simply in preserving Pancasila abstractly, but in how its principles can be internalized, adapted, and operationalized within local communities facing digital disruption (Santika, 2023). Key issues include: how generational differences influence the appreciation and practice of Pancasila in online spaces; how local norms and Pancasila intersect or conflict; and how digital literacy initiatives can be anchored in ideology to produce ethical, harmonious social outcomes.

This research aims to investigate the transformation of social life in Balinese society through the lens of Pancasila values in the digital era. Specifically, it will examine how Pancasila is perceived, interpreted, and applied by different social actors in Bali; how digitalization reshapes communal relations and value practices; and what strategies can sustain social harmony, ethical conduct, and cultural identity in the interplay between ideology and technology. In doing so, it contributes to bridging the gap between national ideological discourse and localized social dynamics in an era of digital transformation.

2. RESEARCH METODOLOGY

This study employs a qualitative approach with a case study design to explore how Pancasila values influence the social life of communities in Klungkung and

Karangasem Regencies, Bali, in the digital era. The case study design is chosen to allow an in-depth understanding of how values are applied, preserved, or transformed within real-life social contexts (Yin, 2018).

Research Location and Participants

The research is conducted in two regencies in Bali, namely Klungkung and Karangasem. Klungkung represents a culturally rich area with developing digital access, while Karangasem reflects a more traditional community that is gradually encountering the impacts of digitalization. These areas are selected to capture different dynamics in how Pancasila values are practiced amidst social and technological changes.

The participants include community leaders, youth (aged 18–30), elders, local digital content creators, and village or district-level government officials involved in public services or cultural affairs. A purposive sampling technique is used to select approximately 30 to 40 participants, aiming to obtain diverse and rich data.

Data Collection Methods

Data will be collected using the following methods:

a. In-depth interviews: Semi-structured interviews are used to explore participants' understanding and application of Pancasila values in both daily and digital life.
b. Participant observation: The researcher will observe various community activities such as traditional ceremonies, banjar meetings, youth events, and digital interactions (e.g., WhatsApp groups, village social media pages).
c. Focus Group Discussions (FGDs): FGDs will be conducted with youth and elder groups separately to explore intergenerational perspectives on the relevance and practice of Pancasila values in digital life.

Document analysis: Local regulations (perdes), customary laws (awig-awig), social media content, and government publications will be reviewed to understand how Pancasila is formally and informally expressed.

Data Analysis

The data will be analyzed using thematic analysis, following these steps:

a. Transcription: All interview and FGD recordings will be transcribed and, if necessary, translated while preserving meaning and context.
b. Initial coding: The researcher will code the data to identify recurring ideas and patterns related to Pancasila values such as unity, social justice, democracy, and tolerance.
c. Categorization and theme identification: Codes will be grouped into broader categories such as cultural adaptation to digitalization, digital ethics, and community harmony in online spaces.
d. Triangulation: Data from different sources (interviews, observations, documents) will be cross-verified to increase the reliability and validity of the findings.
e. Member checking: Preliminary findings will be shared with selected participants to confirm whether interpretations reflect their perspectives accurately.

Ethical Considerations

This study upholds fundamental ethical research principles, including:

a. Obtaining informed consent from all participants.
b. Ensuring confidentiality by anonymizing names and personal data.
c. Respecting local cultural values and Balinese adat during data collection.

Research Limitations

This research is limited to two regencies in Bali, which may not represent the broader Indonesian context. Moreover, as a qualitative study, the results rely heavily on participants' narratives and the researcher's interpretation.

Trustworthiness

To ensure the credibility and trustworthiness of the research, the following strategies will be applied:

a. Credibility through data triangulation and prolonged engagement in the field.
b. Transferability by providing thick descriptions of the research context.
c. Dependability through systematic documentation of the research process.
d. Confirmability by involving participants in validating the results (member checking).illustration.

3. RESULTS AND DISCUSSION

Results

This study investigated how Pancasila values continue to shape social life in Klungkung and Karangasem regencies in Bali amidst rapid digital transformation. Data from interviews, observations, focus group discussions (FGDs), and document analysis reveal four major themes: Preservation of Cultural Identity, Digital Adaptation of Social Values, Intergenerational Perspectives on Pancasila, and Ethical Challenges in the Digital Realm.

Preservation of Cultural Identity

Across both Klungkung and Karangasem, participants consistently emphasized the pivotal role of Pancasila's principles, especially the ideas of unity in diversity (Bhinneka Tunggal Ika) and belief in one God (Ketuhanan Yang Maha Esa), as fundamental to maintaining Bali's unique cultural identity. Traditional ceremonies, religious rituals, and communal gatherings continue to be central venues where these values are enacted and reinforced (Santika& Suastika, 2022).

A community leader from Klungkung highlighted, "Pancasila is not merely a national ideology; it is deeply woven into our adat and everyday life. It guides our respect toward each other and the gods we worship" (Interview, 2025). This statement reflects the symbiosis between national ideology and local customs, demonstrating that Pancasila values are internalized and expressed through adat institutions.

Observations of village rituals and banjar meetings supported this view, showing that participants consciously referenced Pancasila principles in discussions on social harmony and mutual cooperation. These findings align with Sari and Wijaya's (2020) research, which identified the resilience of local cultural frameworks in sustaining social order despite pressures from modernization and technological advancement. This cultural resilience corresponds to Pancasila's goal of social justice and unity.

Digital Adaptation of Social Values

While preserving traditional values remains paramount, digitalization has introduced new channels for expressing and negotiating Pancasila values. Many young participants in Karangasem and Klungkung actively use social media platforms such as Instagram, TikTok, and WhatsApp not only for social interaction but also to promote cultural awareness and reinforce communal bonds.

A young digital content creator in Karangasem explained, “We use social media to share videos of Balinese ceremonies and teachings about Pancasila to educate both local and global audiences” (FGD, 2025). This approach reflects an emerging hybrid cultural practice, where digital tools facilitate the transmission of Pancasila and Balinese cultural values beyond physical boundaries.

This trend supports Putra and Lestari’s (2022) findings that digital platforms can become effective vehicles for cultural revitalization and dissemination of ideological values, provided ethical use is maintained. Social media thus offers both opportunities and challenges for value preservation, serving as a new public sphere where Pancasila is interpreted and enacted in contemporary contexts.

Intergenerational Perspectives on Pancasila Values

A prominent theme in the data concerns divergent perceptions between older and younger generations regarding Pancasila’s role in a digitalized social life (Santika et al, 2021). Elders prioritized face-to-face interactions, communal responsibilities, and adherence to adat protocols as the authentic expressions of Pancasila values. In contrast, the younger generation displayed more flexibility, embracing digital communication while expressing caution about potential erosion of traditional norms.

An elder from Karangasem stated, “We welcome technology, but it should never replace direct human relationships and our respect for customs” (Interview, 2025). This concern highlights a perceived tension between modernization and tradition, where digitalization risks fragmenting social cohesion if not balanced with cultural continuity.

This generational gap mirrors findings in Rahmawati’s (2019) research, which described the digital age as a space of negotiation between inherited social norms and emerging cultural practices. The study’s data indicate that while younger Balinese adapt Pancasila values creatively through digital means, they also recognize the importance of maintaining grounding in traditional social ethics.

Ethical Challenges in the Digital Realm

Digitalization also raises ethical challenges that threaten Pancasila’s ideals of social justice and unity. Several participants reported experiences with misinformation, cyberbullying, and cultural misrepresentation on social media platforms. These phenomena risk undermining social harmony and trust, which are core to Pancasila’s vision of a just and united society.

A local government official in Klungkung stressed, “We urgently need educational programs that integrate Pancasila values into digital literacy, so the public can navigate the online world responsibly and avoid conflicts” (Interview, 2025). This perspective underscores the critical role of state and community institutions in fostering digital ethics rooted in Pancasila.

Supporting this, Wijaya and Santoso (2021) argue that embedding Pancasila into digital literacy curricula is essential to cultivate responsible citizenship in cyberspace, ensuring technology serves as a force for social good rather than division.

Discussion

The findings demonstrate that Pancasila remains a vital ideological foundation for social cohesion in Bali, even as digital technologies reshape interaction patterns. The preservation of cultural identity through adat ceremonies and communal gatherings affirms that traditional values continue to underpin social life,

reinforcing Pancasila's principles at the grassroots level. This supports Harsono's (2018) argument that Pancasila is embedded within Indonesia's plural cultural landscape, sustained through localized practices.

The digital adaptation of Pancasila values among youth illustrates an evolving cultural dynamic where ideology is mediated by technology. Digital platforms serve as contemporary forums for cultural education, ideological expression, and community building. This corresponds with Putra and Lestari's (2022) findings that digital media can revitalize cultural heritage and facilitate ideological dissemination when guided by ethical awareness.

The intergenerational gap reveals complex negotiations between tradition and modernity. While elders prioritize direct communal relations and strict adherence to adat as expressions of Pancasila, youth embrace digital communication but remain mindful of the risks to social fabric. This highlights the importance of fostering intergenerational dialogue to harmonize diverse perspectives on Pancasila's role in modern society, echoing Rahmawati's (2019) insights on hybrid cultural formations.

Finally, the identification of ethical challenges in digital spaces calls attention to the need for digital literacy grounded in Pancasila's ethical framework. The rise of online misinformation and conflict threatens social justice and unity, necessitating proactive education and policy measures. Wijaya and Santoso (2021) emphasize that integrating Pancasila into digital literacy programs is critical to promoting responsible digital citizenship and safeguarding social harmony.

Implications for Policy and Practice

This study's findings carry significant implications. Policymakers should design and implement digital literacy initiatives that incorporate Pancasila's core values, emphasizing unity, social justice, and ethical behavior. Community leaders and educators in Bali can leverage digital media to strengthen cultural transmission and civic education (Santika et al, 2019).

Moreover, creating spaces for dialogue between generations can bridge differing perspectives, fostering mutual understanding and collaborative adaptation of Pancasila in the digital era. Such efforts can enhance social resilience and ensure that technology enhances rather than erodes Indonesia's foundational ideology.

4. CONCLUSION

This study reveals that Pancasila values continue to serve as a vital foundation for social cohesion and cultural identity in the communities of Klungkung and Karangasem, Bali, despite the significant influence of digital transformation. Traditional practices and communal gatherings remain central in preserving the principles of unity, belief in God, and social justice embedded within Pancasila. Simultaneously, digital platforms have become new arenas for expressing and adapting these values, particularly among the younger generation, who utilize social media to promote cultural awareness and ideological education.

However, the research also identifies a generational gap in perceptions of Pancasila's relevance and application in the digital age, highlighting the importance of fostering intergenerational dialogue to balance respect for tradition with openness to technological innovation. Furthermore, ethical challenges such as misinformation and cyberbullying underscore the urgent need to integrate Pancasila-based values into digital literacy programs to promote responsible online behavior and safeguard social harmony.

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MULTIPLICATION AND DIVISION (MnD) BOARD MEDIADEVELOPMENT TO INCREASE THE MULTIPLICATION AND DIVISIONCALCULATION ABILITY OF CLASS III ELEMENTARY SCHOOL STUDENTS

Dewa Ayu Made Manu Okta Priantini[1)], Dewa Made Dwicky Putra Nugraha[2)], Ni Gusti Agung Ayu Sinta Dewi[3)]

[1)] Dwijendra University
gunggeksinta07@gmail.com
[2)] Dwijendra University
Dewaayu056@gmail.com
[3)] Dwijendra University
madedwicky@undwi.ac.id

ABSTRACT

This study aims to produce learning media in the form of Multiplication And Division (MnD) boards to improve the ability to calculate multiplication and division of third grade students of SD Negeri 6 Sumerta which is feasible to be applied in classroom learning. This research was a development research using the ADDIE model which consists of five stages namely analysis, design, development, implementation, and evaluation. The research subjects consisted of 2 media experts, 2 material experts, and users consisting of 34 students and 2 teachers. While the object of this research included the validity of Multiplication and Division (MnD) board media to improve the ability to calculate multiplication and division of mathematics. The data collection instruments used were media and material validation sheets, media practicality questionnaires, and multiplication and division tests. The research data were analyzed using quantitative descriptive analysis techniques. The results showed that the media validity test got a result of 0.86 with very high criteria, then the results of the material validity test got a result of 1.00 with valid criteria, the results of the practicality test got an average score of 92.5% with very practical criteria, then the results of the effectiveness test in the form of student calculation ability scores of 91.24 with very good criteria. The conclusion of this study was that the Multiplication And Division (MnD) board media developed has met the criteria for feasibility for use in learning mathematics and was effective in improving the ability to calculate multiplication and division of third grade students of SD Negeri 6 Sumerta.

Keywords: Multiplication and Division (MnD) board, ability to calculate multiplication and division, mathematics.

1. INTRODUCTION

Law No. 20 of 2003 on the national education system explains that education is "aconscious effort to create learning and an environment that is well-planned and effective for process and enjoyable so that students can actively develop their potential have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills required for themselves and their community. Education is a basic, planned effort to prepare students through learning activities in order to produce superior and high-quality students. Primary school education is formal education that aims to develop basic skills and abilities in order to prepare students for further education. Quoted from the Big Indonesian Dictionary Indonesia (KBBI), education is a process of changing the attitudes and behavior of

a person or group in an effort to mature humans through teaching and training. In addition, education refers to the idea of changing the way a person thinks from not knowing to knowing so that they can apply that knowledge in their daily lives. One of the basic skills that must be mastered by students in the 21st century is the ability to calculate, which is obtained from mathematics lessons. This is because almost all aspects of students' daily activities involve calculation, for example playing, shopping, and even other learning activities require a context of calculation. Therefore, attention to mathematics is very important. Mathematics is a compulsory subject taught in educational institutions, including elementary schools. Mathematics plays an important role in various disciplines and develops human thinking (Upu, 2017). Mathematics is an exact science that studies calculations that must be proven correct. Mathematics is a discipline that has developed through the long process of human civilization on this earth (Manpaat, 2010). A teacher must have creativity in the use of learning media in accordance with the needs and characteristics of students to increase student engagement in mathematical calculations. So, basically, mathematics is a field of study whose truth can definitely improve students' ability to think logically, critically, and practically in solving problems encountered in daily life. Inappropriate learning techniques in the learning process, as well as the suboptimal application of mathematics in daily life, are among the factors contributing to students' low calculation skills (Heriyari & Munasiah 2022).Deepening students' mathematical calculation skills at this time must be done intensively, because calculation skills are the foundation for students to understand the context of Deepening students' mathematical calculation skills must be intensively pursued at this time, because calculation skills are the foundation for students to understand the basic context of mathematics in calculation. The difficulty of instilling a basic understanding of numeracy skills to students in elementary school causes the learning process to be difficult to carry out or continue as From the results of tests conducted on October 22, 2024, mathematics learning in grade III of Sumerta 6 Public Elementary School, especially on multiplication and division material, obtained an average score of 57.05%. This result is far from the Learning Objective Mastery Criteria (KKTP) of 75. Only 15 students out of 34 students met the KKTP. This is because many students still do not understand how to calculate multiplication and division, have low calculating abilities, lack interest in calculating, and make mistakes during the calculation process, which prevents them from getting the right answers and ultimately leaves them confused and bored. From the results of interviews conducted with the homeroom teacher of class III at SD Negeri 6 Sumerta, Mrs. Ni Putu Devi Anggarini, S.Pd., M.Pd., on October 15, 2024, it was found that most students did not understand how to multiply and divide in mathematics, due to several reasons, one of which was that when teachers were conducting learning activities, they still used the lecture method and only used the students' textbooks .Based on the above problems Simply explaining that multiplication is repeated addition and division is repeated subtraction causes students to feel bored and tired of searching for the answer. Therefore, a medium is needed to improve students' multiplication and division skills, namely a concrete medium that makes it easier for students in the process of calculating, especially in multiplication and division. One medium that can overcome this problem is a counting board.

According to the results of research by Hendri (2023) entitle Development of Smart Multiplication Board Media in Mathematics Learning for Second Grade Students, the results of research on the development of Smart Multiplication Board media have met the criteria of several experts. The smart multiplication board is effective in improving the ability of multiplication of students with an average score of 80.708%. According to Sulkhana (2022) with the research title "Development of Media. Dakotar (Smart Mathematics Dakon) Material on Units of Length and Units of Weight to Improve the Activeness and Ability of Calculation Skills of Fourth Grade Students at SDN Gogodeso 01." The results of this study include material expert validation obtained a percentage of 86% with the criteria of highly valid. Tusya (2023) with the research title "Development of Smart Multiplication Board

Media Based on the Montessori Method for Third Grade Elementary School." The validity results of the smart multiplication learning media based on the Montessori method as a whole obtained a score of 87% with a category of highly valid.

2. RESEARCH METODOLOGY

The method used in this study is the research and development method or Research and Development (R&D). R&D research is a research method that is widely adopted by the academic world today to design and test the effectiveness of products. The development research model used is ADDIE (Analyze, Design, Development, Implementation, Evaluation). The ADDIE model is a general and relevant development model used in development.

The ADDIE stages can be seen in the stages of the model in Figure 3.1 ADDIE development.

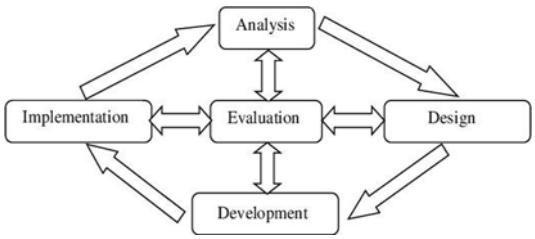

Figure 3. 1 Stages of the ADDIE Development Model
Source: Tegeh, 2014

This Multiplication and Division Board (MnD) media was created using concrete boards to facilitate user usage. The steps in researching the development of the Multiplication and Division Board (MnD) media followed the ADDIE development model. The stages of developing the MnD Board media were analyze, design, development, implementation, and evaluate.

Analysis At this stage, researchers began to conduct analyses based on the needs of MnD Board media development, exploring the feasibility and requirements for development. The stages carried out by researchers included three things, namely: needs analysis, curriculum and material analysis, and environmental analysis.

Design At this stage, researchers begin to design the Multiplication and Division (MnD) Board media to be developed in accordance with the results of the analysis conducted previously. Then, at this stage, they begin to determine the elements needed to develop MnD Board media for III of elementary school. They determine the software and hardware to be used. The first design process carried out at this stage is to determine the software, which refers to the applications and websites used in creating interactive media products. Meanwhile, hardware refers to the tools used to access the links to interactive media product websites. In this case, the researcher designed a multiplication and division board teaching aid. After designing, the researcher determined the materials and tools to be used in designing the Multiplication and Division (MnD) board media, and also prepared the multiplication and division material for use with the Multiplication and Division (MnD) board teaching aid. Development At the development stage, activities are carried out to create products based on the designs that have been made. The final result of this stage is a Multiplication and Division Board Media (MnD) with mathematical content on multiplication and division that will be tested. This stage is the development stage.

Implementation During the implementation stage, researchers will test the product with several parties, namely experts and teachers at the schools referred to as research sites. At this stage, the results of the product that have been validated by validators at the schools used by researchers as research sites will be

applied to verify the feasibility of the Multiplication and Division Board (MnD) developed prior to implementation. After implementation in learning, the product is tested for practicality by teachers. Next, the product is tested on students to assess its effectiveness in improving students' multiplication and division skills. Evaluation At the evaluation stage, an evaluation is carried out in the form of reviewing the overall product development results and making final improvements to the Multiplication and Division Board (MnD) developed based on input from validators (experts and practitioners).

3. RESULTS AND DISCUSSION

This development product was tested for feasibility on third-grade students at SD Negeri 6 Sumerta in the 2024/2025 academic year in the even semester. This chapter presents the results of the development, including the design of the media developed, the results of validity, practicality, and effectiveness tests of the learning media product developed. The Multiplication and Division (MnD) board media was developed with the aim of improving the multiplication and division skills of third-grade elementary school students.

This Multiplication and Division (MnD) board media was developed using the ADDIE model, which includes 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation.

1) Analyze Stage

a. Results of Student Needs Analysis

Based on the observations conducted, it was found that students' interest in and ability to calculate are still relatively low. This was observed from the results of teaching and learning activities in the classroom and it was also found that most students still achieved low results. This was caused by several factors, one of which was that teachers still using the lecture method and only utilizing student textbooks, the use of teaching media that is not very interesting, explaining the material only using a blackboard, which causes students to get bored quickly, resulting in students' arithmetic skills still being relatively low. Based on the analysis of student needs above, the development of the Multiplication and Division (MnD) board is expected to help improve students' calculation skills in mathematics, especially in multiplication and division. One of the factors for success in the learning process is the use of media that is appropriate for learning and can be applied in a concrete manner, so that students are able to understand the material being taught.

b. Curriculum and Material Analysis

The purpose of this curriculum and material analysis is to prove that the media developed is in accordance with the material in the independent curriculum. The purpose of this curriculum and material analysis is to prove that the media developed is in accordance with the material in the independent curriculum. In the development of the Multiplication and Division (MnD) board

c. Results of Environmental Analysis

This stage involves analyzing the condition of the school in terms of its readiness to support the development of Multiplication and Division (MnD) board media. Facilities refer to the equipment used in learning books and stationery by students, while infrastructure refers to public facilities provided by the school, which in this case is the classroom. the material used is mathematical sentences and calculations.

2) Design Stage

Product specifications include components contained in the Multiplication And Division (MnD) board media and the information presented therein. At this stage, mapping of the components of the Multiplication And Division (MnD) board game media is carried out, including the location of the MnD board media, the Multiplication And Division (MnD) board instruction manual, and the tools used.

3) Development Stage

This stage is the development stage, where activities are carried out to create a product based on the design that has been made. The result of this stage is the creation of a learning medium, namely the Multiplication and Division (MnD) board, to improve students' multiplication and division skills. The following is a preview of the results of the MnD board development.

The MnD board has an attractive design with a combination of colors that are not too striking. At the bottom of the MnD board, there is a guide on how to use the MnD board.

4) Implementation Stage

The validity assessment stage of the Multiplication and Division (MnD) board media was carried out by lecturers who are experts in the subject matter and media experts. The next stage was to test the product with teachers and students. The purpose of testing the product with teachers was to assess its practicality, while testing with students was to assess the effectiveness of the Multiplication and Division (MnD) board media. The results of the product testing by media experts and subject matter experts are as follows.

Subject matter expert validation is a stage to determine the suitability of the product in terms of the material presented. The subject matter expert test was conducted using a questionnaire with a PAP assessment on a scale of 5, which produced scores and suggestions for further improvement of the material in the developed product. The data obtained was then processed using Aiken's V analysis technique through Microsoft Excel. The summary of the media validity test results is as follows.

Table 1. Summary of Material Expert Test Results

Item	Expert Assessment		S1	S2	∑s	n(c-1)	v	Ket
	I	II						
Item 1-13	55	61	42	48	90	104	0.86	Very High

Based on the results obtained from two experts/lecturers, the overall validity score of the Multiplication and Division (MnD) board material was 0.86, which is considered very high. Therefore, the Multiplication and Division (MnD) board material can be accepted without revision and used in the learning process. According to Nasrulloh (2024), the purpose of using media in the classroom is to support and assist teachers in presenting material to students, conveying information, and supporting the learning process so that the intended message is conveyed correctly and appropriately.

Media expert validation is a validation stage that serves to determine the level of product feasibility in terms of media as a supporting medium inquality and engaging learning activities. The media expert test uses a questionnaire instrument with a PAP assessment on a scale of 5, which will produce scores and suggestions for further use in improving the product. The data obtained was then processed

using Aiken's V analysis technique through Microsoft Excel. The summary of the media validity test results is as follows.

Table 2. Summary of Media Expert Test Results

Item	Expert Assessment		S1	S2	∑s	n(c- 1)	v	Ket
	1	2						
Item 1-10	43	46	33	36	69	80	0.86	Very High

The results of media validation on the multiplication and division board (mnd) media obtained a validity index of 0.86 with very high validation criteria without revision, making it suitable for use in the learning process. According to (maflikha, 2020), learning media is very important because it brings joy and excitement to students and renews their enthusiasm, helps to consolidate knowledge in their minds, and brings lessons to life. Hariyanti (2023) suggested that the calculation board media could be used as one of the media to improve students' calculation skills. In addition, the calculation board media could be used according to the needs of the school.

Practicality testing is a testing stage that serves to determine the practicality level of the developed product. Practicality testing is conducted by two practitioners, namely The homeroom teacher of class III at SDN 6 Sumerta was practitioner I and the homeroom teacher of class III at SD 7 Sumerta was practitioner II. Based on the results obtained from practitioner I, the score was 100%, and practitioner II obtained a score of 85%. The average percentage obtained was 92.5%. Therefore, from the data, it can be concluded that the Multiplication and Division Board (MnD) is very practical in learning.

The homeroom teacher of class iii at sdn 6 sumerta was practitioner i and the homeroom teacher of class iii at sd 7 sumerta was practitioner ii. Based on the results obtained from practitioner i, the score was 100%, and practitioner ii obtained a score of 85%. The average percentage obtained was 92.5%. Therefore, from the data, it can be concluded that the multiplication and division board (mnd) is very practical in learning.

Then, to measure the level of effectiveness of the multiplication and division (mnd) board, a trial will be conducted on 34 third-grade elementary school students. Students are asked to fill out a test sheet with 10 questions in accordance with the indicators of the mathematical calculation ability test. The product effectiveness test was conducted to determine the effectiveness of the developed multiplication and division board (mnd) media. The effectiveness test results can be seen from the results of the multiplication and division tests conducted in the third grade of sumerta 6 public elementary school. At this stage, final improvements were made based on input or comments from expert assessors with the aim of determining the success of the multiplication and division board (mnd) media as seen from the data collected during the implementation stage. The evaluation in this study was conducted to measure the success of the product, including product validation, Product practicality, and product effectiveness. According to aurelia (2024), one of the things that plays an important role in learning is the use of learning media. Learning media is an important aspect in the educational process because it can increase the effectiveness and efficiency of material delivery.

4. CONCLUSION

The development of Multiplication And Division (MnD) board media using the ADDIE development model has been carried out in third grade elementary school mathematics learning. The validation results show that the media and material

received a very good rating, including media validity of 0.86 with very high validity criteria and material validity of 0.86 with very high validity criteria. The practicality of the Multiplication and Division (MnD) board media development product received an average score of 92.5% with a very practical rating. The effectiveness test results for the Multiplication and Division (MnD) board media development product received an average score of 91.24 with a very good rating. Based on these results, the Multiplication and Division (MnD) board is suitable for use in mathematics lessons in Grade III at Sumerta Public Elementary School 6.

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JURIDICAL ANALYSIS OF THE PROVISIONS ON REST TIME FOR DOMESTIC WORKERS (PRT) IN INDONESIA

Ida Bagus Bayu Brahmantya

Dwijendra University
keprabayu@gmail.com

ABSTRACT

Article 7 letter e of the Regulation of the Minister of Manpower Number 2 of 2015 concerning the Protection of Domestic Workers: "Domestic Workers have the right: e. to obtain sufficient rest time", is still controversial regarding rest time which causes normative ambiguity. A juridical analysis is needed to understand the provisions on rest time for Domestic Workers in Indonesia. Therefore, this research is titled "Juridical Analysis of the Provisions on Rest Time for Domestic Workers (PRT) in Indonesia", with the problem formulation being: what is the regulation regarding Domestic Workers based on the applicable statutory provisions in Indonesia and what is the legal certainty regarding the provisions on rest time for Domestic Workers in Indonesia.

The type of research used is normative legal research, and the approaches used are the statutory approach and the conceptual approach, as well as using descriptive analysis.

The conclusion is that the regulation related to Domestic Workers in Indonesia where Law Number 13 of 2003 concerning Manpower is more focused on formal employment, and the issuance of the Regulation of the Minister of Manpower Number 2 of 2015 concerning the Protection of Domestic Workers is important to protect Domestic Workers; legal certainty related to the provisions on rest time for Domestic Workers, especially the phrase "rest time" which is not specifically explained thus causing ambiguity in the application of rest rights. Suggestions to lawmakers regarding the regulation of Domestic Workers in Indonesia to ensure effective implementation and law enforcement, and to avoid normative ambiguity related to "sufficient rest time" by including a clear and specific definition regarding rest time, including duration, implementation time, and other related rights.

Keywords: *Domestic Workers, Normative Ambiguity, Sufficient Rest Time*

1. INTRODUCTION

In general, labor refers to individuals who possess the ability and opportunity to perform work and contribute to employers through their services. This contribution is typically compensated with payment in the form of money, known as wages in the context of employment.

In Law Number 13 of 2003 concerning Manpower (hereinafter referred to as the Manpower Law), an employer is defined as an individual, entrepreneur, legal entity, or other bodies that employ labor and pay wages or compensation in other forms. Labor that meets certain qualifications set by the employer becomes a worker or employee in accordance with the concepts in the Manpower Law.

Before commencing assigned tasks, an employer and labor must first enter into an employment agreement, commonly known as a work contract, which serves as the

primary key to initiating employment. The employment agreement between the entrepreneur and the worker provides guarantees of protection and legal certainty for the binding work relationship to ensure the fulfillment of rights and obligations (Harikedua, 2015).

According to D.C. Tyas, labor consists of individuals or groups who utilize their energy and abilities to obtain rewards in the form of income, whether physical or spiritual (Tyas, 2010). Regardless of the term used for labor, it must be protected by the state based on the 1945 Constitution of the Republic of Indonesia (hereinafter abbreviated as the 1945 Constitution), as stated in Article 27 paragraph (2): “Every citizen has the right to work and a livelihood decent for humanity.”

Workers, employees, and staff are terms for parties who perform work under an employer, thus falling into the category of formal workers. Informal workers differ from formal workers, such as domestic workers. Article 1 paragraph (1) of Minister of Manpower Regulation Number 2 of 2015 concerning the Protection of Domestic Workers (hereinafter referred to as Minister Regulation No. 2 of 2015) defines the term Domestic Worker as: “A Domestic Worker (hereinafter abbreviated as PRT) is a person who works for an individual in a household to perform household tasks in exchange for wages and/or compensation in other forms.”

Referring to Minister Regulation No. 2 of 2015, it also regulates the rights possessed by domestic workers. One of the rights of domestic workers regulated in Minister Regulation No. 2 of 2015 pertains to rest time. According to Article 7 letter e of Minister Regulation No. 2 of 2015, it states: “PRT has the right: e. to obtain sufficient rest time.”

The issuance of Minister Regulation No. 2 of 2015 has generated pros and cons from various parties, as it is deemed insufficient to protect all issues arising for PRT. Minister Regulation No. 2 of 2015 does not detail the rights obtainable by PRT, such as working hours for domestic workers, resulting in no standard maximum working time limit for PRT, allowing employers to freely assign tasks without regard for humanity, time, physical conditions, or psychological situations of PRT.

The real-world depictions in society create a distinct impression for the regulation of PRT rights in Minister Regulation No. 2 of 2015, particularly the provision of “sufficient rest time” for PRT, which remains unclear and leads to varying rest time allocations for PRT. The impact on PRT includes injustice and legal uncertainty in obtaining rights grounded in human rights. The protection regulations for PRT in Minister Regulation No. 2 of 2015 do not specify rest time provisions, unlike general (formal) workers accommodated in the Manpower Law. Based on the above, this research adopts the title “Juridical Analysis of the Provisions on Rest Time for Domestic Workers (PRT) in Indonesia.”
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2. RESEARCH METODOLOGY

The type of research employed is normative legal research. The approaches used are the statutory approach and the conceptual approach. The sources of legal materials used align with Ida Bagus Bayu Brahmantya’s view that normative research utilizes primary legal materials with binding force, secondary legal materials as supplements, and tertiary legal materials as legal information, subsequently analyzed qualitatively in formulation (Brahmantya, 2020). After all

legal materials are collected in a filing system, they are analyzed within a framework of thought directed toward achieving a clear description of the issues within the research scope.

3. RESULTS AND DISCUSSION

3.1 Regulation of Domestic Workers Based on Provisions in Force in Indonesia

In various legal literatures, terms such as labor law or employment law are encountered. Both are fundamentally part of law in general (Endah Pujiastuti, 2008). Soetiknya refers to it as labor law, meaning the entirety of legal regulations concerning work relationships that place an individual personally under the command and leadership of another, as well as living conditions directly related to such work relationships (Eko Wahyudi, 2016).

To date, in national law, only one regulation explicitly addresses domestic workers: Minister Regulation No. 2 of 2015. Referring to Article 1 number 1 of Minister Regulation No. 2 of 2015, a domestic worker is explained as:

> *"a person who works for an individual in a household to perform household tasks in exchange for wages and/or compensation in other forms."*

Meanwhile, Article 1 number 2 defines household work as tasks performed within the scope and interest of the household. Minister Regulation No. 2 of 2015 also regulates the rights and obligations of domestic helpers, as follows: The rights of domestic workers are regulated in Article 7 of Minister Regulation No. 2 of 2015, namely:

a. to obtain information about the User;
b. to receive good treatment from the User and their family members;
c. to receive wages in accordance with the Work Agreement;
d. to obtain healthy food and beverages;
e. to obtain sufficient rest time;
f. to obtain leave rights in accordance with the agreement;
g. to have the opportunity to perform worship in accordance with their religion and beliefs;
h. to receive religious holiday allowances; and
i. to communicate with their family.

The obligations of domestic workers are regulated in Article 8 of Minister Regulation No. 2 of 2015, namely:

a. to perform tasks and responsibilities in accordance with the Work Agreement;
b. to complete work properly;
c. to maintain ethics and courtesy within the User's family; and
d. to notify the User in sufficient time if the PRT intends to cease working.

At the international level, recognition of the existence and importance of domestic workers' roles occurred through a prolonged struggle, beginning with resolutions on normative actions for PRT conditions proposed at the United Nations (hereinafter referred to as the UN), repeated in 1948, 1965, and 2002, until 2008, when the resolution proposal for Setting Standards on Decent Work Situations for Domestic Workers was accepted for discussion at the International Labour Organization, culminating in the birth of ILO Convention No. 189 (Hanifah, 2018).

The requirements and conditions for decent work for workers are contained in its articles, namely: definition/scope, protection of human rights for domestic workers, minimum age limits and elimination of child labor, work contracts and their contents, rights and work situations, privacy and document rights, working hours and weekly holidays, minimum wages and payments, social security including maternity protection, accommodation and consumption, education and training, complaint mechanisms.

Domestic workers under this convention mean any person engaged in domestic work within an employment relationship, while someone who performs domestic work only occasionally or sporadically and not as a means of livelihood is not considered domestic work. The term domestic work means work performed in or for one or more households (Hanifah, 2018).

One right that PRT should possess is limitations on working hours. As commonly occurs, PRT, especially those living in the employer's home, belong to the group of workers with unclear working hour limits. This certainly opens potential for exploitation of PRT and creates injustice and inequality between PRT and other workers in general, particularly those in the formal sector, who have clear working hour limits.

Referring to Article 10 number 1 of ILO Convention No. 189, it regulates that domestic workers should have working hour limits no different from other workers in general, including rights to overtime compensation if those limits are exceeded, and it becomes the state's duty to take necessary measures to ensure equality regarding such working hour limits. Furthermore, Article 10 number 2 of ILO Convention No. 189 affirms that PRT must have the right to rest for at least one full day (24 hours) per week.

The exposition related to "rest time" certainly also concerns regulations on working hours, overtime rules, and rest hour rules. Regulations on working hours in Indonesia are governed by the Job Creation Law enacted in 2020 and Government Regulation Number 35 of 2021. Working hours are crucial for a worker to perform their duties according to job descriptions, whether daytime or nighttime. The purpose of employment regulations is to prosper citizens. Working hour rules also serve to protect workers from exploitative work systems.

According to Hidayat Muharam (2006), employment agreements based on duration and type of work can be made as fixed-term employment agreements or indefinite-term employment agreements, as stated in Article 56 of the Manpower Law. If linked to types of employment agreements, rest time should be includable in the employment agreement. However, employment agreements for Domestic Workers with their service users are rarely found, as there are no clear limits on rest time as Domestic Workers.

3.2 Legal Certainty Regarding the Provisions on Rest Time for Domestic Workers in Indonesia

Employment law is a collection of regulations, both written and unwritten, concerning events where a person works for another in exchange for wages (Abdul Hakim, 2014). The term employment itself is stated in Article 1 number 1 of the Manpower Law, meaning everything related to labor before, during, and after a person's working period.

Labor in Indonesia consists of Indonesian citizens of working age, namely 15 years and older, while working is defined as economic activities performed by a person to obtain income or profit for at least 1 uninterrupted hour in the past week. This

includes patterns of unpaid worker activities assisting in a business/economic activity (Statistics, 2024). The type of work assigned to a person refers to the Indonesian Standard Classification of Occupations (hereinafter referred to as KBJI) 2002, updated in 2014 (Statistics, 2014). One occupation listed in the KBJI is Domestic Helper (PRT) under the category of Elementary Occupations (Subgroup 9).

Field realities indicate that laws in Indonesia related to protection for PRT remain highly limited. This contributes to numerous cases of violence against PRT in Indonesia. Various violence cases against PRT demonstrate that the mandate of the 1945 Constitution has not been well implemented. PRT still face workplace issues without definite legal protection.

PRT rights as part of labor must be addressed because PRT status differs from industrial labor clearly protected under the Manpower Law. According to Tri Dian, labor rights contained in the Manpower Law include receiving wages or compensation. This statement should encompass PRT as labor. In reality, the Manpower Law substantively lacks specific rules on PRT, meaning the legal basis for PRT protection cannot fully refer to that law. Specific rules on PRT protection are contained in Minister Regulation No. 2 of 2015, but it is not a derivative of the Manpower Law. Minister Regulation No. 2 of 2015 is instead a derivative of Law Number 23 of 2014 concerning Regional Government, which is not directly related to employment (Sesa & NIM, 2016).

When reviewing the rights received by workers, PRT rights contained in Minister Regulation No. 2 of 2015 differ from those in the Manpower Law. Rights in Article 7 of Minister Regulation No. 2 of 2015 include the right to information about the service user, the right to good treatment from the user and family members, to receive wages per agreement, healthy food and beverages, sufficient rest time, leave per agreement, to perform worship per religion and beliefs, religious holiday allowances, and to communicate with family. Meanwhile, labor rights in the Manpower Law emphasize basic rights including basic rights in work relations, social security and occupational safety and health, wage protection, working time limits, rest, leave and holidays, collective work agreements, strikes, special rights for female workers, and protection against termination of employment (hereinafter referred to as PHK).

Based on rights in Minister Regulation No. 2 of 2015 and the Manpower Law, common rights pertain only to wages, rest time, and leave. Minister Regulation No. 2 of 2015 does not include basic rights for female workers, despite data showing women dominate PRT numbers and are highly vulnerable to workplace violence. PRT working hours are also unclear in Minister Regulation No. 2 of 2015, allowing potential exploitation, especially if living with the employer. Hidayati (2014) states that employers and PRT have a complex and specific relationship, unlike labor in industrial settings. Both reside in the same complex or house for extended periods, enabling mixed psychological, social, and work relations that diminish professionalism. This can yield positive effects like familial bonds but also negative ones like exploitation and violence against PRT. Thus, legal protection is essential as preventive and repressive measures if negative impacts arise from employer-PRT relations.

The absence of definite legal protection through law renders PRT increasingly vulnerable and unprotected in obtaining rights from employers. Minister Regulation No. 2 of 2015, which regulates work agreements, PRT obligations, employers, working hours, weekly holidays, 12 days annual leave, Religious Holiday Allowances (hereinafter THR), social and health security, decent work conditions, minimum age for PRT, including regulations on Domestic Worker Placement

Agencies from business permits to guidance and supervision, has proven unable to address various PRT issues. This is evident from hundreds of unresolved PRT cases to date.

The ambiguity of the mandatory term in Article 7 of Minister Regulation No. 2 of 2015, specifically the focus of this research, is the phrase “rest time,” which is not clearly defined, leading to varying perceptions. Additionally, ambiguity in other PRT rights in Article 7 of Minister Regulation No. 2 of 2015, such as wage amounts, social security provision, leave time, occupational safety and health, and conflict resolution methods, are not detailed. PRT rights in Minister Regulation No. 2 of 2015 also do not refer to Chapter X of the Manpower Law on protection, wages, and welfare.

Article 7 letter e of Minister Regulation No. 2 of 2015 states the right to “sufficient rest time.” This contains unclear norms, resulting in normative ambiguity. There are no normative limits regulating the duration of rest time and working time for PRT. On the other hand, PRT require protection that guarantees their rights as workers. One such is working time limits similar to general workers.

In forming legislation, it is essential to ensure no legal uncertainty occurs, particularly in the context of rest time for domestic workers. This aligns with the principles of good legislation formation, which include:

1. Clarity of Purpose. Legislation must be clear in its objectives, including setting rest time for domestic workers, to avoid confusion or misinterpretation.
2. Appropriate Instituting or Forming Body. The appropriate lawmaker will ensure the legislation formation process follows established procedures while considering relevant aspects, including rest time for domestic workers.
3. Compatibility Between Type and Content. In the case of rest time for domestic workers, regulated provisions must be relevant to their work conditions and accommodate their needs for adequate rest.
4. Feasibility of Implementation. Provisions in legislation, including those on rest time, must be implementable by all related parties. This means rules must consider limitations and capabilities of various parties, including domestic workers and service users.
5. Usability and Effectiveness. Legislation must be useful and successful in achieving desired goals. For rest time of domestic workers, the legislation must benefit their rights and welfare protection and be effectively applicable in practice.

By adhering to these principles of good legislation formation, it is expected that legal uncertainty regarding rest time for domestic workers can be minimized, providing greater clarity and protection for them.

4. CONCLUSION

The conclusions of this research are that regulations concerning PRT in Indonesia have undergone several changes and developments. The Manpower Law generally regulates employment in Indonesia but is not fully specific to domestic workers, focusing more on formal employment and providing less special attention to PRT. The issuance of Minister Regulation No. 2 of 2015 is an important step in protecting domestic workers in Indonesia. Legal certainty regarding the provisions on rest time for Domestic Workers (PRT) in Indonesia is not yet fully guaranteed clearly, particularly due to the absence of a specific law explicitly regulating this. One issue is normative ambiguity in Article 7 letter e of Minister Regulation No. 2 of 2015, containing the phrase “rest time,” which is not explained specifically, causing

unclarity in the application of rest rights for domestic workers. Without a clear definition or specific provisions on rest time, domestic workers and employers may have differing understandings of what constitutes adequate rest time. This impacts exploitation or misuse by PRT service users and increases the risk of disputes between domestic workers and employers regarding rest time, which can disrupt work relations and require further conflict resolution.

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CIRCULAR ECONOMY AND THE EVOLUTION OF NETWORKING-DRIVEN LOGISTICS BUSINESS MODELS: EXAMINING THE ROLES OF DIGITAL INTEGRATION AND STAKEHOLDER COLLABORATION

P Subha[1)], Dr S Lakshmi[2)]
Assistant Professor, MBA Department, SRMIST, Chennai
subhap@srmist.edu.in , 9444777030

ABSTRACT

The shift toward a circular economy is now a key importance for modern logistics businesses looking to grow sustainably and stay competitive. This study expressions at how business models based on networking, digital tools, and coope ration among diverse groups affect the use and success of circular economy practices in India's logistics industry. The core data came from reverse logistics par tners and as analysed using EFA to check if the ideas being studied were clearly defined and reliable. The results show that using digital tools and working together in networks improves transparency, resource recovery, and creating shared value. The internal consistency of the data is robust, with an alpha value of 0.893, and fo ur related but distinct factors together clarify about 72.46% of the variation. The results highlight that merging digital changes, network systems, and stakeholder participation creates a solid groundwork for building sustainable logistics models that support the circular economy.

Keywords:
Circular Economy Practices; Networking-Driven Business Models; Digital Integration; Stakeholder Collaboration; Reverse Logistics; Sustainable Development; Exploratory Factor Analysis; Supply Chain Innovation; Business Model Transformation; India

1. INTRODUCTION

The logistics sector is undertaking a major change, stirring from up-front supply chains to more sustainable, connected, and tech-enhanced systems. This shift is fuelled by the need for environ mental accountability and developments in technology, leading companies to rethink how they produ ce, use, and dispose of goods. The circular economy model offers a way to make better use of resources, boost reuse, and generate new value, forceful industries to develop systems that minimalize waste and maximize benefits. This research advents at how practices of the circular economy, business models based on networking, digital integration, and collaboration among stakeholders help shape sustainable logistics in India. The study also confirms the key elements elaborate and illuminates the factors that support fruitful transitions to more sustainable practices in complex supply chains.

2. REVIEW OF LITERATURE

1. Circular Economy Practices

The impression of the Circular Economy (CE) marks a key change from the usual "take-make-dispose" way of undertaking things in industry, affecting instead toward a system that values reusing, remanufacturing, and improving resources. As Geissdoerfer et al. (2017) explain, circular economy practices try to distinct economic growth from harming the situation by keeping materials in use within supply chains. In the logistics field, this means doing reverse logistics, cutting down on waste, and changing distribution systems to make goods last longer.

Kirchherr et al. (2018) say that implementing circular logistics helps the environment to opens up new commercial chances through secondary markets and eco-friendly branding.

Making the most of circular models relies a lot on digital tracking and cooperation among diverse investors. In India, the increasing focus on Prolonged Manufacturer Responsibility (EPR) has raised awareness about adopting CE, but there are motionless challenges related to having the right infrastructure and coordination between companies.

2. Networking-Driven Business Models

A commercial model that trusts on networking creates value by working together with additional companies, forming partnerships, and collaborating across organizations. According to Møller and Halinen (2019), modern logistics systems are built on flexible networks instead of fixed supply chains. Companies now be contingent more on working in groups to share resources, handle risks, and improve how services are delivered.

In reverse logistics, networking helps diverse groups like manufacturers, distributors, recyclers, and outside service providers work together effortlessly to return and reuse products effici ently.

Vural et al. (2020) point out that a good network helps segment data, save costs, and make operations more flexible. Also, using network-based models makes businesses more resilient, permitting them to quick reply to changes in the environment or market. So, in the logistics field, the ability to connect and work well with other parts of the network is attractive very important for staying competitive and achieving sustainability.

3. Digital Integration

Digital integration involves combining digital technologies like IoT, cloud computing, blockchain, and artificial intelligence into logistics and supply chain operations. According to Ivanov et al. (2019), digital integration forms the core of Industry 4.0, as seen through data collected from reverse logistics partners in India, including manufacturers, 3PL service providers, e-commerce handlers, recyclers, and remanufacturers. Each of these areas was assessed using a series of Likert-scale questions, extending from 1 (Strongly Disagree) to 5 (Strongly Agree).

Digital integration supports logistics by contribution real-time visibility, predictive analytics, and automated decision-making.With digital platforms, companies can track products, monitor the stream of resources, and work more efficiently with their partners.

In the context of a circular economy, digital integration is vital for following product life cycles, tracking reverse flows, and ensuring data transparency throughout the network.A study by Kumar and Anbanandam (2021) shows that digital connectivity builds trust among logistics partners and helps with sustainability reporting. Challenges such as data interoperability, cybersecurity

threats, and the digital divide between small and large firms still prevent full adoption. Digital integration acts as both a support and a driver for moving logistics systems toward more circular and interconnected business models.

4. Stakeholder Collaboration

The success of any sustainable logistics effort relies heavily on the cooperation of various stakeholders. Freeman's (1984) stakeholder theory explains how different groups such as customers, suppliers, government bodies, local groups, and employees all play a role in creating value for an organization. In the ecosphere of logistics, working together helps in solving problems more effectively, being exposed and honest, and staying committed to sustainability targets.

Sarkis et al. (2020) suggest that collective networks encourage green innovation and help in keeping environmental goals reliable throughout the supply chain.When stakeholders work together to plan and share information, they can collectively lower their carbon footprint, make transportation more efficient, and improve how products are handled at the end of their life.

In India, partnerships involving multiple stakeholders have been key in areas like waste management, returns from online shopping, and programs where producers take responsibility for their products after use. As a result, working with stakeholders helps improve how well things run and also supports social and environmental responsibility.

5. Overall Scale Reliability

In social science research, reliability refers to how reliably an instrument measures what it is meant to measure. Cronbach's Alpha is frequently used to check how well different parts of a survey agree with each other. According to Nunnally (1978) and Hair et al. (2022), a Cronbach's Alpha score above 0.7 suggests that the instrument is reliable enough, while scores above 0.8 show a high level of reliability. When a scale is reliable, it means that the results are trustworthy and less affected by mistakes in measurement.

In this study, all the constructs — Circular Economy Practices, Networking-Driven Business Models, Digital Integration, and Stakeholder Collaboration — had Cronbach's Alpha values higher than 0.85, which shows that the tool used is robust and reliable. This reliability helps support the next steps in the research, such as validating factors and using regression models to understand how different variables relate to each other.

3. Sample

To ensure that the multi-item rulers used to quantity Circular Economy Practices, Networking-Driven Business Models, Digital Integration, and Stakeholder Collaboration are internally constant and reliable for further statistical analysis. A total of 312 valid responses were

3. RESEARCH METHODOLOGY

1. Cronbach's Alpha

A reliability test using Cronbach's Alpha was directed in SPSS to determine the internal consistency of the measurement scales. The alpha coefficients for all constructs beaten the recommended threshold of 0.7, confirming that the items were reliable and consistent. Specifically, Circular Economy Practices (α = 0.872), Networking-Driven Business Models (α = 0.886), Digital Integration (α = 0.902), and Stakeholder Collaboration (α = 0.894) demonstrated excellent reliability. Accordingly, all items were retained for subsequent factor and regression analyses.

Construct	No. of Items	Cronbach's Alpha (α)	Reliability Level	Remarks
Circular Economy Practices	10	0.872	Excellent	Items show strong internal consistency

Networking-Driven Business Models	10	0.886	Excellent	High inter-item correlation; items measure the same latent construct
Digital Integration	10	0.902	Excellent	Very reliable; construct internally cohesive
Stakeholder Collaboration	10	0.894	Excellent	Strong reliability across stakeholder-related indicators
Overall Scale Reliability	40	0.926	Excellent	Indicates the instrument is highly reliable

2 Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) was used to discovery the hidden structure among the investigational variables and to check if the constructs — Circular Economy Practices (CEP), Networking-Driven Business Models (NBM), Digital Integration (DI), and Stakeholder Collaboration (SC) — are measured properly.

EFA helps to see if the questions fit together in a logical way under each main idea and ensures that each construct is clearly different from the others before doing more detailed analysis.

Before starting the analysis, tests called Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were done to make sure the data is suitable for factor analysis and that there is enough information to draw conclusions.

Test	**Statistic**	**Interpretation**
KMO Measure of Sampling Adequacy	0.861	Excellent (Kaiser, 1974)
Bartlett's Test of Sphericity	χ^2 (1225) = 5489.72, $p < 0.001$	Significant, data suitable for EFA

A KMO value above 0.8 and a significant Bartlett's test confirm that the correlation matrix is appropriate for factor extraction.

EFA revealed a **four-factor solution** that aligns with the theoretical framework of the study.
These factors collectively explained **72.46% of the total variance**, indicating good construct representation.

Factor	**Number of Items Retained**	**Variance Explained (%)**	**Reliability (α)**
Circular Economy Practices (CEP)	10	18.92	0.872
Networking-Driven Business Models (NBM)	9	17.31	0.845
Digital Integration (DI)	8	19.56	0.881
Stakeholder Collaboration (SC)	7	16.67	0.834

Four substances were taken out because they showed cross-loadings or had weak factor loadings below 0.50. After removing those items, the factor structure became clearer, with items grouping together in a way that shows good discriminant validity. The Cronbach's alpha scores for all the constructs were higher than 0.8, which shows that the items within each construct are reliable and consistent with each other (Nunnally & Bernstein, 1994). The overall reliability of the scale was found to be α = 0.893, which means the measurement structure is strong and stable, making it suitable for further Confirmatory Factor Analysis (CFA). The results from the Exploratory Factor Analysis funding the idea that the proposed constructs—Circular Economy Practices, Networking-Driven Business Models, Digital Integration, and Stakeholder Collaboration—are separate but related aspects that fit within the conceptual framework. The high reliability values and clear factor structure support the validity of the constructs and recommend that the measurement model accurately reflects the intended theoretical areas.

4. RESULTS AND DISCUSSION

Construct	Key Insight	Reliability (α)	Relationship to Sustainability
Circular Economy Practices	Emphasis on material reuse and closed-loop recovery	0.872	Strong positive link
Networking-Driven Business Models	Collaboration drives resource efficiency	0.845	Strong positive link
Digital Integration	Enhances transparency and operational control	0.881	Strong positive link
Stakeholder Collaboration	Builds trust, joint accountability, and shared value	0.834	Strong positive link

5. CONCLUSION

This research looked into how circular economy practices, business models that rely on networking, digital tools, and teamwork between different groups help create sustainable logistics systems. The findings show that changing to a circular logistics system isn't just about using new technology or improving processes—it's about redesigning the whole system through teamwork, innovation, and shared digital platforms.

The research also found that the different parts of this system, like sustainability in logistics, are not the same thing. Circular economy practices are the main way to recover resources, reuse products, and reduce waste. Networking-based business models help these practices work smoothly across different companies and partners. Digital tools are important because they help track and manage logistics more clearly, and allow for real-time coordination.

Cooperation among different groups—such as suppliers, manufacturers, recyclers, and digital service providers—helps build trust, create new ideas, and make sure everyone's goals are aligned. Composed, these factors create a strong, resilient system that supports both business success and environmental protection.

From a business strategy point of view, the study shows that to make logistics more sustainable, companies need to include digital teamwork in their daily operations and the way they run their business. Altering from traditional supply chains to circular, connected ecosystems requires not just good technology, but also a culture that encourages openness and trust. These findings have important consequences for government officials and business leaders. They need to invest in digital systems, shared platforms, and partnerships that will help the logistics industry move towards a more sustainable future. For researchers, this study adds to the growing body of knowledge that connects

network theory with digital changes in the context of a circular economy.

The study shows that working together using digital tools and networks is the key part of building sustainable logistics business models.Helping Indian logistics companies shift from short-term efficiency to long-term value, stability, and environmental balance matches the global goals for sustainable growth and responsible industrial growth.

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THE PRESENCE OF PEST *PARACOCCUS MARGINATUS* AND NATURAL PREDATORS ON CASSAVA PLANTS IN KINTAMANI, BANGLI

I Wayan Dirgayana [1), 2)], Ni Nyoman Ari Putri Murtiyah [3)]

[1)] Agrotechnology Study Program, Faculty of Agriculture and Business, Dwijendra University
e-mail : wayandirgayana@gmail.com
[2)] Doctoral Study Program Agricultural Science, Faculty of Agriculture, Udayana University
e-mail : wayandirgayana@gmail.com
[3)] Agrotechnology Study Program, Faculty of Agriculture and Business, Dwijendra University
e-mail : ariputri20@gmail.com

ABSTRACT

Manihot esculenta Crantz is an important commodity in tropical regions but is vulnerable to pest attacks such as the mealybug (Paracoccus marginatus). This study aimed to document the occurrence of mealybugs and their natural predators in cassava agroecosystems in Kintamani, Bangli. The research was conducted from June to August 2025 in four cassava plots using a survey method. In each plot, 20 sample plants were observed, and three leaves from each plant were collected to count mealybug and predator populations. Data were analyzed to determine prevalence, density, and the relationship between predators and pests. The observations revealed that the population of P. marginatus increased over time, with the highest average density of 14.3 individuals per leaf in location 4. The overall mean population density across the four sites ranged from 7.67 to 8.71 individuals per leaf. The predator Cryptolaemus montrouzieri was found in all sites but at relatively low densities, ranging from 0.42 to 0.71 individuals per leaf. The low predator density is thought to be influenced by the presence of tending ants that protect mealybug colonies. Nevertheless, a negative correlation was observed between mealybug density and predator abundance, indicating the potential role of C. montrouzieri as a biological control agent. These findings are consistent with previous reports that predators from the Coccinellidae family play an important role in suppressing mealybug populations, although their effectiveness is strongly influenced by environmental conditions, farming practices, and interactions with other organisms. The low predator-to-pest ratio in this study area indicates that natural control capacity remains limited. Therefore, integrated biological control strategies are needed through the conservation of natural enemies, predator augmentation, and the implementation of environmentally friendly farming practices. This study highlights the importance of natural predators in supporting the sustainability of mealybug management in cassava, particularly in the highland areas of Kintamani.

Keywords: *Cassava, Paracoccus marginatus, Cryptolaemus montrouzieri, natural predators*

1. INTRODUCTION

Cassava plant (*Manihot esculenta)* Crantz) is commodities important in the area tropical as source food and materials standard industry. However, its productivity often disturbed by the attack pests, especially lice white (family Pseudococcidae) which is known as *Cassava mealybug* (*Phenacoccus manihoti*, as well as insect other suckers such as *Bemisia tabaci* (Aleyrodidae) (Bashir *et al*., 2014; Supartha, 2022). Attack This pest can cause growth plant stunted, leaves curly, the appearance soot black, to decline results significant harvest (Neuenschwander, 2001) . Invasion *P. manihoti* in Asia, including Indonesia, causes threat Serious Because its rapid spread and wide adaptation to condition climate (Parsa *et al*., 2012). In Bali, reports latest show infestation lice white on the ground cassava with potential loss for farmer local (Supartha, 2022; Fanani *et al*., 2024). Factors environment, practice

cultivation, as well as interaction biotic like connection mutualistic with ants the more strengthen challenge control this pest (Gupta, 2021; Othim, 2024).

Enemy experience play a role important in pressing population lice white. Predator of the families Coccinellidae, Chrysopidae, and the parasitoid Hymenoptera are known effective reduce density pests , although the result depending on the conditions environment (Aguilera *et al.,* 2021; Burgio *et al.,* 2025). Release of the parasitoid *Anagyrus Vladimir* reported successful in several area, whereas conservation of local predators is also an issue approach potential (Burgio *et al.,* 025). However , the practice use excessive insecticide precisely often bother population enemy natural and aggravating explosion pests (Aguilera *et al.,* 2021; Fanani *et al.,* 2024). Changes climate participate influence distribution and prevalence pest and predators. Research show that pattern fluctuations population *B. tabaci* and *P. manihoti* very influenced temperature, humidity, and altitude (Criticos *et al*., 2020). This makes the plains area tall like Kintamani, Bangli interesting to research, because own climate different micro from area plains low. Information specific about existence lice white and its predators in this area are still limited , even though very important to support strategy Integrated Pest Management .

Inventory population pests and enemies experienced in cassava in Bali before show variation significant spatial and temporal (Supartha *et al*., 2022). Although Thus, the study connecting ecology prevalence pests with an abundance of predators in the plains tall Kintamani has never been conducted. This research aims to documenting existence lice white, identifying associated natural predators, as well as analyze connection beginning between population pests and enemies naturally. This finding is expected to be base development strategy control effective, environmentally friendly environment, and according to conditions agroecology local.

2. RESEARCH METHODS

Location and Period Study

Study implemented in 4 plots land cassava in the village Sekaan , District Kintamani , Regency Bangli , which represents variation cultivation plant cassava . Implementation study done in June until August 2025. Observation techniques done in a way survey to identify population pests and enemies natural (Criticos *et al.,* 2020; Fanani *et al*., 2024).

Sampling Techniques

Study use type direct research (survey) with sampling in each plot 20 plants observed sample then each plant takes 3 leaves (Parsa) *et al*., 2012)

Pest and Predator Observation

Observation roomy includes: (1) calculation individual lice white per leaf / location attack (density); (2) recording prevalence (% of plants) attacked) by counting proportion plant positive to the total number of plants observed (Aguilera *et al*., 2021; Supartha *et al*., 2022. Method taking sample covering visual inspection, to catch more active predators use net insects (Bashir *et al*., 2014; Fanani *et al*., 2024).

3. LITERATURE REVIEW

White lice papaya (*Paracoccus marginatus*) is one of the pest important thing that attacks various plant tropical, including cassava (*Manihot esculenta*). This pest is known as insect sucker fluid plants that cause symptom chlorosis, leaves rolling, and decreasing growth vegetative as well as productivity plants (Amarasekare *et al*., 2008). In attack weight, population *P. marginatus* can cover surface leaves and stems, causing plant become weak, and reduce results harvest up to more than 50%. *P. marginatus* first reported attack plant cassava and papaya in the area tropical wet, then spread to the plains high (Marsadi & Dirgayana, 2023; Muniappan *et al*., 2008). This spread is driven by the activity of trading seeds plants, conditions climate damp, and the absence of enemy natural effective at this stage beginning invasion. Environment in the Village Sekaan, Kintamani, has temperature cool ranges from 18–25°C and humidity relatively high (>70%), very severe condition support development eggs and nymphs *P. marginatus*. Combination factor climate and

availability plant host throughout the year causes population This pest is capable of survive and thrive in a way sustainable in the region.

The presence of natural predators in the ecosystem agriculture Village Sekaan own role important in pressing population pest in a way natural. Some common predators found including beetles *Cryptolaemus montrouzieri* (Coccinellidae), ladybug *Scymnus sp.,* and the predatory fly *Diadiplosis karnyi* (Dirgayana *et al*., 2021). This predator preys on eggs, nymphs, and lice white mature young, so that help guard population *P. marginatus* at a non-harmful level (Herlinda *et al*., 2019). Predatory activity tends to increases in season dry when population pest reaches the peak. Besides factor biotic, wild vegetation around garden cassava also plays a role role important as an alternative habitat for predators and parasitoids. Vegetation the provide source feed addition like nectar and pollen, as well as place take shelter for predators during period population pest low (Mani & Shivaraju, 2016). This condition supports stability predator population in the long term long and contributing to control sustainable biodiversity management *P. marginatus* in the Village Sekaan need directed at conservation enemy experience through restrictions use pesticide synthetic, planting refugia vegetation, as well as population monitoring in a way periodically. This strategy is not only pressing population pest but also maintain balance ecology and diversity life in agroecosystems cassava plains high. Through this approach, the system agriculture in Kintamani can be developed going to agriculture environmentally friendly sustainability environmentally friendly, productive, and stable in a way ecological.

4. RESULTS AND DISCUSSION

Paracoccus Pest Population Marginatus

The results show that attack pest *Paracoccus marginatus* is found in plants cassava in the village Sekan Kintamani, Bangli. Appearance lice white is shown in figure 1.

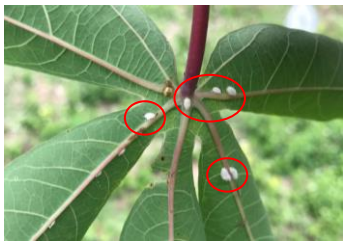

Figure 1.
Source: Dirgayana (2025)

Based on results observations in Table 1 show that population lice white *P. marginatus* on plants cassava in the village Sekaan, Kintamani increase from beginning until end observations, with an average density highest reached 14.3 individuals per leaf at location 4. The average total density population in four location ranging from 7.67–8.71 individuals per leaf. The pattern of increase This population is in line with the findings Parsa *et al.* (2012) who reported that condition climate tropical plains tall very support mealybug development. In addition, the weather like rainfall suitable rain and humidity will be cause growth population pest Significant *S. marginatus*. Humidity levels high in Kintamani (>70%) is known speed up reproduction pest suction. Temperature air in the area Kintamani is relatively cool (18–25°C) to factor main thing that accelerates development eggs and nymphs *P. marginatus* (Amarasekare *et al*., 2008). Humid environment help maintain layer candle body protector pests, so that increase resilience to factor environment like rain and wind. In addition, the conditions shoot young and soft cassava become ideal place for lice white to suck fluid plants, causing leaf curling, yellowing, and dropping activity photosynthesis.

Table 1. Population size pest *Paracoccus marginatus* in plants cassava in the village Sekaan, Kintamani

Observation of the	Average Number of Pests/ Leaf			
	Location 1	Location 2	Location 3	Location 4

1	3.7	4.3	4.0	4.7
2	5.0	5.7	5.3	5.7
3	5.3	5.7	5.0	6.3
4	7.3	7.0	7.7	8.0
5	8.3	8.7	9.3	9.7
6	9.0	9.7	8.7	9.3
7	10.3	10.7	11.3	11.7
8	12.3	12.7	13.7	14.3
Total Average	7.67	8.04	8.13	8.71

Compared to the plains area low population *P. marginatus* in Kintamani relatively higher. This is consistent with the report Supartha *et al*., (2022) who stated that agroecosystem plains high in Bali tends to own greater vulnerability to mealybug attack due to lack of practice rotation plants. Factors monoculture cassava is dominant in the village Sekaan also strengthens sustainability population pests. Distribution higher population at location 4 is suspected influenced by density plants and existence ant protector from the genus Anoplolepis and Solenopsis which intertwine connection mutualistic with *P. marginatus* (Mani & Shivaraju , 2016). Ants the protect colony lice white from natural predators like *Cryptolaemus montrouzieri*, so extend age life population. This condition is in line with the report Muniappan *et al*. (2008) that interaction mutualistic between ants and fleas white be one of factor driver explosion population in the area tropical.

Difference population between location can also be caused by conditions different microclimates, including intensity light, aeration air, and variation varieties planted cassava. In locations with denser shade, the population tends to be higher Because stable humidity support reproduction pests. While in more open locations, exposure ray direct sunlight and higher temperatures can reduce population through improvement death eggs and nymphs. In In general, these results indicate that *P. marginatus* own ability high adaptation in the ecosystem plains Bali's high population. The population continues to grow increase without control strong natural potential cause damage economy significant. Therefore, the approach control-based ecology like natural predator conservation and management surrounding vegetation land very important implemented (Herlinda *et al*., 2019) Strategy it is not only pressing population pest but also maintain balance agroecosystem in the Kintamani region.

Predator Population Cryptolaemus Montrouzieri

Presence of the predator *Cryptolaemus montrouzieri* found at the location research is shown in Figure 2, although in much lower numbers compared to population lice white , with an average of 0.42–0.71 individuals per leaf as shown in Table 2. The low this predator population may influenced by the height interaction mutualistic between lice white and ants the shepherd who protects colony pests (Gupta & Ghosh, 2021). Othim *et al.* (2024) also reported that activity ants can lower the effectiveness of natural predators by driving away Coccinellidae attack. Pest *C. montrouzieri* still considered as agent controller biological important. Burgio *et al.* (2025) stated that This species is capable of lower mealybug population in general significant in conditions Good habitat conservation . Nurfuadianti *et al*. (2022) added that release *C. montrouzieri* in the field cassava capable pressing level damage up to 40% in season dry season. In the village Sekaan, though its population low, the presence of correlation negative between density lice white and predators indicate role potential *C. montrouzieri* as a regulator.

Table 2. Population of *the Cryptolaemus montrouzieri* predator on pests *Paracoccus marginatus* in the Village Sekaan, Kintamani

Observation of the	**Average Number of Predators/ Leaf**			
	Location 1	**Location 2**	**Location 3**	**Location 4**
1	0.0	0.3	0.3	0.0

2	0.7	0.7	0.7	0.0
3	1.0	0.7	0.7	0.3
4	0.7	1.0	0.3	0.3
5	0.7	1.0	0.7	0.7
6	1.3	0.7	0.7	0.3
7	0.7	0.7	0.7	0.7
8	0.7	0.3	0.3	1.0
Total Average	0.71	0.67	0.54	0.42

Average difference in predator population between location (0.42–0.71) indicates existence influence condition microhabitat to existence enemy natural. Variations landscape, availability of refugia, and level use pesticide very influence abundance of natural predators. Aguilera *et al.* (2021) also showed that practice fertilization organic can increase generalist predator population. In the context of ecology, predator– pest ratio in the village Sekaan Still far below threshold control natural. According to Southwood & Henderson (2000), the effective predator: pest ratio usually around 1:20 or better. Meanwhile, in Figure 2 it can be seen that at the location this study, with density lice white average 8–9 individuals / leaf and predators less than 1 individual / leaf, it is clear that ability control experience Still weak.

Figure 2.
Source: Dirgayana (2025)

The implications are the need strategy conservation enemy experience through provision refugia plants, reduction insecticide synthetic, and even introduction additional predator *C. montrouzieri*. Burgio *et al.* (2025) suggest area -wide predator augmentation to stabilize population pests in the field wide. Meanwhile, integration with specific parasitoids like *Anagyrus lopezi* who has success in Africa can also be considered (Parsa *et al.*, 2012; Neuenschwander, 2001).

5. CONCLUSION

Existence population *P. marginatus* in the Village Sekaan, Kintamani, included high and potential harm production cassava. The predator *C. montrouzieri* is present but in limited numbers, so that contribution experience still not enough significant. Difference microclimate between location cause variation population *P. marginatus* and the predator *Cryptolaemus montrouzieri*. Although Thus, the existence of natural predators like *C. montrouzieri* potential pressing population pests in the field with intervention pesticide low.

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THE LEGAL STANDING OF CORPORATE ORGANS IN THE DISSOLUTION PROCESS OF A LIMITED LIABILITY COMPANY THROUGH A COURT DECISION

Ni Made Trisna Dewi[1], I Putu Yudha Dharma Putra[2]
Dwijendra University Faculty of Law
E-mail: madetrisnadewishmh@gmail.com, yudhadharma58@gmail.com

Abstract

This study discusses the legal regulations regarding the dissolution of Limited Liability Companies based on Law Number 40 of 2007 concerning Limited Liability Companies (Company Law/UUPT) and highlights the importance of legal certainty in petitions for dissolution submitted by shareholders, directors, or commissioners to the court. The objective of the research is to analyze the legal norms within the Company Law that serve as the basis for dissolution and to identify conflicts of norms that may give rise to uncertainty in judicial practice. The research method employed is normative legal research using a statute approach as well as a conceptual approach.The results of the study indicate that the regulation of the dissolution of limited liability companies is provided in Articles 142 to 152 of the Company Law. However, issues arise regarding the legal standing of company organs entitled to submit a petition for dissolution. The conclusion of this study is that the position of company organs in the dissolution process is stipulated in Article 146 paragraph (1) letter c of the Company Law, which grants the right to shareholders, directors, or commissioners to file for dissolution if the company can no longer continue its business activities. In practice, however, differences in interpretation occur regarding the requirements for submission, including the necessity to prove that the company has been inactive for three years and has reported this to the tax authorities. This lack of clarity may lead to conflicts among company organs. Therefore, regulatory harmonization and judicial guidelines are needed to ensure that company dissolution provides legal certainty and protection.

Keywords: Limited Liability Company; Company Dissolution; Legal Certaint

1. INTRODUCTION

The economic development in Indonesia has stimulated the growth of various types of business entities, both those with legal status such as Limited Liability Companies (PT), Foundations, and Cooperatives, as well as those without legal status such as Firms and Limited Partnerships (CV). Among these forms, the Limited Liability Company (PT) has become the most dominant choice because it provides legal certainty for investors and limits the shareholders' liability to the value of their respective shares. As a legal entity, a PT consists of three main organs: the General Meeting of Shareholders (GMS), the Board of Directors, and the Board of Commissioners, each of which holds specific authorities as stipulated in Law Number 40 of 2007 concerning Limited Liability Companies (hereinafter referred to as the "Company Law").

One of the essential aspects of a PT's existence is its dissolution mechanism. In practice, dissolution may occur through a decision of the GMS or by a court ruling, as regulated in Article 146 of the Company Law. An application for dissolution may be submitted to the court by any of the company's organs—namely shareholders, directors, or commissioners—if the company is no longer able to continue its business activities. However, in practice, problems often arise, particularly when dissolution cannot be carried out through the GMS due to an equal balance of share ownership that leads to a deadlock in decision-making. In such circumstances, a court ruling serves as an alternative legal avenue.

Article 146 paragraph (1) letter (c) of the Company Law stipulates that dissolution may be requested when the company can no longer continue its

operations, including cases in which the company has been inactive for three years or more. Nevertheless, a legal issue arises concerning who has the lawful authority (legal standing) to submit a notification of inactivity to the tax authority as proof that the company has ceased operations. The explanatory provisions of the article do not explicitly specify whether this authority lies with the directors, commissioners, or shareholders. This ambiguity creates differing interpretations, which have the potential to generate internal conflicts among the company's organs.

The legal uncertainty regarding such legal standing becomes problematic because dissolution constitutes a legal act that has broad implications for shareholders, creditors, and other third parties. Therefore, it is crucial to conduct an in-depth examination of the legal standing of a company's organs in the process of dissolution through a court ruling, so that the process can proceed on a solid legal foundation and avoid discrepancies in interpretation in practice.Based on the aforementioned background, the following research problems are formulated:

1. How is the regulation of the dissolution of a Limited Liability Company under Law Number 40 of 2007 concerning Limited Liability Companies?
2. How is legal certainty ensured regarding the application for dissolution of a Limited Liability Company before the court, whether filed by the shareholders, the board of directors, or the board of commissioners?

2. METHOD

The research method employed in this study is a normative legal research method, which focuses on legal materials as the primary data source. These include primary legal materials, such as laws and regulations, court decisions, and other related legal provisions; and secondary legal materials, consisting of books, legal research articles, and expert opinions (Dewi, 2021, p. 137).This study adopts two approaches: the statute approach and the conceptual approach, focusing on the analysis of legal concepts such as legal entities, limited liability companies, authority, and legal interpretation. The legal materials examined comprise primary sources (the 1945 Constitution, the Civil Code, and the Company Law), secondary sources (literature, journals, and expert opinions), and tertiary sources (legal dictionaries and encyclopedias).

Data collection was carried out through library research, while data analysis employed a descriptive-analytical and legal argumentation method to evaluate the clarity and consistency of legal norms related to the legal standing of corporate organs in the dissolution of a Limited Liability Company through a court determination.

3. RESULTS AND DISCUSSION

The Legal Basis for the Dissolution of a Limited Liability Company

Law consists of norms that contain obligations or prohibitions governing society, which are genuinely accepted and practiced by the community (Indradewi, 2023, p. 21). The dissolution of a Limited Liability Company (PT) can be carried out through several mechanisms, one of which is by a court decision. The legal basis for the dissolution of a PT is regulated under Law Number 40 of 2007 concerning Limited Liability Companies (the Company Law). Article 142 paragraph (1) of the Company Law states that a PT may be dissolved for several reasons, including a resolution of the General Meeting of Shareholders (GMS), the expiration of the company's term as stipulated in the articles of association, a court decision, the revocation of the company's business license, or bankruptcy (Pandiangan, A. V., & Anindita, S. L., 2022, p. 45).

The dissolution of a Limited Liability Company (PT) is a legal process that terminates the existence of the company as a legal entity and is governed by Articles 142 to 152 of Law Number 40 of 2007 concerning Limited Liability Companies. This process includes the cessation of business activities, the settlement of assets and liabilities, and the elimination of the company's legal status. Based on Article 142 paragraph (1) of the Company Law, dissolution may occur due to a resolution of the General Meeting of Shareholders (GMS), the

expiration of the period of establishment, a court decision, the revocation of the business license, or the declaration of bankruptcy. Understanding this legal foundation is crucial to ensure that the dissolution and liquidation process is carried out in accordance with the applicable regulations and to protect the interests of all parties involved.

The dissolution of a company through a GMS is a prerogative right of the shareholders as the owners of capital. However, such a decision must be made lawfully, in compliance with the quorum requirements and the decision-making mechanisms stipulated in the Company Law and the company's Articles of Association (Muhammad, 2010, p. 256).Similar to a Limited Liability Company, a Foundation also consists of organs with specific authorities, roles, and functions. The Board of Trustees, the Management, and the Supervisory Board each have powers, duties, and responsibilities that are closely related to the foundation's performance in carrying out its operations as a unified entity to achieve the foundation's objectives (Brahmantya, 2023, p. 273).

Requirements and Procedures for the Dissolution of a Limited Liability Company

Law Number 40 of 2007 concerning Limited Liability Companies (Company Law) stipulates several ways in which a company may be dissolved:

a. **Based on the Resolution of the General Meeting of Shareholders (GMS)**

   The Board of Directors, the Board of Commissioners, or one (1) or more shareholders representing at least one-tenth (1/10) of the total shares with voting rights may propose the dissolution of the company to the General Meeting of Shareholders (GMS) (Harahap, 2011, p. 543)

b. **Due to the Expiration of the Company's Term as Stipulated in the Articles of Association**

   The process of dissolving a Limited Liability Company (PT) through a court begins with the submission of an application by an interested party to the District Court in the jurisdiction where the company is domiciled. The court will then examine the evidence and consider the reasons for dissolution (Neris, 2009, p. 80). Article 6 regarding general provisions of a company explains that if the term of the company is set at ten (10) years in its articles of association, then the company shall automatically terminate after ten (10) years from the date of its legalization, and upon the expiration of this period, the company is dissolved by operation of law (Khairandy, 2014, p. 326).

   In carrying out their duties, the Board of Directors and the Board of Commissioners are guided by the same principles. The authority of the GMS, the Board of Directors, and the Board of Commissioners must be exercised in good faith and in accordance with the company's articles of association and applicable laws and regulations. The company's organs cannot be held personally liable for corporate acts that comply with the principles governing companies in Indonesia, namely the principles of *separate entity* and *limited liability* (Adiningsih, 2019, pp. 1–16).

   Based on Article 145 concerning company dissolution in the Company Law, a company is dissolved by operation of law when the term of establishment stipulated in the articles of association expires. Within no later than thirty (30) days after the company's term of establishment expires, the General Meeting of Shareholders (GMS) must appoint a liquidator. After the term of establishment stated in the articles of association has expired, the Board of Directors is prohibited from conducting any new legal acts on behalf of the company.

c. **Based on a Court Ruling**

   Article 146 stipulates that the dissolution of a Limited Liability Company may be carried out based on a court ruling under the following conditions:

   1. A petition filed by the Public Prosecutor on the grounds that the company has violated public interest or engaged in acts contrary to laws and regulations.

2. A petition filed by an interested party on the grounds of a legal defect in the deed of establishment.
3. A petition filed by shareholders, the Board of Directors, or the Board of Commissioners on the grounds that the company can no longer continue its operations.

The elucidation of Article 146 explains that "the company can no longer continue its operations" refers, among others, to the following situations:

1. The company has not conducted any business activities (is inactive) for three (3) years or more, as evidenced by a notification submitted to the tax authorities.
2. Most shareholders cannot be located, even after being summoned through announcements in newspapers, making it impossible to convene a General Meeting of Shareholders (GMS).
3. The share ownership structure of the company is such that the General Meeting of Shareholders (GMS) cannot make a valid decision — for example, when two shareholder groups each own fifty percent (50%) of the shares.
4. The company's assets have been depleted to such an extent that it is no longer possible for the company to continue its business activities.

Normative Implications of the Dissolution of a Limited Liability Company Based on Law No. 40 of 2007 on Limited Liability Companies

One of the mechanisms for the dissolution of a Limited Liability Company (PT), as regulated under Article 142 of Law Number 40 of 2007 concerning Limited Liability Companies, is through a court ruling. Article 146 paragraph (1)(c) stipulates that a petition for dissolution may be submitted if the company has been inactive for three years or more, which must be proven by a notification letter to the tax authority. However, the Company Law does not explicitly specify who is authorized to issue such a letter—whether it is the Board of Directors, shareholders, or commissioners. This ambiguity creates legal uncertainty, as reflected in several cases where the court rejected dissolution petitions filed by shareholders on the grounds that the applications were premature. This situation demonstrates an inconsistency between the substantive article and its elucidation, as well as a potential imbalance in the rights of the parties within the company to prove the company's inactive status.

According to Supreme Court Decision No. 1618 K/Pdt/2016, one of the requirements for filing a petition for the dissolution of a Limited Liability Company is notifying the Tax Office that the company has been inactive for at least three (3) years, and such notification must be made by the Board of Directors (Kurniawan, 2022, pp. 69–79). One example illustrating legal uncertainty in company dissolution is the case between PT Baraventura Pratama (BVP) and PT Artha Komoditi& Energi Services (AKES). PT BVP, which owned 50% of PT AKES shares, filed a petition for dissolution with the Central Jakarta District Court (Case No. 176/Pdt.P/2015/PN.Jkt.Pst). However, the petition was rejected because the company's non-active notification letter to the tax authority was submitted by the shareholder rather than the Board of Directors. The court ruled that only the Board of Directors was authorized to submit the notification, as it is the organ fully responsible for the management of the company. This decision was upheld by the Supreme Court through Decision No. 1618 K/Pdt/2016. PT BVP argued that the elucidation of Article 146 paragraph (1)(c) of the Company Law should not be interpreted exclusively as granting such authority only to the Board of Directors, as this would contradict the main provision of the article, which expressly provides that shareholders, directors, and commissioners all have the right to file a petition for dissolution (Kurniawan, 2022, p. 71).

If a Limited Liability Company has not been operating for approximately three years, both the Board of Directors and shareholders have the right to file for dissolution through the court. A common reason for seeking dissolution via the court is the company's inactivity and imbalance in share ownership. Article 146

paragraph (1) of the Company Law grants both the Board of Directors and shareholders the right to file for dissolution. However, there remains a difference in interpretation regarding which corporate organ has the authority to send the notification letter to the tax authority about the company's inactivity for three years or more. In the case above, the court deemed the petition premature because the notification to the tax authority was submitted by a shareholder (Sihotang, 2023, pp. 500–510).

The elucidation of Article 146 paragraph (1)(c)(a) of the Company Law states that one of the reasons a company cannot continue its operations is if it has not conducted business activities for three years or more, as evidenced by a notification to the tax authority. The phrase *"among others"* indicates that any one of the stated reasons may suffice to support a petition for dissolution. However, the elucidation creates legal uncertainty by failing to specify who is authorized to submit the notification. This contradicts Article 146 paragraph (1)(c) of the Company Law, which grants shareholders, directors, and commissioners equal rights to file for dissolution. Consequently, this elucidation risks diminishing the normative force of the main provision by restricting that right to a single organ, thereby contravening the principle of legal certainty guaranteed by the 1945 Constitution.To analyze the normative conflict between Article 146 paragraph (1)(c) of the Company Law and its elucidation, the author employs grammatical and systematic interpretation methods. Grammatical interpretation involves interpreting the wording of the article according to linguistic rules, while systematic interpretation involves understanding the article within the broader context of the Company Law and its underlying legal principles. According to Sudikno Mertokusumo, legal discovery methods consist of three approaches—interpretation, argumentation, and exposition (or legal construction)—all of which aim to uncover the true meaning of the law in accordance with the spirit and purpose of legislation (Mertokusumo, 2007, p. 56).

A grammatical interpretation of Article 146 paragraph (1)(c) of the Company Law reveals that while the article provides the legal foundation for company dissolution, it contains ambiguity and potential for subjective interpretation. The phrase *"among others"* and the lack of clarity regarding who is authorized to prove the company's non-active status create a loophole that may be exploited. The article states that a petition for dissolution may be submitted by shareholders, the Board of Directors, or the Board of Commissioners if the company cannot continue its operations. The conjunction *"or"* in this context signifies that each organ has an equal right to file such a petition in court. According to the *Kamus Besar Bahasa Indonesia* (KBBI), the word *"or"* denotes a choice among several options, implying that any of the listed parties may act.Beyond grammatical interpretation, the author also examines the issue through *systematic interpretation*. Systematic interpretation refers to interpreting a legal provision within the context of the broader legal framework (*systematische interpretative*). It may also involve comparing related legal texts governing the same subject matter. For example, when interpreting an article of a statute, relevant provisions or underlying principles in other laws must be taken into consideration (Utrecht, 1983, pp. 212–213).Systematic or logical interpretation emphasizes understanding a legal article within the entire legal system rather than in isolation. It considers interrelationships among provisions within a statute, as well as with other relevant laws and general legal principles. In the case of Article 146 paragraph (1)(c) of the Company Law, a systematic approach is essential to address the uncertainty arising from its elucidation. The article grants shareholders, directors, and commissioners the right to request the dissolution of a company that can no longer continue its business. The elucidation, however, cites one example of such a condition—company inactivity for three years or more, evidenced by a notification to the tax authority. Yet, the phrase *"among others"* raises the question of whether the reasons are exhaustive or illustrative, creating interpretative flexibility that can undermine legal certainty.

Furthermore, Article 114 of the Company Law regulates shareholders' rights to obtain information about the company. If shareholders have evidence that the company has been inactive for three years or more, they are entitled to request the Board of Directors to provide clarification and take appropriate actions, including filing for dissolution. A systematic or logical interpretation requires that this shareholder right be respected and protected so that shareholders are not disadvantaged by directors' lack of transparency or accountability (Rajagukguk, 2008, p. 95).A systematic interpretation of Article 146 paragraph (1)(c) of the Company Law must also consider the underlying principles of *Good Corporate Governance* (GCG), which emphasize transparency, accountability, and responsibility in company management. Therefore, any decision to dissolve a company should be made transparently and accountably, involving all relevant parties—shareholders, directors, and commissioners—while ensuring fair consideration of their respective interests.The interpretation of Article 146 paragraph (1)(c) should thus be broadened and not confined to the examples in its elucidation. The phrase *"the company can no longer continue its operations"* may encompass various factors beyond the company's inactivity for three years, as long as such factors can be substantiated and are consistent with prevailing legal principles. Moreover, this interpretation reaffirms that all interested parties have the right to file for dissolution, and such decisions must be made with due regard to fairness and the protection of all stakeholders' rights.

Legal Certainty in the Dissolution of a Limited Liability Company in Court Based on Applications by Shareholders, Directors, or Commissioners

The dissolution of a Limited Liability Company (PT) through the court is a mechanism regulated under Law Number 40 of 2007 concerning Limited Liability Companies (Company Law). Article 146 paragraph (1) of the Company Law states that a district court may dissolve a company upon the application of shareholders, directors, or the board of commissioners on the grounds that the company can no longer continue its business. This provision is intended to provide a clear legal standing for these three organs in submitting a petition for the dissolution of the PT to the court.Shareholders have the right to file for the dissolution of a PT if there are strong grounds to believe that the company's continuation is no longer viable. For example, in situations where share ownership is evenly split, causing the General Meeting of Shareholders (GMS) to be unable to reach valid decisions—such as when two shareholder factions each own 50% of the shares. In such circumstances, shareholders may file a dissolution petition to the court in order to obtain legal certainty. (Hapsari, 2021, p.2)

Legal certainty in the judicial dissolution of a PT is crucial for all parties involved, including shareholders, directors, and the board of commissioners. A clear and transparent dissolution process will ensure that the rights and obligations of each corporate organ are protected in accordance with the prevailing laws and regulations. Therefore, a deep understanding of the procedures and legal basis for company dissolution becomes essential for stakeholders in operating and managing the company.Normatively, legal certainty refers to regulations that are drafted and enacted in a definitive manner because they are explicitly and logically structured. This means the law should not create ambiguity (multiple interpretations) and should be logically coherent, forming a system of legal norms that aligns with other norms. Hence, it does not conflict with or cause issues or normative clashes. Legal certainty refers to the application of law that is clear, consistent, and consequently implemented, without being influenced by subjective circumstances. Certainty and justice are not merely moral demands but are factual characteristics of law. A law that lacks certainty and fairness is not merely poor law—it ceases to be law at all. (Kamsil, 2009, p.17)

4. CONCLUSION

The regulation of the dissolution of a Limited Liability Company (PT) based on Law Number 40 of 2007 concerning Limited Liability Companies (Company

Law) is stipulated in Articles 142 to 152 of the Company Law. Dissolution may occur due to a resolution of the General Meeting of Shareholders (GMS), the expiration of the company's term, a court decision, or the revocation of the business license. Specifically, Article 146 paragraph (1) letter (c) of the Company Law regulates the dissolution of a company by a court decision. In particular, letter (c) grants authority to shareholders, directors, or the board of commissioners to file a petition for the company's dissolution with the district court if the company is deemed no longer viable.

This mechanism is intended to provide legal certainty for shareholders and other related parties. However, in practice, there are often obstacles in its implementation, especially when there are conflicting interests among the company organs. Furthermore, the absence of a clear definition regarding the criteria for such dissolution within the main text of the Company Law or its implementing regulations has led to varying interpretations among legal practitioners and the courts, thereby creating legal uncertainty.

The provisions on the dissolution of a Limited Liability Company under Law Number 40 of 2007 are covered in Articles 142 to 152, with Article 146 paragraph (1) letter (c) in particular affirming that shareholders should have the same legal standing as the directors and the board of commissioners in terms of authority to file for dissolution in court.

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ANALYSIS OF THE RATE OF SYMPTOM DEVELOPMENT OF *FUSARIUM* SP. CAUSING VANILLA STEM ROT ON ARTIFICIAL MEDIUM AND LIVING PLANTS

Made Mika Mega Astuthi[1)] ,Kadek Ayu Charisma Julia Dewi[2)],

[1)]*Doctoral Study Program Agricultural Science, Faculty of Agriculture, Udayana University*

e-mail : *made.mika90@gmail.com*

[2)]*Agribusiness Study Program, Faculty of Agriculture and Business Dwijendra University*

e-mail : *ayucharismajd@gmail.com*

ABSTRACT

Vanilla stem rot disease (Vanilla planifolia Andrews) is one of the most destructive fungal diseases affecting vanilla cultivation worldwide. It is caused by the soil-borne fungus Fusarium sp., which significantly reduces crop productivity and quality through stem necrosis, tissue softening, and plant death. This study aimed to analyze the rate and pattern of symptom development of Fusarium sp. infection under two different conditions: artificial medium (Potato Dextrose Agar/PDA) and living vanilla plants. The research was conducted at the Biotechnology Laboratory and the Laboratory of Plant Pests and Diseases using a descriptive observation method without statistical analysis. Inoculation was performed by culturing fungal isolates on vanilla stem cuttings placed on PDA medium and on healthy vanilla plants under controlled humidity and temperature. Daily visual observations were made to record the onset and progression of disease symptoms. The results showed that fungal mycelium began to develop on PDA on the second day after inoculation and fully covered the stem surface by the sixth day. In contrast, disease symptoms on living plants appeared on the sixth day, characterized by brownish lesions, tissue discoloration, and mild stem wilting. These findings confirm that Fusarium sp. has a high infection potential under humid environments and fulfills the initial criteria of Koch's Postulates as the causal pathogen of vanilla stem rot disease.

Keywords: *Fusarium sp., vanilla stem rot, PDA medium, infection symptoms, Koch's Postulates*

1. INTRODUCTION

Vanilla (*Vanilla planifolia* Andrews) is one of the most valuable horticultural crops and a major export commodity with high economic importance. However, vanilla production is highly susceptible to attack by plant pathogens, particularly vanilla stem rot disease (VSRD), which causes severe losses in the field (Directorate General of Estate Crops, 2022). The main pathogen responsible for VSRD is *Fusarium oxysporum* f. sp. *vanillae*, a fungal species highly specific to vanilla. This pathogen possesses strong infection capabilities and can survive under diverse environmental conditions. It spreads through contaminated soil, water, cultivation tools, and infected plant materials such as cuttings, roots, and dust particles. Moreover, *Fusarium oxysporum* f. sp. *vanillae* produces chlamydospores that allow it to survive for years in the absence of a host plant, making long-term control extremely difficult (7–10 years or more) in infested soils.

Typical symptoms of the disease include stem discoloration to brown, tissue softening, necrosis, and eventual plant death under severe infection (Directorate General of Estate Crops, 2022). In plant pathology studies, *in vitro* (artificial medium) models are frequently used to assess fungal virulence, screen biological control agents, and perform biochemical tests because they allow controlled conditions and faster observation. However, although *in vitro* systems accelerate observations, they do not always represent the infection dynamics occurring in *in vivo* (living plant) systems, which are influenced by plant defense mechanisms, local microbiota interactions, environmental variability, and other complex factors (Shi et al., 2018).

Fusarium sp. can persist in soil and plant debris for extended periods. Infection typically occurs through wounds on roots or stems and spreads into soft plant tissues. Environmental conditions such as temperatures between 28–30°C and high humidity strongly favor disease development (Windels, 1993). To confirm the causal relationship between the pathogen and the disease, Koch's Postulates are applied, involving the processes of pathogen isolation, inoculation, and observation of symptoms in healthy plants (Agrios, 2005).

In this study, a descriptive observation was conducted to analyze the rate of symptom development of *Fusarium* sp. under two conditions: artificial medium (Potato Dextrose Agar/PDA) and living vanilla plants. The findings are expected to provide a preliminary understanding of the infection dynamics of *Fusarium* sp. and serve as a scientific basis for developing effective control strategies against vanilla stem rot disease.

2. RESEARCH METODOLOGY

2.1. Research Time and Location

The research was conducted every Friday at the Biotechnology Laboratory and the Laboratory of Plant Pests and Diseases, Faculty of Agriculture.

2.2. Tools and Materials

The tools used in this study included a weighing balance, stove, stirrer, measuring cylinder, Erlenmeyer flask, cotton, bottles, aluminum foil, autoclave or pressure cooker, Petri dishes, laminar flow cabinet, tweezers, inoculating needle, syringe, cotton buds, microscope, and digital camera.

The materials used were 250 g of potatoes, 17 g of agar, 25 g of dextrose, 1 L of distilled water, soil for planting medium, healthy and diseased vanilla plants, and *Fusarium* sp. fungal isolates.

2.3. Preparation of PDA Medium

Potatoes were peeled, washed, and diced, then boiled in 750 mL of water for 20 minutes until soft. The potato extract was filtered and mixed with dextrose, agar, and distilled water to a final volume of 1 liter. The mixture was dispensed into test tubes (approximately 10 mL each), plugged with cotton and covered with aluminum foil, then sterilized using an autoclave for 10 minutes at a pressure of 1 bar. After sterilization, the tubes were slanted until the medium solidified and became ready for use.

2.4. Isolation of Microorganisms

Petri dishes were sterilized using an autoclave and exposed to UV light under a laminar flow cabinet. PDA medium was poured into sterile Petri dishes and allowed to solidify.

Diseased vanilla stem tissues (approximately 1 × 2 cm) were cut, surface-sterilized with 70% ethanol for 3 minutes, rinsed three times with sterile distilled water, and air-dried on sterile filter paper. The sterilized tissue pieces were then placed onto PDA medium using a sterile inoculating needle under a Bunsen flame. The Petri dishes were sealed and incubated at room temperature until fungal growth appeared.

The fungal colonies were observed visually and under a microscope. Isolates producing spores were purified using the single-spore isolation or hyphal tip cutting technique. Germinated spores were transferred to fresh PDA medium until pure cultures were obtained. Morphological identification was carried out by comparing the shape and structure of spores and conidia with standard taxonomic references (Barnett, 1983; Drenth & Sendall, 2001).

2.5. Koch's Postulates Test

Purified *Fusarium* sp. isolates were inoculated onto healthy vanilla plants. The inoculating needle was sterilized over a Bunsen flame and used to take the fungal inoculum from pure culture, then applied or inserted into the stems and leaves of healthy vanilla plants.

Inoculated plants were covered with transparent plastic to maintain humidity. For inoculations on cut vanilla stems, the samples were placed on PDA medium in sealed Petri dishes.

Daily observations were carried out to record symptom development, including discoloration, tissue decay, and mycelial growth. The infection process and resulting symptoms were documented visually using a digital camera.

3. RELATED RESEARCH/LITERATUR REVIEW

3.1. Infection of *Fusarium* sp. in Vanilla

Vanilla stem rot disease is caused by the fungus Fusarium oxysporum, which infects plant tissues through mechanical or natural wounds. The infection process begins with the discoloration of tissues to brown, followed by soft rot and wilting symptoms (Singh et al., 2022). This fungus produces toxins and cell wall–degrading enzymes such as pectinase and cellulase, which accelerate tissue maceration and decay (Kumar et al., 2021).

A study by Pavitra et al. (2023) reported that Fusarium oxysporum exhibits different levels of virulence among isolates, and disease symptoms develop more rapidly under high humidity conditions. These findings suggest that environmental factors play a critical role in determining the severity and progression rate of Fusarium infection in vanilla.

3.2. Koch's Postulates in Pathogenicity Verification

Koch's Postulates are used to establish a causal relationship between a microorganism and the disease it induces. The four main steps include isolation, cultivation in pure culture, inoculation into a healthy host, and re-isolation of the same pathogen (Agrios, 2005). This process confirms that the obtained isolate is indeed the causal agent of the disease.

Similar studies by Sutanto et al. (2020) and Pavitra et al. (2023) successfully demonstrated that *Fusarium* isolates derived from diseased vanilla plants were able to reproduce identical symptoms when inoculated onto healthy plants, thereby fulfilling Koch's criteria for pathogenicity confirmation.

3.3. Vanilla Stem Rot Disease (VSRD)

Vanilla Stem Rot Disease (VSRD) is one of the major diseases affecting *Vanilla planifolia*, primarily caused by fungi belonging to the genus *Fusarium*, particularly *F. oxysporum* and *F. solani* (Leslie & Summerell, 2006). Early symptoms include brown discoloration of the stem tissues, followed by softening, rotting, and eventually plant death. According to Pavitra et al. (2023), *F. oxysporum f. sp. vanillae* can survive for long periods in soil and infect plants through wounds in roots or stems. The disease develops rapidly under conditions of high humidity and optimal temperatures of 25–30°C. Typical symptoms include internal tissue browning and the exudation of yellowish mucilage from infected stems.

In addition to stem infection, the pathogen can spread through contaminated farming tools and unsterilized planting media (Sutanto et al., 2020). Control efforts for VSRD include the use of disease-free planting materials, sterilization of tools,

and the application of biological control agents such as *Trichoderma harzianum*, which has been proven effective in suppressing *Fusarium* growth in soil (Sharma et al., 2022).

Recent research by Mahendra et al. (2024) indicated that *Fusarium* isolates from different regions exhibited varying levels of virulence, emphasizing the importance of understanding the rate of symptom development to determine effective management strategies against vanilla stem rot.

4. RESULTS AND DISCUSSION

4.1. Results

4.1.1 Symptoms of *Fusarium* sp. Infection on Vanilla Stems in Petri Dishes

Figure 1. Symptoms observed on day 5
Source: Mika (2025)

Figure 2. Symptoms observed on day 5
Source: Mika (2025)

4.1.2. Symptoms of Infection on Living Vanilla Plants

Figure 3. Symptoms observed on day 6
Source: Mika (2025)

4.2. DISCUSSION

On artificial medium (Petri dishes), vanilla stems inoculated with *Fusarium oxysporum* began to show early signs of infection on the second day after inoculation. By the fifth day, fungal mycelia partially covered the stem surface, and by the sixth day, dense whitish-gray mycelial growth had enveloped the entire stem, indicating complete fungal colonization. In living vanilla plants, symptoms appeared later—on the sixth day after inoculation. Early symptoms included light brown lesions on the stem, slight leaf wilting, and changes in tissue texture around the inoculation site.

These findings indicate a positive result for the first stage of Koch's Postulates, in which inoculation of the suspected pathogenic isolate caused similar disease symptoms on healthy plants. However, the confirmation test (re-isolation) was not conducted in this practical study, so it cannot be concluded whether all four of Koch's criteria were fully satisfied.

According to Matthews (1970) as cited in Agrios (2005), Koch's Postulates consist of four essential criteria to establish a causal relationship between a microorganism and a disease:

1. The microorganism must always be associated with the same disease.
2. It must be isolated and grown in pure culture under laboratory conditions.
3. The pure culture must cause the same disease when inoculated into a healthy host.
4. The same microorganism must be re-isolated from the newly infected host.

Thus, the current observation fulfills only the first three criteria of Koch's Postulates. The disease symptoms observed on the vanilla stems were characterized by soft rot, followed by tissue drying along the stem edges. This suggests that *Fusarium oxysporum* has the ability to infect soft plant tissues and persist in dried tissues. The fungus grows optimally at 28–30°C (Windels, 1993), consistent with the temperature of the laboratory during observation.

According to Pavitra et al. (2023), the rapid formation of *Fusarium oxysporum* mycelia is strongly influenced by tissue moisture content and environmental humidity. In living plant tissues, physiological defense responses such as phenolic compound synthesis and lignification may slow down fungal penetration (Singh et al., 2022). These results are consistent with the findings of Sutanto et al. (2020), who reported that *Fusarium* infection in vanilla typically produces soft rot symptoms between the fifth and seventh day after inoculation. Therefore, the present observations reinforce the conclusion that *Fusarium oxysporum* is the primary causal agent of vanilla stem rot disease (*Vanilla planifolia*).

5. CONCLUSION

Based on the observations, it can be concluded that *Fusarium* sp. is the pathogenic fungus responsible for stem rot disease in vanilla (*Vanilla planifolia*). The development of infection symptoms occurred more rapidly on artificial medium (PDA) than on living plants. On PDA medium, fungal mycelium appeared on the second day and completely covered the stem tissues by the sixth day, while on living plants, symptoms appeared on the sixth day, characterized by soft rot and tissue drying along the stem. The results confirm that *Fusarium* sp. is capable of infecting and developing in accordance with Koch's Postulates, thereby establishing a clear causal relationship between the fungus and vanilla stem rot disease.

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AGROTECHNOLOGICAL INNOVATION OF THE SALIBU SYSTEM IN LOWLAND RICE CULTIVATION: IMPLICATIONS FOR CROPPING INDEX AND FARMING FEASIBILITY

Kadek Ayu Charisma Julia Dewi[1)] ,Made Mika Mega Astuthi[2)],
[1)]*Doctoral Study Program Agricultural Science, Faculty of Agriculture, Udayana University*
e-mail : ayucharismajd@gmail.com
[2)]Agrotechnology Study Program, Faculty of Agriculture and Business Dwijendra University
e-mail : made.mika90@gmail.com

ABSTRACT

The Salibu rice cultivation system represents an agrotechnological innovation with significant potential to support land intensification by increasing the cropping index (CI) and improving resource-use efficiency. This study aims to analyze the implications of applying the Salibu system on productivity, cropping index, and farm feasibility in lowland rice cultivation. The research employed a descriptive-analytical approach, integrating farm business analysis, revenue–cost ratio (R/C ratio), and direct field observations in farmers' paddy fields in Tabanan Regency, Bali. The results showed that the Salibu system increased the cropping index from two to three planting cycles per year, with an additional potential yield of 4.92 tons of dry harvested grain (GKP) per hectare annually. Economically, the Salibu system was more efficient, reducing production costs by up to 25.81% compared to conventional transplanting systems, and achieved an R/C ratio of 2.1, indicating farm feasibility. From an agrotechnological perspective, the Salibu system not only delivers economic benefits but also enhances water-use efficiency, reduces dependence on external inputs, and aligns with sustainable agroecological farming practices. These findings highlight that the Salibu cultivation system can serve as a relevant land intensification strategy to address future challenges of food security and climate change.

Keywords: agrotechnology innovation, Salibu system rice, planting index, farm viability, land intensification

1. INTRODUCTION

From the perspective of agrotechnology, the application of the Salibu system is not only regarded as a strategy to increase land productivity but also as a form of cultivation technology innovation that supports resource-use efficiency, soil and water conservation, and carbon emission reduction. This technology contributes to sustainable agricultural development through an agroecological approach.Tabanan Regency, known as the "Rice Barn" of Bali, holds a strategic position in rice production, as rice is one of its leading commodities. With a planting area of 21,452 ha per season out of the total 79,526 ha of rice fields in Bali (27.0% of the province's total area), rice plays a crucial role in regional agriculture. Nationally, per capita rice consumption in March 2015 was recorded at 98 kilograms per year. This consumption rate is expected to increase in line with population growth.

However, the rapid conversion of agricultural land to other sectors in Tabanan Regency, reaching 122.7 ha per year (BPTP, 2018), is alarming and must be addressed immediately to prevent potential food insecurity. One strategy to be considered is the enhancement of rice production through increasing land productivity by raising the cropping index from 2 to 3 harvests, or even 4 harvests per year if feasible.

Since 2007, an innovative rice cultivation technology known as the SALIBU system has been developed. Salibu rice cultivation is a modification of the traditional ratoon rice system (locally called embong in Bali). Salibu rice is a regrowth of rice plants after the harvested stems are cut down; new shoots emerge from underground nodes and develop new roots, enabling nutrient supply independent of the old stem. This differs from embong rice, where new shoots grow from the uppermost nodes and remain dependent on the old stem for nutrient supply.

The results of Salibu rice cultivation on local varieties have shown promising outcomes. For instance, in the “Lumuik” variety cultivated in Matur Sub-district, Agam Regency, productivity reached 7.2 tons per hectare (Erdiman, 2012). However, research and data on the application of Salibu rice cultivation for new high-yielding varieties remain limited. Therefore, this study seeks to analyze the potential production and farmer income when adopting the Salibu rice cultivation technology. This study aims to provide information on farm business analysis and the potential for increasing rice production through the innovation of Salibu rice cultivation using the 'Pak Tiwi-1' variety.

2. RESEARCH METHODOLOGY

2.1 Research Time and Location

The study was conducted from January to June 2025 on a 0.5-hectare rice field owned by Pekaseh Subak Getar Bang Munggah (Mr. I Nengah Sukarba), located in Mekayu Hamlet, Lalanglinggah Village, West Selemadeg Sub-district, Tabanan Regency, Bali.

2.2 Method

This research was conducted using an applied agrotechnology approach, emphasizing the evaluation of the relationship between cultivation techniques, plant physiology, and the optimization of the growing environment. This approach provides opportunities for the development of precision technology in rice production systems.The improved rice variety studied was “Pak Tiwi-1”, described in the official release (Decree of the Minister of Agriculture No. 2434/kpts/SR.120/7/2012) as follows: number of tillers 25–35 per clump; yield potential 11 tons/ha; field yield achievement 8 tons/ha; plant maturity 105–115 days after transplanting (DAT). In this study, the parent crop was harvested at 95 DAT, with a productivity of 6.17 tons/ha. Planting began on January 8, 2025, and harvesting was carried out on June 13, 2025.

The data collected in this study consisted of primary and secondary data. Primary data were obtained from direct observations and interviews using a structured questionnaire, with a single respondent, namely Pekaseh (head of Subak) Getar Bang Munggah, Mr. I Nengah Sukarba, as the implementer of the Salibu demonstration plot. Secondary data were collected from various literature sources and records from the Tabanan Regency Agricultural Office relevant to this research, which served as supporting information in the preparation of the study results.

There were three (3) variables explored in this study, namely:

1. Production cost requirements in Salibu cultivation.
2. Time requirements and management stages of Salibu rice cultivation.
3. Production yield of Salibu rice cultivation.

2.3 Data Analysis

Data analysis is the process of systematically searching for and organizing data obtained from observations, interviews, field notes, and documentation by categorizing the data and breaking it down into units. The analytical methods used in this study include income analysis, feasibility analysis, and descriptive analysis (Soekartawi, 2002). The analytical methods used in this study are income analysis, feasibility analysis, and descriptive analysis (Soekartawi, 2002), which can be mathematically formulated as follows:

Data analysis is the process of systematically searching for and organizing data obtained from observations, interviews, field notes, and documentation by categorizing the data and breaking it down into units.

1) Income analysis formula:

Pd = TR – TC

TR = Y . Py

TC = FC + VC

Where:

Pd = farm income

TR = total revenue

TC = total cost

FC = fixed cost

VC = variable cost

Y = production obtained from a farm

Py =price of Y

2) Feasibility analysis formula

a = R/C

Note:

a = R/C ratio

R = revenue

C = cost

Decision criteria:

R/C > 1, the farm is profitable (additional benefits/revenues are greater than additional costs).

R/C < 1, the farm is unprofitable (additional costs are greater than additional revenues).

R/C = 1, the farm is break-even (additional revenues are equal to additional costs).

3) Descriptive Analysis

Descriptive analysis is an analysis that systematically and accurately describes the facts and characteristics of a population or activities carried out in a particular field, which forms the research subject, based on data from variables obtained from the studied subject group as well as facts observed in the field (Nasir, 2003).

3. LITERATURE REVIEW

3.1 Income Theory

Farm income is the amount of benefit or return received by farmers, calculated based on the value of production minus all types of expenditures used in production. Therefore, farm income is greatly influenced by the cost of production inputs, maintenance costs, post-harvest handling, processing, distribution, and the production value (Prawirokusumo, 1990). Furthermore, income will increase if production volume and prices rise, provided that costs can be minimized (Ratmi Rosilawati, 2013). According to Prawirokusumo (1990), income can be classified as follows: Gross income – farm income that has not yet been deducted by costs. Net income – income after deducting costs.

Management income – income resulting from the subtraction of total input costs from total output. Production inputs are expenditures incurred during the production process that are transformed into specific goods or final products, including both purchased goods and paid services. Prawirokusumo (1990) further stated that fixed costs are costs that do not change regardless of the level of production (constant costs), meaning they are not affected by the scale of farming. Measured per unit of production, fixed costs will decline over time. Examples of fixed costs in vegetable farming include land, interest on capital, taxes, and equipment. Variable costs, on the other hand, are costs that change depending on the level of production, such as the cost of production inputs, maintenance, harvesting, post-harvest handling, processing, marketing, labor, and operational costs.

According to Hernanto (1994), several factors affect farm income, namely:
(a) farm size, including planting area, crop area, and average crop size;
(b) production level, measured by productivity per hectare and cropping index;
(c) crop choice and combination;
(d) crop enterprise intensity; and
(e) labor efficiency. Furthermore, Baharsjah (1992) emphasized that factors determining farm progress and income improvement include the condition of natural resources, human resources, and institutional or enterprise structures.

3.2 Salibu Rice Cultivation (Modified Ratoon/Embong System)

From an agrotechnological perspective, the Salibu system represents an integrative application combining plant physiology, soil fertility management, and production input efficiency. This technology is aligned with the principles of smart farming, as it optimizes the cropping index with reduced input requirements and has the potential to be developed in conjunction with digital technologies and biofertilizers.

Salibu rice cultivation is a modification of the traditional ratoon rice system (embong). Salibu rice plants regrow after harvested stems are cut, with new shoots emerging from underground nodes. These shoots produce new roots, enabling nutrient uptake independent of the old stems. The new shoots can further divide and tiller, similar to the first planting.

Several advantages of Salibu rice cultivation include:
(a) no need for land preparation, nursery establishment, or transplanting;
(b) reduced labor requirements;
(c) shorter time to harvest (80–90% of the first crop’s duration);
(d) lower irrigation water requirements (Krishnamuthy 1988; Santoso 2014).

The main stages of Salibu rice cultivation are as follows:

a. Initial preparation for Salibu rice cultivation

Harvesting the parent crop (I) should be done at physiological maturity (95% yellow grains) while stems remain green, and the field should be in moist (field capacity) conditions. If the soil is too dry during harvest, irrigation should be applied for 1–2 days, then drained until the soil remains moist.

b. Cutting of rice stubble

Cutting of stubble should be uniform using cutting tools, leaving an average height of 3–5 cm above ground level. Once Salibu shoots emerge, water should be maintained at 2–5 cm depth without submerging the shoots. Stubble cutting should be performed within 7 days after harvest, as delays reduce ratooning ability due to the depletion of food reserves in the stubble (Susilawati, 2011).

c. Gap-filling (Transplanting Salibu tillers)

Gap-filling is conducted at 20–25 days after cutting (DAC) using available Salibu tillers. The method involves splitting tillers with their root systems into 2–3 seedlings, then replanting them in gaps where plants failed to regrow. Using scattered seedlings from harvest residues is not recommended as it may result in uneven crop stands.

d. Fertilization

Fertilization is applied by broadcasting under moist soil conditions. The first application is given at 15–20 DAC with 40% of the recommended dosage, and the second at 30–35 DAC with the remaining 60%. A higher nitrogen dosage (15–20% above the rate used for the parent crop) is recommended to optimize tiller growth stimulation.

e. Weed and Pest Control (Pest and Disease Management)

Weed and pest management is carried out using an Integrated Pest Management (IPM) approach, based on ecological, efficient, and economic principles within the framework of environmentally sustainable agroecosystem management. The same principles as in conventional rice farming apply.

f. Harvest and Productivity

Salibu rice is harvested when 95% of the grains turn yellow while stems remain green. The Salibu system can reduce cropping time by approximately 10–20% compared to conventional transplanting.

4. RESULTS AND DISCUSSION

Pesticide applications during the cropping period were carried out six times, namely: one application of herbicide at 15 days after cutting (DAC) using Ally 10 and Sidamin at the recommended dosage through spraying; three applications of insecticides, namely (1) at 25 DAC using liquid Regent Extra through spraying, (2) at 45 DAC with the same chemical and method, and (3) at 60 DAC with the same chemical and method; and two applications of fungicides, namely (1) at 45 DAC and (2) at 60 DAC using Score, which was applied in combination with insecticide applications.

Fertilizer use amounted to 250 kg, consisting of 100 kg of urea and 150 kg of NPK, applied in two stages: (1) at 10 DAC with 50 kg of urea and 50 kg of NPK, evenly broadcasted; and (2) at 25 DAC with 50 kg of urea and 100 kg of NPK.

4.2. Increasing Rice Production by Improving the Cropping Index (CI)

In general, the Pak Tiwi rice variety has a harvest age of 105–115 days. In this study, the parent crop (I) was harvested at 95 days after transplanting (DAT) to ensure that the stems remained relatively fresh. The preparation time required for transplanted rice cultivation (land tillage and seedling preparation) takes about 20 days, making the total cultivation period 115 days. Meanwhile, Salibu rice cultivation (a modified ratoon system) could already be harvested at 85 days after cutting, which is 30 days earlier than the parent crop (transplanted system).

The primordial (generative) phase plays an important role in relation to vegetative growth, as earlier primordial initiation shortens the vegetative growth phase. In the Salibu system, the primordial phase of Pak Tiwi rice appeared at 47 days after cutting (DAC), which was 15 days earlier than in the parent crop. This result is consistent with the findings of Susilawati et al. (2012), which reported that ratoon rice plants have a shorter growth duration compared to the parent crop, as the stems quickly flower and produce panicles after being cut. A comparison of the production components between the parent Pak Tiwi-1 rice (I) and the Pak Tiwi-1 Salibu system is presented below.

Table 1. Comparison of Production Component Yields of “Pak Tiwi” Rice Variety Cultivation in Subak Getar Bang Munggah.

Component	Transplanting System (Pak Tiwi-1)	Salibu System (Pak Tiwi-1)
Number of productive tillers/clump	25.0 – 36.0 (avg. 28.3)	21.0 – 26.3 (avg. 22.0)
Plant height (cm)	92.1 – 97.6 (avg. 94.6)	67.5 – 84.3 (avg. 79.6)
Number of grains/panicle	164.0 – 185.0 (avg. 171.4)	120.0 – 172.0 (avg. 140.4)
Number of filled grains/panicle	155.0 – 178.0 (avg. 163.2)	117.0 – 168.0 (avg. 133.0)
Number of empty grains/panicle	7.0 – 10.0 (avg. 8.2)	6.0 – 9.0 (avg. 7.4)
Yield sample (kg/plot)	5.14	4.10
Productivity analysis (ton/ha)	6.17	4.92
Production (ton/0.5 ha)	3.09	2.46

Source: primary data, 2025

From the data in Table 1 above, the production yield of the Salibu system is lower than that of the main crop, with a difference of 2.46 tons of harvested dry grain (GKP) or 20.26%. Among the three production component variables observed in the Salibu crop (number of productive tillers, plant height, and number of grains per panicle), all showed relatively lower results compared to the main crop. This yield reduction occurred because Salibu rice plants produce fewer tillers than the main crop, lacking sufficient assimilate reserves for tiller growth. The smaller number of tillers consequently reduced the number of panicles per clump. In addition to producing fewer panicles, the panicles of Salibu rice were also shorter compared to those of the main crop.

In Salibu cultivation, the harvest age of Salibu rice is shorter than that of the main crop. However, the grain filling rate in ratoon rice is slower compared to the main crop, resulting in a lower percentage of filled grains and a reduced 1000-

grain weight. These factors contribute to a decrease in the harvest index and grain yield of Salibu rice. Nevertheless, due to the shorter cultivation duration and the absence of land preparation, seedling, and transplanting processes, Salibu rice cultivation can save up to 30 days (26.09%). The detailed stages and duration of each planting system are presented below.

4.3. Farm Business Analysis

Farm business analysis is the process of recording and calculating the total costs (expenditures) required in a production process, along with the revenues obtained or expected, as well as the profit and feasibility of the enterprise. The production output of lowland rice farming using the Salibu system in Subak Getar Bang Munggah, Selemadeg Barat District, Tabanan Regency, with a cultivated area of 0.5 ha during this planting season, amounted to 2.46 tons of dry harvested grain (GKP), with a production cost of IDR 5,030,000. The comparison of yields between the Salibu system and the transplanting system was 2.46 tons of dry harvested grain (GKP) versus 3.09 tons of GKP. The reduction in production yield of Salibu rice cultivation, which reached 19.35%, did not significantly affect farm feasibility. The results of the feasibility analysis, using the comparison between revenue and production costs (R/C ratio), showed a value of 2.1 (Salibu) compared to 2.0 (transplanting), indicating a difference of 0.1. This is possible in Salibu rice cultivation because it no longer requires land preparation, seedling, and transplanting, thus production costs are significantly lower than in the transplanting system. The production results of Salibu rice cultivation with an area of 0.5 ha in Subak Getar Bang Munggah, which amounted to 2.46 tons of GKP, saved production costs by IDR 1,750,000 or 25.81%. A further analysis of cost allocation showed that Salibu cultivation saved 71.59% of expenses in land preparation and planting activities, and 14.52% in input costs. When converted into monetary value, where at that time the field price of unhusked rice (GKP) reached IDR 4,300,000 per ton, Salibu rice cultivation on 0.5 ha provided an additional profit of IDR 5,548,000 per planting season.

5. CONCLUSION

The application of Salibu (modified ratoon) rice cultivation system in Subak Getar Bang Munggah, Selemadeg Barat District, Tabanan Regency, Bali, demonstrated that although the production yield was relatively lower compared to the conventional transplanting system (2.46 tons GKP vs. 3.09 tons GKP, or a decrease of 19.35%), the system remained feasible and profitable. This feasibility is supported by the significant reduction in production costs due to the elimination of land preparation, seedling, and transplanting processes. The Salibu system provided savings of up to 25.81% in production costs, with the largest savings in land preparation and planting activities (71.59%), as well as in agricultural inputs (14.52%).

Moreover, the shorter growth duration of Salibu rice (approximately 30 days faster) allows the potential increase in the Cropping Index (CI) from two planting seasons per year to three. This increases land-use efficiency and enhances farmer income.

Therefore, Salibu rice cultivation can be considered a viable technological innovation to improve planting intensity, reduce production costs, and increase the profitability of rice farming in Bali.

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CULTURALLY RESPONSIVE EDUCATIONAL EVALUTION AS A MULTIDICIPLINARY INNOVATION FOR ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

Ni Putu Ika Putri Sujianti[1)], Eldiyanto Tadu Niga[2)], and Antonius Ndari[3)]

[1)] Dwijendra University
Ikaputri600@gmail.com
[2)] Dwijendra University
tanuniga@gmail.com
[3)] Dwijendra University
Atenkatoda323@gmail.com

ABSTRACT

Educational evaluation plays a strategic role in ensuring the quality, equity, and sustainability of learning outcomes, particularly in the pursuit of Sustainable Development Goal 4 (Quality Education). Traditional evaluation approaches often rely on standardized models that fail to recognize cultural diversity and contextual realities. This paper discusses culturally-responsive educational evaluation as a multidisciplinary innovation that integrates pedagogy, psychology, sociology, cultural studies, technology, and policy analysis. The discussion emphasizes that embedding cultural values and local wisdom into evaluation processes ensures inclusivity, character development, and sustainability. Examples from Indonesian contexts, such as gotong royong and tri hita karana, illustrate how local culture can be operationalized in evaluation practices. Furthermore, the integration of digital technologies and interdisciplinary approaches is shown to enhance transparency, adaptability, and fairness. The paper concludes that culturally-responsive and multidisciplinary evaluation is essential not only for achieving SDG 4 but also for contributing to broader goals such as equity, climate action, and social justice.

Keywords: *Educational evaluation, culturally-responsive, multidisciplinary innovation, sustainable development goals, local wisdom.*

1. INTRODUCTION

Education has long been acknowledged as the foundation of sustainable development (UNESCO, 2020). The fourth Sustainable Development Goal (SDG 4) explicitly emphasizes the need to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2015). Achieving this ambitious target requires not only effective teaching and curriculum design but also robust systems of educational evaluation.

Evaluation serves as both a mirror and a compass. It reflects the effectiveness of learning processes while guiding improvements for future practices (Scriven, 2013). However, evaluation that merely focuses on standardized test scores risks reducing education to mechanical measurement, thereby overlooking essential aspects of holistic human development, including cultural identity, social responsibility, and moral integrity (Brookhart, 2015).

In contexts such as Indonesia and other culturally diverse nations, education is inseparable from cultural heritage and local wisdom (Tilaar, 2015). Integrating culture into evaluation is not only a pedagogical choice but also a moral imperative to respect the identities and contexts of learners. Furthermore, the challenges of

the 21st century—including globalization, digital transformation, and climate change—demand that evaluation systems incorporate multidisciplinary innovations that combine educational theory, psychology, sociology, law, and technology (Siemens & Long, 2011).

This paper explores how culturally-responsive educational evaluation can serve as a multidisciplinary innovation for achieving the SDGs. It discusses the theoretical underpinnings, practical applications, and implications for policy and practice.

2. RESEARCH METODOLOGY

This study adopts a qualitative descriptive approach to explore how culturally-responsive educational evaluation (CRE) serves as a multidisciplinary innovation for achieving the Sustainable Development Goals (SDGs), particularly SDG 4 on quality education. A qualitative design was chosen because it allows for an in-depth understanding of educational, cultural, and contextual dimensions that cannot be captured through quantitative methods (Creswell & Poth, 2018). The focus of the research lies in analyzing how cultural values and local wisdom—such as gotong royong and tri hita karana—can be integrated into educational evaluation frameworks to promote inclusivity and sustainability.

Data were obtained from both primary and secondary sources. Primary sources included official reports and global policy documents from organizations such as UNESCO (2020), OECD (2019), and the United Nations (2015) that outline frameworks for quality and equitable education. Secondary sources consisted of scholarly books and peer-reviewed journals on culturally-responsive pedagogy, educational assessment, and multicultural education (Gay, 2018; Banks, 2016; Nitko & Brookhart, 2014). These sources were selected to provide a comprehensive perspective that bridges theory, policy, and practice.

The data analysis utilized document analysis and thematic interpretation following the framework proposed by Bowen (2009) and Braun & Clarke (2006). The process involved coding recurring themes such as cultural integration, multidisciplinary collaboration, and technological innovation. Triangulation of multiple references ensured the credibility of interpretations, while consistency with established models of evaluation (Stufflebeam & Shinkfield, 2007) strengthened the reliability of findings. The final synthesis offers an integrative understanding of how culturally-responsive evaluation contributes to educational transformation within the broader context of sustainable development.

3. RELATED RESEARCH/LITERATUR REVIEW

Educational evaluation refers to systematic processes of collecting, analyzing, and interpreting data to make decisions about learning and teaching (Nitko & Brookhart, 2014). Its functions include diagnosis, placement, monitoring, certification, and accountability (Stufflebeam & Shinkfield, 2007). While traditionally associated with tests and grades, modern evaluation emphasizes formative feedback, authentic assessment, and learner-centered approaches.

3.1 Culturally-Responsive Evaluation

Culturally-responsive evaluation (CRE) emerged as a response to the limitations of standardized testing in diverse educational contexts. Gay (2018) defines it as evaluation that acknowledges cultural diversity and actively incorporates cultural values, traditions, and social realities into the assessment process. Banks (2016) further argues that education must integrate multicultural perspectives to promote equity and justice.

In practice, CRE involves using culturally-relevant indicators, engaging community stakeholders, and valuing local knowledge systems. It aligns well with the principles of inclusivity and sustainability, as it ensures that evaluation does not marginalize learners from minority or indigenous groups.

3.2 Multidisciplinary Approaches to Evaluation

Evaluation is inherently multidisciplinary. Psychology provides insights into cognitive and affective development, sociology examines group dynamics and social norms, law ensures compliance with regulations, while technology offers innovative platforms for data collection and analysis (Shepard, 2000). Integrating these disciplines creates a holistic framework that enhances the validity and utility of evaluation outcomes.

3.3 Evaluation and the Sustainable Development Goals

The SDGs call for quality education that is equitable, inclusive, and relevant to the needs of society. Evaluation aligned with SDGs must therefore go beyond academic outcomes to include competencies such as critical thinking, environmental awareness, social responsibility, and intercultural understanding (OECD, 2019).

4. RESULTS AND DISCUSSION

The findings reveal that culturally-responsive educational evaluation (CRE) operates through three interrelated dimensions: cultural integration, multidisciplinary collaboration, and technological innovation. Integrating local wisdom such as gotong royong and tri hita karana into the evaluation process promotes moral values, social responsibility, and ecological awareness, aligning education with the principles of sustainability (Sudaryanti, 2020). Evidence from Indonesia, Japan, and Thailand further demonstrates that embedding cultural indicators in educational evaluation enhances learners' engagement and strengthens their connection to community and environment (Ichihara, 2019; Kanchanawongpaisan, 2021). Moreover, the application of digital tools, such as learning analytics and artificial intelligence, supports adaptive and authentic assessments while maintaining cultural relevance and inclusivity (Siemens & Long, 2011). Collectively, these practices contribute to the achievement of SDG 4—ensuring inclusive and equitable quality education—and extend their impact toward SDG 10 (Reduced Inequalities) and SDG 13 (Climate Action).

The discussion highlights that evaluation is not merely a technical measurement process but a transformative instrument that directs the values and outcomes of education. When evaluation integrates cultural values, multidisciplinary insights, and technology, it cultivates holistic learners who are ethically grounded, socially engaged, and environmentally conscious (Anderson, 2017; Shepard, 2000). Psychology contributes to understanding socio-emotional learning, sociology connects education to social equity, law and policy ensure fairness, while technology enables broader accessibility. However, digital evaluation must be guided by ethical principles to prevent bias and exclusion, ensuring that technological innovation complements rather than replaces cultural and humanistic dimensions of learning. In this way, culturally-responsive and multidisciplinary evaluation becomes a pathway to achieving sustainable and transformative education systems.

5. CONCLUSION

Culturally-responsive educational evaluation represents a powerful innovation for achieving the Sustainable Development Goals. By integrating cultural values, multidisciplinary approaches, and technological innovations, evaluation systems

can transcend the limitations of standardized testing to promote inclusivity, sustainability, and holistic human development.

Such evaluation not only ensures the achievement of SDG 4 but also contributes to broader global objectives, including equity, climate action, and social justice. In culturally diverse nations such as Indonesia, embedding local wisdom into evaluation is not merely an academic exercise but a vital strategy for aligning education with the aspirations of sustainable development.

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EVALUATING THE ANTIFUNGAL ACTIVITY OF AGNIASTRAM (3G'S) ON *ASPERGILLUS NIGER*

Dr. G.A Asif Jamal
Associate Professor
Department of Botany
Justice Basheer Ahmed Sayeed College for Women (Autonomous)
Affiliated to the University of Madras.
Chennai-600 0168, Tamil Nadu, India
E mail id : drasifjamalga@gmail.com

ABSTRACT

In today's world, organic agricultural techniques have gained significant importance. Plants remain the primary source of fulfilling fundamental human needs, including food, shelter, and clothing. Despite advancements in technology, plants continue to play a vital role in ensuring healthy living. The use of bio-pesticides and bio-fertilizers has become increasingly prevalent in agriculture. Research is rapidly advancing in the development of bio-pesticides to combat plant diseases caused by pathogens such as fungi, bacteria, viruses, and nematodes. In this study an experimental work has been initiated to check the Bio pesticides and its control over particular fungi, *Aspergillus niger*. To check the Agniastram a biopesticide which is also a bio fertilizers such as 3G'S (*Zingiberofficinale,Alliumsativum,Capsicum annum*) was course applied into the well grown *Aspergillus niger* on a petridish in a invitro condition and to check the 3G's efficicy. Phytochemical study was analysed and PDA nutrients was prepared to grow the fungal innoculam.
Key words: 3G's, Aspergillus niger, Biopesticides, biofertilizer, Agniastram.

1. INTRODUCTION

With the growing awareness of environmental sustainability and human health, organic agricultural techniques have emerged as a vital component of modern farming practices. As the global population continues to rise, ensuring food security while minimizing the ecological footprint of agricultural activities has become a pressing concern. In this context, the use of bio-pesticides and bio-fertilizers has gained significant interaction, offering a promising alternative to chemical-based solutions. This study aims to contribute to the growing body of research on bio-pesticides, focusing on the efficacy of a novel bio-formulation, Agniastram, in controlling Aspergillus niger, a common fungal pathogen. Through an in vitro experiment, this study evaluates the effectiveness of Agniastram, a bio-pesticide composed of Zingiber officinale, Allium sativum, and Capsicum annuum (3G's), in inhibiting the growth of Aspergillus niger, while also exploring the phytochemical properties of the bio-formulation.

2. MATERIALS AND METHODS

The experimental study was carried out in the Tissue Culture laboratory of Botany department at Justice Basheer Ahmed Sayeed College for Women (Autonomous) Teynampet, Chennai,600 018, Tamil Nadu, India.

The following study was carried out, such as

- Prepartion of the 3G's.
- Preparion of the glassware for the inoculation.
- Preparion of PDA Medium for Fungal culture,
- Prepration of the fungal culure.
- Experimental Study.

A piolet study as well as field study was done to find the 3G's percentage for optimization.

Out of which a 50% solution of 3G's was observed as a standard to control the fungal growth.

The study as been designed in the following objectives.

OBJECTIVES

- To determine the inhibitory effect of Agniastram on Aspergillus niger growth in vitro.
- To compare the effectiveness of Agniastram with conventional methods of fungal control.
- To analyze the phytochemical constituents of the 3G's bio-formulation and their potential role.In fungal inhibition.

PREPARATION OF BIO PESTICIDES 3G's (Ginger, Garlic, Green chilly)

3G'S is prepared with the Indian traditional methodology .It acts as a manure for the soil and plants and it can remove all kind of pests ,insects and also increase the richness of the soil. Moreover it acts as an enricher for the greenery of the plant, can be use for all agricultural crops. The three direct constituents are Ginger, Garlic and Green Chilly. These were grained and stock solution was prepared and filtered and kept aside in a container. Later after 48 hours 50% solution was prepared from the stock solution.

PREPARATION OF 3G'S

(a) : MATERIALS REQUIRED

S.NO	MATERIALS	QUANTITY
1	Ginger	250g
2	Garlic	250g
3	Green chilly	500g

TABEL 1: Showing on 3G's preparation

(b): PREPARATION

Initially the materials such as ginger, garlic, green chilly are washed thoroughly with normal tap water and then with distilled water. In 1:1:2 ratio such as 250 gms of Ginger and Garlic and 500 gms of Green chillies. Then they were grind into fine paste seperately and then was filtered with the help of sterile filter and was kept in a glass container left for 48 hours to settle. From the stock solution 50% solution was prepared by using distilled water.

PREPARATION OF GLASSWARES FOR INOCULATION:

It was ensured for a contamination-free environment, in following steps:

1. Clean the glassware: Wash Petri dishes, test tubes, pipettes, and other equipment with detergent and warm water, then rinse thoroughly with distilled water.

2. Sterilize the glassware: Use an autoclave (121°C/250°F, 15-20 minutes) or dry heat sterilization (160°C/320°F, 2 hours) to eliminate any microorganisms.

3. Dry the glassware: Place the sterilized glassware in a hot air oven or under a laminar flow hood to dry, preventing any contamination.

PREPARTION OF PDA MEDIUM FOR FUNGAL CULTURE,

Required Materials:

- 200g potatoes
- 20g dextrose
- 15g agar
- 1L distilled water
- Autoclave
- Petri dishes
- Inoculation loop

Preparation Steps:

1. Prepare Potato Infusion: Boil 200g of chopped potatoes in 1L distilled water for 30 minutes. Strain the mixture through a fine-mesh sieve.

2. Mix with Dextrose and Agar: Add 20g dextrose and 15g agar to the potato infusion. It was heated gently, stirring until the agar dissolves.

3. Optional pH Adjustment: If needed, adjust the pH to 5.6 ± 0.2 using NaOH.

4. Sterilization: Autoclave the medium at 121°C (250°F) for 15-20 minutes.

5. **Dispense into Petri Dishes:** Cool the medium to 45-50°C (113-122°F) and pour into sterile Petri dishes.

6. **Solidification and Storage:** Allow the medium to solidify at room temperature, then store the prepared PDA plates at 4°C (39°F).

Two petriplates were prepared one for Control and other for Treatment.

PREPARATION OF FUNGAL CULTURE:

To prepare a healthy fungal culture, follow these steps:

1. Acquire a pure culture: Obtain a pure Aspergillus niger culture from a reputable source, such as a culture collection was from the mycology laboratory.

2. Prepare the PDA medium: To prepare the PDA medium the fungal culture was inoculated.

3. Inoculate the medium: By using a sterile inoculation loop or pipette to introduce a small amount of Aspergillus niger spores or mycelium onto the PDA medium.

4. Incubate the culture: Later the petriplates was placed the inoculated PDA plates in a controlled environment with a suitable temperature (25-30°C) and humidity level to promote fungal growth.

5. Maintain the culture: Regularly subculture the fungal strain to ensure its viability and prevent contamination.

PHYTOCHEMICAL ANALYSIS OF 3G'S SOLUTION.

Phytochemical analysis was done by following standard methods for the following compoundssuchas carbohydrate,tannins,saponins,flavonoids,alkaloids,quinoles,terpenoids,phenols,coumarin,steroid and triterpinoids and the following result was obtained.

In carbohydrate,flavonoids,terpenoids,phenols, were shown positive results and it indicates the presence of the nutrients.(Tabel 2)

Table 2: SHOWING 3G'S PHYTOCHEMICAL QUALITATIVE ANALYSIS

SI. NO	PHYTONUTRIENTS	PRESENCE	ABSENCE
1	CARBOHYDRATES	+	
2	TANNINS		-
3	SAPONIN		-
4	FLAVANOIDS	+	
5	ALKALOIDS		-
6	QUINOLES	+	
7	GLYCOSIDE		-
8	TERPENOIDS	+	
9	PHENOLS	+	
10	STEROID		-

"+" Indicates the presence of phyto nutrients and

"-" Indicates the absence of phyto nutrients

EXPERIMENTAL STUDY.

The fungal culture was fully grown in two pertidishes. One was considered as Control and other was subjected to the treatement of 3G's 50% solution.The study was done for one fortnight by giving 5 ml of 3G's 50% solutions in 5 days intervals.

3. RESULTS AND DISCUSSION

The spraying of 3G's has controlled the treated petridish from being infected. This study is a preliminary study and this work is poiner. Similar work

on Kunapajala “importance of *kunapajala*(traditional liquid organic manure) of *vrikshayurveda*in medicinal plant cultivation” by Savitha, D. B*etal*.,(2012). *Kunapajala* by virtue of its behaviour as plant growth regulator is readily available as a simple compost manure showing its potency in

increasing the leaf area, higher yield of flowers and fruits as well as phyto-constituents. It also seems that *Kunapajala* as some plant growth regulatory actions through which it enhances the overall growth of plants. Being a biofertilizer it is a more suitable form and can be beneficial in growth of medicinal plants with probably minimal toxic effects on human body when compared to chemical fertilizer.

The phytochemical parameters of 3G’s(Ginger,garlic,green chilly) was the pioletstudy.This study showed the presence of phytonutrients such as carbohydrates, flavonoids, quinoles, terpenoids, phenols, coumarins ,phytosteroid, triterpinoids.

4. CONCULSION

This study demonstrates the efficacy of a 50% 3G's solution in controlling Aspergillus fungi, highlighting its potential as a potent biopesticide. The 3G's formulation shows promise for promoting effective crop growth while providing a valuable economic benefit, making it a viable option for sustainable agricultural practices

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THE ROLE OF THE NATIONAL LAND AGENCY OF GIANYAR REGENCY IN OPTIMIZING THE OWNERSHIP OF ELECTRONIC LAND CERTIFICATES AS AN EFFORT TO PREVENT DOUBLE CERTIFICATES

Sang Ayu Made Ary Kusumawardhani[1)], Made Nani Supartini[2)]
[1),2)] Dwijendra University Faculty of Law
e-mail : arykusumawardhani21@gmail.com

ABSTRACT

The overlap of land certificates involves various legal aspects, including Law Number 5 of 1960 concerning the Basic Agrarian Principles (UUPA), Government Regulation Number 24 of 1997 concerning Land Registration, as well as the procedures applied in the Prona program. The purpose of this research is to analyze the role of the National Land Agency of Gianyar Regency in optimizing the ownership of electronic land certificates as a strategic measure to prevent double certificates.The type of research used in this study is empirical legal research. The research location is the National Land Agency Office of Gianyar Regency. The results of this study show that the implementation of electronic land certificates requires a longer transition period because the public has not yet fully trusted the existence of these electronic certificates, which also poses a challenge. The conclusion of this study is that the role of the National Land Agency of Gianyar Regency in optimizing the ownership of electronic certificates is very crucial in efforts to prevent double certificates. Through digital transformation, the Gianyar Land Agency encourages the integration of land data into a verified and transparent electronic system. The challenges faced by the National Land Agency of Gianyar Regency in optimizing electronic certificate ownership include uneven technological infrastructure, limited human resources who understand digital systems, and the low level of public literacy regarding the use of electronic documents. In addition, there are still technical obstacles such as overlapping old land data and challenges related to administrative culture.

Keywords: prevention, double certificates, electronic certificates

1. INTRODUCTION

Land issues in Indonesia remain complex and multidimensional, one of which is the overlap of land rights or the occurrence of duplicate land certificates. Duplicate certificates not only harm the legitimate rights holders but also create legal uncertainty and hinder development processes that require certainty of land status. Therefore, a modern, transparent, and accountable land administration system is needed to minimize the potential for agrarian conflicts.

As part of the digital transformation in the agrarian sector, the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) has initiated the issuance of electronic land certificates (e-certificates) to replace physical certificates. Electronic certificates are believed to improve the efficiency of land services, reduce document forgery practices, and most importantly, prevent the occurrence of duplicate certificates through an integrated and digitally-based data management system.

Gianyar Regency, as one of the strategic areas in Bali Province with a relatively high level of land dynamics, faces its own challenges in organizing land administration. Therefore, optimizing the issuance and utilization of electronic land certificates in Gianyar is a crucial step in preventing land conflicts and improving public services. One of the identified issues at the Gianyar Land Office (BPN Gianyar) is related to Ownership Certificates, which serve as valid and legally

recognized proof of land ownership in Indonesia. However, cases of overlapping or duplicate certificates frequently arise, leading to legal disputes in the land sector. One example is the case involving SHM Number 177 under the name of I Made Dapir, located in Keramas Village, covering an area of 1,960 m². This certificate was issued on October 7, 1981.

At one point, the owner of SHM 177 used the land as collateral by registering a mortgage at a Rural Credit Bank (Bank Perkreditan Rakyat) as part of a credit facility. The mortgage registration process typically involves verifying the validity of the land certificate at the National Land Agency (BPN) to ensure there are no legal issues concerning the land being used as collateral. However, during a validity check in early 2024, it was discovered that SHM 177 had a serious issue in the form of an overlap with another land certificate. The overlapping certificate is SHM Number 00755, located in Medahan Village. SHM 00755 covers an area of 2,714 m² and is registered under the names of I Wayan Rabih, I Ketut Merus, and I Ketut Rabuh. This certificate was issued through the National Agrarian Program (PRONA) on September 15, 2010. This case has raised a number of legal and administrative concerns.

Geographically, the land locations described in both certificates appear to partially or entirely overlap. The existence of overlapping land certificates raises questions about the validity of each certificate, whether one was issued through improper procedures, or whether there were administrative errors during the land registration process. This issue also has direct implications for the involved parties. The owner of SHM 177 faces uncertainty in using the land, whether for personal or commercial purposes. On the other hand, the bank that accepted the land as loan collateral also suffers losses due to the uncertain value of the collateral. Meanwhile, the owners of SHM 00755 also face the risk of losing their rights to land they believed to be legally theirs based on a certificate issued under a government program.

The problems to be discussed in this study are as follows :

1. What is the role of the National Land Agency of Gianyar Regency in maximizing the ownership of electronic land certificates as an effort to prevent duplicate certificates?
2. What are the obstacles faced by the National Land Agency of Gianyar Regency in maximizing the ownership of electronic land certificates?

2. RESEARCH METODOLOGY

The research method used is an empirical type of research that emphasizes field research or the process of discovering legal rules, legal principles, and legal opinions to address the issues faced, focusing on the behavior of the legal community (law in action). This requires primary data as the main data, alongside secondary data in the form of legal materials from the literature (Arka, 2021, p.508).

Empirical legal research is not only directed at the community but also at law enforcers and the facilities expected to support the implementation of the regulations. This empirical approach is a method of observation conducted through human senses, so the method used can be known and observed by others. The location of this research is at the National Land Agency of Gianyar Regency.

3. RELATED RESEARCH/LITERATUR REVIEW

The electronic land certificate is an innovation introduced by the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) aimed at improving the security, efficiency, and accuracy of land data. Based on Ministerial Regulation of ATR/BPN No. 3 of 2023 concerning the Issuance of Electronic Documents, electronic certificates possess the same legal force as physical

certificates, but they utilize a digital-based storage and verification system, making them more difficult to forge or duplicate.

The issue of duplicate land certificates in Indonesia generally arises from overlapping data, administrative irregularities, and weaknesses in manual filing systems. Through the digitalization of land data, all information regarding land parcels can be integrated into a national database, ensuring that each plot of land has only one verified digital identity. This integration forms the main foundation for preventing the occurrence of duplicate certificates.

The National Land Agency (BPN) of Gianyar Regency plays a crucial role in implementing this policy at the regional level. Its roles include: (1) public outreach regarding the benefits and mechanisms of electronic land certificates; (2) data updating and digitization of old land archives; (3) field verification to ensure the validity of land parcel data; and (4) coordination with the central government in the implementation of the electronic land system.

Through the implementation of these functions, BPN Gianyar is expected to maximize the ownership of electronic land certificates within its jurisdiction and reduce the risk of issuing duplicate certificates, which has long been one of the main sources of land disputes. The success of this program largely depends on the readiness of technological infrastructure, the quality of human resources, and the active participation of the community in the process of land data digitalization.

4. RESULTS AND DISCUSSION

The Role of the National Land Agency of Gianyar Regency in Maximizing the Ownership of Electronic Land Certificates as an Effort to Prevent Duplicate Certificates.

The National Land Agency (BPN) is a government institution authorized to administer land registration in Indonesia. Through the land digitalization policy launched by the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), BPN plays an important role in implementing electronic land certificates (e-certificates) as part of the modernization of public services in the land sector.

The electronic certificate is regulated under Ministerial Regulation of ATR/BPN Number 3 of 2023 concerning the Issuance of Electronic Documents. This regulation affirms that electronic certificates have the same legal validity as physical certificates, but are supported by digital-based systems for storage, verification, and security. The system aims to improve data reliability, prevent forgery, and avoid the occurrence of duplicate certificates, a condition in which one parcel of land is registered under more than one ownership certificate.

At the regional level, the BPN of Gianyar Regency holds a strategic role in maximizing the ownership of electronic certificates. Its roles include :

1. Conducting public outreach and education on the benefits and procedures of using electronic certificates.
2. Updating and digitizing land archives, so that physical land data can be integrated into the national electronic system.
3. Carrying out field verification and data validation to ensure the authenticity of land parcels before electronic certificates are issued.
4. Coordinating with central and regional institutions to strengthen the implementation of technology-based land administration systems.

The success of BPN Gianyar's role in maximizing electronic land certificate ownership is largely determined by the institution's internal capacity. Therefore, training and strengthening the competence of land affairs human resources are crucial aspects to ensure that the implementation of electronic certificates runs according to established standards. BPN officers must possess skills in land information system management, digital mapping, and the secure and verified processing of electronic documents. These capacities serve as vital assets to

maintain the integrity of public services while preventing potential fraud within the digital system.

Amid all these strategic efforts, it cannot be ignored that BPN Gianyar also faces social and cultural challenges in the transformation process toward electronic certification. Some members of the community still tend to distrust digital documents that cannot be physically held. Therefore, a cultural approach and persuasive communication are key factors in increasing public participation in electronic land services. BPN Gianyar acts as the implementing authority responsible for translating national regulations into the local context of Gianyar Regency. Ensuring alignment between national regulations and local implementation is essential to prevent legal gaps that could otherwise be exploited by irresponsible parties.

Through the implementation of these roles, the BPN of Gianyar Regency is expected to increase public awareness and participation in the ownership of electronic land certificates and reduce the potential emergence of duplicate certificates. Furthermore, the success of this program depends on the support of technological infrastructure, the improvement of human resource competence, and strong synergy among relevant institutions in the field of land administration.

The role of the National Land Agency (BPN) of Gianyar Regency in maximizing the ownership of electronic land certificates represents an actualization of the principle of public service that is adaptive to the development of information technology. By promoting digital transformation in the land sector, BPN Gianyar not only improves the quality of its services but also performs a preventive function against potential agrarian conflicts such as duplicate certificates. This role requires institutional commitment, service innovation, and a strong dedication to transparency and accountability.

Challenges Faced by the National Land Agency of Gianyar Regency in Maximizing the Ownership of Electronic Land Certificates.

In its efforts to implement and maximize the ownership of electronic land certificates (e-certificates) as part of the land digitalization program, the National Land Agency (BPN) of Gianyar Regency faces several challenges, both technical, human resource-related, and social in nature.

1. Limited Information Technology Infrastructure

   One of the main obstacles is the uneven availability of information technology facilities, such as internet networks, computer equipment, and adequate data storage systems. This condition hinders the process of archive digitization, data uploading, and the optimal issuance of electronic land certificates.
2. Quality and Quantity of Human Resources

   The transformation toward an electronic system requires staff with strong competencies in information technology. However, there are still limitations in the technical capabilities of employees in operating digital-based land administration applications, as well as a lack of continuous and intensive training programs.
3. Integration and Validation of Old Land Data

   Many historical land records are still in physical form and have not yet been fully digitized. The process of data updating requires significant time, effort, and accuracy to avoid input errors or overlapping information, which could potentially create new cases of duplicate certificates.
4. Lack of Public Understanding and Awareness

   Some members of the public do not yet understand the benefits and mechanisms of electronic certificates. Doubts remain regarding the legal validity of digital documents and concerns about data security, resulting in resistance to transitioning from physical to electronic certificates.
5. Suboptimal Interagency Coordination

   The implementation of the electronic certificate system requires synergy between the central government, local governments, and supporting

institutions such as notaries, Land Deed Officials (PPAT), and financial institutions. Lack of coordination among these parties can slow down the process of verification and validation of land data integration.

6. Regulatory and Legal Adjustment Issues

   Although a legal basis has been established through Ministerial Regulation of ATR/BPN No. 3 of 2023, its application in the field still encounters technical and interpretative obstacles, particularly concerning legal verification mechanisms, electronic signatures, and system interoperability among institutions.

Many notaries and Land Deed Officials (PPAT) are not yet fully prepared for the implementation of the electronic land certificate system. There remains a degree of rigidity in the transition from manual to digital systems, particularly in data entry and document verification processes. On the other hand, financial institutions still question the legal validity of electronic certificates as collateral objects for credit. As a result, land transactions such as buying and selling, grants, or transfers of ownership involving electronic certificates have been hindered, as these documents are not yet widely accepted by other institutions involved in such transactions.

To overcome these challenges, an integrated strategy is required. First, the BPN of Gianyar Regency needs to enhance public education through digital land literacy programs involving traditional leaders, village officials, and community groups. Second, the internal capacity of BPN employees should be strengthened through regular technical and managerial training to ensure that staff can keep pace with developments in digital systems. Third, there is a need for strengthening local regulations that accommodate the unique characteristics of customary land and establish contextual mechanisms for land certificate conversion.

In general, the BPN of Gianyar Regency has made efforts to implement the digitalization of land certificates. However, the success of the electronic certificate program is highly dependent on the readiness of technological infrastructure, the competence of human resources, public support, and inter-agency synergy. Strategic measures such as enhancing employee training, strengthening digital infrastructure, and conducting continuous public outreach are required to effectively achieve the goal of preventing duplicate certificates.

5. CONCLUSION

Based on the description and discussion that the author has described above, the following conclusions can be drawn :

1. The role of the National Land Agency (BPN) of Gianyar Regency in maximizing the ownership of electronic land certificates is crucial in efforts to prevent duplicate certificates. Through digital transformation, BPN Gianyar promotes the integration of land data into a verified and transparent electronic system, thereby narrowing the possibility of ownership duplication. With the use of an electronic-based land information system, the verification process of land rights becomes more accurate, ownership history can be easily traced, and land data can be legally and securely accessed by owners and relevant institutions.
2. The challenges faced by the National Land Agency (BPN) of Gianyar Regency in maximizing the ownership of electronic certificates include uneven technological infrastructure, limited human resources capable of operating digital systems, and low public literacy regarding the use of electronic documents. In addition, there are still technical obstacles such as overlapping old land data and administrative culture challenges that remain accustomed to physical documents. Therefore, system improvement, intensive training, and educational approaches to the community are key to overcoming these obstacles.

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LITERATURE STUDY: AESTHETIC VALUES IN THE TRADITIONAL GAME OF *MACEPETAN*

Ida Ayu Putu Purnami [1)], I Wayan Rasna [2)], I Nengah Martha [3)], I Ketut Paramartha [4)]

[1] Doctorate in Language Education, Postgraduate Program, Ganesha University of Education, Singaraja, Bali, Indonesia
putu.purnami@undiksha.ac.id
[2] Doctorate in Language Education, Postgraduate Program, Ganesha University of Education, Singaraja, Bali, Indonesia
wayan.rasna@undiksha.ac.id
[3] Doctorate in Language Education, Postgraduate Program, Ganesha University of Education, Singaraja, Bali, Indonesia
nengah.martha@undiksha.ac.id
[4] Doctorate in Language Education, Postgraduate Program, Ganesha University of Education, Singaraja, Bali, Indonesia
ketut.paramarta@undiksha.ac.id

ABSTRACT

Bali is renowned for its ancestral linguistic and cultural heritage, one of which is traditional games that are gradually being abandoned. Traditional games are not merely a form of entertainment but also carry noble values passed down from generation to generation. One such example is the traditional game of Macepetan*, a cultural heritage rich in noble values and aesthetic appeal, yet its existence faces challenges in the modern era. This study was conducted to examine the aesthetic values contained in the* Macepetan *game.* Macepetan*, derived from the word* "cepet" *meaning agile, is a game that requires agility, speed, and cooperation among players. The method used is a qualitative approach with literature review, including text analysis from the documentation "Traditional Games of Bali" (1986) and other relevant sources. The findings reveal that* Macepetan *not only serves as a form of entertainment but also embodies noble values such as sportsmanship, cooperation, and fairness. This game reflects important aesthetic, social, and moral aspects in shaping children's character. Thus, this study is expected to enrich the understanding of the aesthetic values of traditional games as an integral part of the nation's cultural identity.*

Keywords: *Literature review, Aesthetic Values, Traditional Games, Macepetan*

1. INTRODUCTION

Bali, as an island rich in cultural heritage, has various forms of traditional games that reflect the noble values of the local community. Traditional games are a form of intangible cultural heritage that not only serve as a means of entertainment, but also embody noble values that shape the character and identity of the community [1]. One of Bali's traditional games that is still played today is *Macepetan*, a game that requires agility, speed, and cooperation between players. The word *Macepetan* itself comes from the Balinese root word *cepet*, which means agile or quick, emphasizing.

The nature of the game, which requires speed of movement and quick thinking [2]. The game of *Macepetan* is generally played by two groups of children of equal strength, both in terms of numbers and physical ability. In practice, this game not only trains the body, but also instills the values of sportsmanship, cooperation, and positive group fanaticism. Additionally, *Macepetan* also has aesthetic aspects, both in terms of movement, interaction patterns, and rules of play that have been passed down orally from generation to generation.

The study of traditional games such as *Macepetan* is highly relevant, especially from a philological perspective. Philology, as a discipline that studies texts, oral traditions, and cultural artifacts, plays an important role in reconstructing the history, meaning, and aesthetic values contained in folk games [3]. Philological studies play an important role in the preservation and deep understanding of intangible cultural heritage, including traditional games. Philology is not only related to the study of ancient texts, but also includes analysis of cultural documentation in various forms, including ethnographic records of traditional games [4]. Through a philological approach, it is possible to reconstruct, interpret, and conduct in-depth analysis of the cultural aspects contained in traditional games [5]. Documentation of traditional games in scientific works such as the book *"Permainan Rakyat Daerah Bali"* (Traditional Games of the Balinese People), published in 1986, is a valuable primary source in the context of philological studies. This work not only records the forms of games, but also the socio-cultural context in which these games developed, so that from a philological perspective, this document can be treated as a "text" that requires critical analysis to understand the meaning and value contained within it [6].

Macepetan is one of Bali's traditional games documented in the 1986 publication *"Permainan Rakyat Daerah Bali"* (Traditional Games of Bali) and reflects the local wisdom of the Balinese people in developing recreational activities that are not only entertaining but also rich in educational and aesthetic values. From an etymological perspective, the word *"Macepetan"* originates from the Balinese language and indicates the specific characteristics of this game. A philological analysis of this term can provide an understanding of the basic concepts behind the game, including the philosophy and values that are conveyed through the activity of playing. This game is not only part of the oral tradition of the Balinese people, but also a representation of the value system and worldview embraced by the community at that time [7].

[1] Cahyani et al., "Penanaman Nilai-Nilai Karakter dan Budaya Melalui Permainan Tradisional Pada Siswa Sekolah Dasar."
[2] Manuara, "Permainan Tradisional Macepetansebagai Media Pendidikan Bahasa Bali Yang Menyenangkan Pada Siswa Kelas 4 Sekolah Dasar Negeri 1 Bongkasa."
[3] Suci et al., "Kajian Filologi dan Hakikat Ilmu Rasa dalam Naskah Raos Jawi."
[4] Fahmi, "Kajian Filologi pada Perubahan Sintaksis dan Morfologis Arab."
[5] Aprianto, "Cerita Pandai Besi dalam Sêrat Rama, Arjunawiwaha, Saha Kempalan Dongeng : Kajian Filologi dan Kritik Respon Pembaca."
[6] Astuti, Hardyanto, dan Kurnia, "Naskah Adji's (Sentolo): Kajian Filologi."
[7] Manuara, "Permainan Tradisional Macepetansebagai Media Pendidikan Bahasa Bali Yang Menyenangkan Pada Siswa Kelas 4 Sekolah Dasar Negeri 1 Bongkasa."

However, philological research on traditional games in Bali is still very limited. This is due to the lack of written literature and the dominance of oral transmission in the preservation of these games. Many aspects of the history and socio-culture of Balinese folk games, including *Macepetan*, have not been scientifically and systematically documented, requiring in-depth study to uncover their origins, development, and values. From an aesthetic point of view, traditional games in Bali not only emphasize entertainment, but also cultural values such as togetherness, honesty, creativity, discipline, and sportsmanship. Aesthetics in this context are not only limited to the beauty of the movements or forms of the games, but also to the social harmony and symbolic meanings contained within them. [8]. A philological study of *Macepetan* can open up new insights into how these aesthetic values have been passed down, interpreted, and practiced by Balinese society over time.

Studies on aesthetic values in the traditional game of *Macepetan* are highly relevant in the context of cultural preservation and character education development, especially in this era of globalization when traditional games face serious challenges from the dominance of modern and digital game [9]. The philological approach in this study allows researchers to not only describe the game, but also explore hidden meanings, analyze changes that have occurred over time, and reconstruct the cultural context behind the game. [10]**.** This study will use a philological approach with a focus on analyzing the text *"Permainan Rakyat Daerah Bali"* (1986) as a primary source through textual analysis for an in-depth study of the description of the games, contextual analysis to understand the socio-cultural context at the time of documentation, comparative analysis with other traditional games that have similar characteristics, and aesthetic analysis to identify and interpret the aesthetic values contained in the games.

The novelty of this research lies in its interdisciplinary approach that combines the study of art, culture, and character education. Recent research shows that traditional games have religious, nationalistic, integrity, independence, and mutual cooperation values, and can foster positive attitudes. In the game of *Macepetan*, aesthetic value is not only seen from visual beauty alone, but also from aspects of social harmony, local wisdom, and the transmission of cultural values contained within it. Traditional games train sensory skills, mathematical abilities, social and motor interactions, and highlight aesthetic values or beauty. This approach provides a new dimension in understanding traditional games as a medium for preserving a living and sustainable cultural aesthetic.

This research is expected to contribute to cultural preservation through the academic documentation and analysis of the aesthetic values contained in traditional Balinese games, particularly the *Macepetan* game. Through a philological approach, this study highlights the aesthetic richness of *Macepetan* as an integral element of Bali's cultural heritage and the nation's cultural identity

2. RESEARCH METODOLOGY

This study uses a qualitative approach with a literature review method [11]. A literature study was chosen because this research aims to examine and analyze the aesthetic values contained in the traditional game of *Macepetan* through a review of various relevant sources. A qualitative approach was considered appropriate because this study sought to understand socio-cultural phenomena in depth and interpretatively, particularly in relation to aesthetic values that are subjective and complex in the context of traditional games. The approach used in

[8] Ardhiyasa dan Wirajaya, "Kajian Estetika Melayu Klasik Dalam Syair Ibadat."
[9] Rizal, "Nilai Estetika dan Pendidikan Naskah Singir Mitera Sejati dan Ngudi Susila Karya Kiai Bisri Musthofa."
[10] Yulianti, Sariada, dan Marajaya, "Nilai Estetika Musik Iringan Drama Tari 'The Blessing of Siva-Visvapujita.'"
[11] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*.

this study was a descriptive-analytical approach with an interpretative paradigm. This study sought to describe and analyze the aesthetic values in the traditional game of *Macepetan* based on an in-depth literature review. The interpretive paradigm was chosen because aesthetic values in traditional culture require contextual understanding and deep interpretation of the symbolism and philosophy contained therein. The descriptive-analytical approach allows researchers to not only describe the phenomena found in the literature, but also to analyze and interpret the deeper meaning of these aesthetic values.

The data sources in this study are divided into two main categories, namely primary data and secondary data. Primary data includes reference books on traditional Indonesian games, scientific journals that specifically discuss the traditional game of *Macepetan*, academic articles on aesthetic values in traditional culture, and official documentation from cultural institutions. Meanwhile, secondary data consists of popular articles and news about traditional games, photo and video documentation of *Macepetan* games, official local government websites discussing local culture, and previous research reports relevant to the research topic. The selection of diverse data sources aims to obtain a comprehensive and in-depth perspective on the aesthetic value of the traditional game of *Macepetan*. Data collection was carried out using two main techniques, namely literature study and documentation.

The literature study was conducted by searching for literature from various sources, including university and regional libraries, online journal databases such as Google Scholar, educational institution repositories, and national and international scientific publication portals. The documentation technique was carried out by collecting supporting documents in the form of photographs of the traditional game of *Macepetan*, documentary videos or recordings of the game, newspaper and magazine articles, and official government documents related to cultural preservation. The data collection process was carried out systematically using relevant keywords and structured search strategies to ensure the completeness and relevance of the data obtained.

3. LITERATUR REVIEW

The There are very few sources related to the traditional game of *Macepetan* that discuss the ins and outs of this traditional game. However, there are several pieces of literature that discuss the traditional game of *Macepetan*. The first literature study is a book about Balinese Folk Games published in 1986 as part of the Balinese Regional Culture Inventory and Documentation Project, located in the Kirtya Building library in Singaraja, Bali [12].

Figure 1. Cover of the book *Permainan Rakyat Bali* (Balinese Folk Games)
Source: Personal collection

In addition, there is research conducted by I Gede Sugata Yadnya Manuara (2017), “The Traditional Game of *Macepetan* as a Fun Medium for Teaching Balinese Language to Fourth Grade Students at Sekolah Dasar Negeri 1 Bongkasa.” The results of his research explain that the potential of the traditional game of *Macepetan* in instilling the pillars of Balinese language education can be proven by the many connections between traditional games (the traditional game of *Macepetan*). The implementation of traditional *Macepetan* games can be carried out in order to foster interest among the younger generation of Bali to continue using the Balinese language through the family environment (informal), school environment (formal), and community environment (non-formal) [13].

Previous researchers have conducted field-based studies utilizing the traditional game of *Macepetan* as a learning medium. However, no studies have

[12] (Mayun 1986)
[13] Manuara, “Permainan Tradisional Macepetansebagai Media Pendidikan Bahasa Bali Yang Menyenangkan Pada Siswa Kelas 4 Sekolah Dasar Negeri 1 Bongkasa.”

been found that reveal information about the aesthetic values contained in the traditional game of *Macepetan*. Therefore, this study is important because it will provide new information about the aesthetic values in the traditional game of *Macepetan* and is expected to provide a more holistic understanding of Balinese culture.

4. RESULTS AND DISCUSSION

Aesthetic Values in the Traditional Game of Macepetan

Figure 2. Illustration of the traditional game of *Macepetan*
Source: Personal documents

Based on literature analysis, the traditional game of *Macepetan* contains various aesthetic values that can be identified through various aspects of the game:

(a) Aesthetics of Movement and Agility

Macepetan showcases the beauty of dynamic movements through blocking, dodging, and attacking. These movements create an aesthetic pattern involving hand coordination, footwork, and body twists, forming visual harmony in the game. The agility displayed is not just physical skill, but an art combining speed, precision, and coordination. Players must quickly move to avoid their opponent while trying to touch an agreed part of their body. This harmony creates a captivating visual spectacle, where unplanned actions form an aesthetically pleasing movement. The beauty also lies in the players' adaptability to game conditions. In Macepetan with a center line, players must work in limited space, while in Macepetan awuran, freedom allows greater movement exploration, resulting in varied aesthetics, from controlled to expressive.

(b) Social and Democratic Aesthetics

The social aesthetic value is evident in the democratic and populist nature of the game. It breaks down social barriers such as caste and economic status, creating a beautiful sense of togetherness that transcends the social stratification of Balinese society. In the context of Balinese society, which traditionally recognizes a caste system, *Macepetan* provides a social space that allows for interaction across strata regardless of the socioeconomic background of the participants. This democratic beauty is also reflected in the process of dividing groups, which prioritizes balance and fairness. Children naturally develop a system that takes into account differences in physical abilities and individual skills, creating a balanced and enjoyable competition for all parties [14]. There is no external

[14] (Yulianti dan Marheni 2021)

authority regulating this division; everything happens through consensus and mutual agreement that reflects the values of participatory democracy. The social aesthetics of *Macepetan* can also be seen in its inclusiveness of various age groups. Although it is generally played by children aged 5-15 years, before the 1950s adults also participated by grouping themselves according to their age categories. This phenomenon shows that this game has a universal appeal that is able to unite different generations in the same activity, creating cultural continuity between generations.

(c) Musical Aesthetics

There is an aesthetic musical dimension in the form of accompanying songs. Although rarely used due to the children's enthusiasm to immediately compete, these songs demonstrate an awareness of the importance of musical accompaniment in traditional games. The lyrics of these songs not only serve as accompaniment, but also contain moral messages and game rules that are conveyed in an easy-to-remember form. The musical aspect of *Macepetan* reflects the oral tradition of Balinese society, which is rich in songs and mantras. These accompanying songs serve as a medium for cultural transmission, conveying values and game rules from generation to generation [15]. The use of the *Macepetan* song as a warm-up activity in elementary education illustrates its aesthetic potential for integration into formal learning contexts.

(d) The Aesthetics of Justice and Balance

The group division system in *Macepetan* embodies the aesthetic value of fairness. Rules for stronger players, such as playing with one hand (*nganehin*) or one foot (*nengkleng*), emerge organically as creative means of maintaining balance. These limitations function not as penalties but as artistic challenges that enhance the game's visual and performative appeal. The concept of *sapih* (draw) further reflects an aesthetic appreciation of balanced outcomes and sustainable competition.

(e) Temporal Aesthetics

Macepetan features a distinctive temporal rhythm, played at dusk during the dry season and bright moon phases. This timing creates an aesthetic atmosphere that harmonizes with Bali's natural environment, enhancing the visual drama of the game. The concept of a "game season" reflects an awareness of natural cycles, as play is aligned with optimal weather and lunar conditions. Children's intuitive sense of timing, based on environmental cues rather than formal schedules, embodies a traditional aesthetic that emphasizes living in harmony with nature's rhythms, producing beauty that is both visual and philosophical.

(f) Spatial Aesthetics

The use of space in games, whether limited (with a center line) or free (*Macepetan awuran*), demonstrates an aesthetic awareness of the use of space as a strategic and beautiful element of the game. In *Macepetan* with a center line, the division of space into two symmetrical parts creates a balanced and orderly visual composition. The center line not only functions as a boundary, but also as an aesthetic element that provides visual structure to the game. The flexibility in choosing the location of the game—from home yards, schools, temples, to

[15] Jaya, "Kajian Antropologi , Semiotika , Estetika Dan Pendidikan Karakter Dalam Permainan Tradisional Kul Kuk."

highways—shows the aesthetic adaptability of *Macepetan* to various spatial contexts. The absence of standard dimensions for the playing field allows for creative freedom in using the available space, creating unique aesthetic variations according to the characteristics of each location. This reflects an aesthetic principle that prioritizes essence over formal form. In *Macepetan awuran*, total spatial freedom creates a different aesthetic dynamic. Without spatial constraints, players can explore the entire available area, creating more complex and unpredictable movement patterns. The concepts of *"bokongan"* (sheltered place) and *"bisen/misen"* (attack from behind) demonstrate an aesthetic understanding of spatial architecture and spatial strategy that adds to the visual complexity of the game.

(g) Estetika Moral

The concept of *"salem-putih"* (seeking truth between black as dishonesty and white as purity) demonstrates a deep moral aesthetic value in resolving game conflicts. This color symbolism reflects an aesthetic understanding of the fundamental moral dualism in Balinese culture. The use of color metaphors to explain moral concepts shows that aesthetics and ethics are closely intertwined in this traditional game. The process of searching for *"salem-putih"* through a rematch between two conflicting players creates a special aesthetic moment. All other players stop playing and watch closely, creating a focus of attention that increases the dramatic intensity.

This situation shows that conflict resolution in *Macepetan* is not only a technical matter, but also an aesthetic moment that requires collective appreciation of the process of searching for truth. The absence of a referee in the game of *Macepetan* demonstrates a moral aesthetic that relies on personal honesty and integrity. Each player is responsible for upholding the rules and acknowledging defeat fairly, creating a moral beauty based on mutual trust. This system teaches that moral aesthetics do not require external authority, but can arise from collective consciousness and personal commitment to the values of truth and justice.

5. CONCLUSION

The traditional game of *Macepetan*, derived from the Balinese word *"cepet"* (fast), emphasizes agility and speed in blocking, dodging, and attacking, passed down through generations in Bali. Its origins are unclear but may be linked to *Badung* and *Buleleng* regions and the influence of *pencak silat*. Usually played by village children in the late afternoon during a full moon, the game offers entertainment as well as deep aesthetic, social, and moral values like fairness, cooperation, and creativity. It also creates an inclusive social space where children from diverse backgrounds interact regardless of caste or social status, strengthening unity and togetherness.

The aesthetic values in *Macepetan* go beyond play. Its focus on agility, speed, and fluid movements creates a dynamic visual and performative experience reflecting Balinese artistic sensibilities. The game's rhythms, use of space, and cooperative interactions show high aesthetic awareness balancing beauty, fairness, and social harmony. *Macepetan* serves as both cultural entertainment and an expression of community identity and creativity. Preserving it means safeguarding a living art form embodying harmony between movement, space, and social values in Balinese tradition.

Researchers interested in the traditional game *Macepetan* are encouraged to conduct deeper studies on its cultural, social, and educational aspects. Focus can be on how *Macepetan* influences children's character development and its potential integration into formal education to teach collaboration, problem-solving, and resilience. Additionally, exploring regional variations and the game's adaptation to changing social contexts is important.

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The Effect of Manure Dosage on the Growth and Yield of Shallot Plants (*Allium ascalonicum L.*) in Subak Dangin Umah, Batubulan Kangin Village

Dewa Ayu Ari Febriyanti [1),3)], and Ni Ketut Karina Sari [2)]
[1)] Agrotechnology Study Program, Faculty of Agriculture and Business Dwijendra University
[1)] dewaayuarifebriyanti@gmail.com
[2)] Agrotechnology Study Program, Faculty of Agriculture and Business Dwijendra University
[2)] ketutkarina17@gmail.com
[3)] Doctoral Study Program in Aricultural Sciences, Udayana University
[3)]dewaayuarifebriyanti@gmail.com

ABSTRACT

Shallots (*Allium ascalonicum L.*) are a strategic commodity whose productivity in Indonesia is often constrained by declining soil fertility due to the intensive use of inorganic fertilizers. As a sustainable solution, this study evaluated the effect of manure application on the growth and yield of shallots. The research utilized a Randomized Block Design (RBD) with four dosage treatments: D0 (0 tons/ha), D1 (10 tons/ha), D2 (20 tons/ha), and D3 (30 tons/ha). It was conducted in Subak Dangin Umah, Batubulan Kangin Village, Gianyar, Bali, from April to July 2025. Key variables measured included vegetative growth and yield per hectare. The analysis results showed that manure application had a significant effect on both growth and yield. Treatments D2 (20 tons/ha) and D3 (30 tons/ha) resulted in significantly higher vegetative growth and bulb yield compared to the control (D0). Fresh bulb weight increased significantly from 2.9 kg/plot (control) to 4.7 kg/plot (D2) and 5.0 kg/plot (D3). Although the 30 tons/ha dose produced the highest bulb weight, the yield increase was relatively small compared to the 20 tons/ha dose. Therefore, 20 tons/ha is recommended as the economically more efficient optimum dose. In conclusion, the use of manure not only boosts shallot yield but also supports soil quality improvement and the sustainability of the *subak* farming system in Bali.
Keywords: *Shallots, manure, optimum dose, growth, yield, Subak.*

1. INTRODUCTION

Shallots (*Allium ascalonicum* L.) are one of Indonesia's leading horticultural commodities with strategic economic value. This commodity is not only used as a primary seasoning in various cuisines but also serves as an important source of income for farmers across different regions. High demand for shallots from both household consumers and the industry drives the need for continuous production increases (Setiawan *et al.,* 2020). However, shallot productivity often faces constraints related to declining land quality due as a result of intensive cultivation practices. The use of high doses of inorganic fertilizers generally succeeds in increasing yield in the short term, but in the long run, it potentially reduces soil organic matter content, decreases fertility, and causes the degradation of the soil's physical and chemical properties. This condition can hinder the sustainability of shallot farming (Haryanto *et al.,* 2019).

Alternative, the use of organic fertilizers like manure is considered a solution that is expected to both improve soil quality and increase yields. Manure contains essential macronutrients, particularly nitrogen (N), phosphorus (P), and potassium (K), which play a crucial role in vegetative growth, bulb formation, and improving harvest quality. Furthermore, the organic

matter contained in the manure functions to improve soil structure, increase Cation Exchange Capacity (CEC), enhance the soil's water-holding capacity, and stimulate soil microorganism activity (Haryanto *et al.,* 2019).

Crop response to manure is highly dependent on the dosage applied. At low doses, manure may not be able to meet the plant's nutrient requirements optimally, whereas at excessively high doses, the yield increase is not always significant and can even lead to agronomic and economic inefficiency (Yuliana *et al.,* 2021). Therefore, research into the optimum manure dosage must be conducted to determine the most effective and efficient rate for enhancing shallot growth and yield. The local context is also a critical factor. In Bali, farming practices within the subak system emphasize the principles of sustainability and local wisdom in resource management. The utilization of manure from local livestock is aligned with the concept of eco-friendly agriculture, thus not only increasing agricultural output but also preserving the balance of the traditional farming ecosystem (Sudarta & Astika, 2022).

Therefore, research on the effect of various manure dosages on the growth and yield of shallots in Subak Dangin Umah, Batubulan Kangin Village, is relevant. The results of this study are expected to provide practical recommendations regarding the appropriate manure dosage, while supporting the productivity and sustainability of the subak-based farming system in Bali.

2. RESEARCH METODOLOGY

2.1 Research Location and Time.

The research was conducted on farmland within the Subak Dangin Umah system, Batubulan Kangin Village, Sukawati District, Gianyar Regency, Bali, from April to July 2025. The research site is located at an altitude of ±75 meters above sea level (masl) and has a wet tropical climate type, with an average temperature of 27–30∘C and average annual rainfall of 1800–2000 mm.

2.2 Materials and Equipment

1. Materials: Shallot seedlings of the Bima Brebes variety, cow manure, base fertilizers (Urea, SP-36, KCl according to recommendation), insecticides and fungicides (if required), and irrigation water.
2. Equipment: Hoe, analytical balance, tape measure, sprayer, stationery, and documentation camera.

2.3 The study employed a Randomized Block Design (RBD) with one factor, consisting of four manure dosage treatments and four replications, resulting in a total of 16 experimental units. The manure dosage treatments were:

- D0 = 0 tons/ha (control)
- D1 = 10 tons/ha
- D2 = 20 tons/ha
- D3 = 30 tons/ha

The size of each experimental plot was 2 m2 (1 m×2 m), with a planting distance of 20 cm×20 cm.

2.4 Research Implementation

1) Land preparation was carried out by hoeing the soil, clearing weeds, and constructing beds sized according to the treatment plots.
2) Manure application was performed according to the dose of each treatment, mixing it evenly into the soil before planting.

3) Planting was done using healthy shallot bulb seeds with a diameter of ±1.5–2 cm, planted at a depth of ±3 cm.
4) Crop maintenance included watering, weeding, and pest and disease control as needed.
5) Harvesting was conducted at approximately ±70 days after planting (DAP), characterized by 70–80% of the leaves collapsing and turning yellow.

2.5 Observed Variables

1) Plant height (cm) → measured from the base of the stem to the tip of the highest leaf at 30 DAP.
2) Number of leaves (sheets) → counting the number of leaves actively photosynthesizing at 30 DAP.
3) Fresh bulb weight per plot (kg) → weighing all harvested bulbs per plot.
4) Dry bulb weight per plot (kg) → bulbs were air-dried for 7 days then weighed.
5) Yield per hectare (ton/ha) → converted from the bulb weight per plot.

2.6 Data Analysis

The observed data were analyzed using Analysis of Variance (ANOVA) at the 5% significance level. If the results showed a significant effect, they were further analyzed using the Least Significant Difference (LSD) Test at 5% to determine the difference between treatments.

3. RELATED RESEARCH/LITERATUR REVIEW

Shallots (Allium ascalonicum L.) are one of the leading horticultural commodities with high economic value and are widely cultivated in Indonesia. Shallot production is influenced by genetic factors, environment, and cultivation techniques, including nutrient availability. Deficiencies in essential nutrients can reduce vegetative growth, bulb size, as well as the quality and storage life of the harvest. Therefore, the right fertilization strategy is crucial for determining shallot productivity (Setiawan *et al.,* 2020).

Manure plays a vital role in improving the soil's physical, chemical, and biological properties. The organic matter in manure can increase water-holding capacity, nutrient availability, and soil microbial activity. Furthermore, the content of nitrogen (N), phosphorus (P), and potassium (K) in manure supports vegetative growth and bulb formation. Applying manure at an appropriate dosage has been shown to increase the yield and quality of horticultural crops, including shallots (Haryanto *et al.,* 2019).

Crop response to manure generally increases with higher dosages; however, there is an optimum limit that must be considered. At low doses, manure may not sufficiently meet the nutrient requirements, while at excessive doses, the yield increase is not significant and may potentially be economically detrimental (Sudarta & Astika, 2022). Research on green mustard plants indicated that the highest dose (60 tons/ha) did produce maximum yield, but a slightly lower dose (30 tons/ha for water spinach) was considered the optimum dose that was both practical and economically profitable (Beja, 2017; Hilala *et al.,* 2023).

Some studies indicate that a combination of manure and inorganic fertilizers yields better results than using either alone (Yuliana et al., 2021). This combination is effective because organic fertilizers release nutrients slowly, improve soil physical properties, and increase soil organic matter, while inorganic fertilizers are quickly available to plants to meet urgent nutrient demands (Putra et al., 2020; Nooraminah, 2022). For instance, in rice cultivation, a combination of 75% basic inorganic fertilizer and 100% organic fertilizer proved to increase production by 39–59% (Putra et al., 2020).

In the subak fields in Bali, the practice of organic fertilization is important as it relates to soil and water conservation. Manure available from local livestock can be utilized efficiently to support sustainable agriculture. Research on optimal dosage at the local level, such as in Subak Dangin Umah, Batubulan Kangin Village, is crucial so that farmers can obtain practical recommendations that are suitable for the local agroecosystem conditions while preserving environmental balance (Sudarta & Astika, 2022).

4. RESULTS AND DISCUSSION

Figure 1. image of the number of onion bulbs from each treatment D0, D1, D2, D3
Source: personal documentation

4.1 Shallot Plant Growth

Observation results showed that manure application had a significant effect on both plant height and number of leaves at 30 days after planting (DAP). Plants in the 20 tons/ha (D2) and 30 tons/ha (D3) dosage treatments exhibited better growth compared to the control (D0) and low-dose treatment (D1). The average plant height at D3 reached 42.9 cm, which was significantly higher than the control (34.4 cm). The number of leaves also increased from 17.5 sheets (D0) to 23.5 sheets (D3). This result aligns with the research by Haryanto et al. (2019), which stated that manure is capable of improving nutrient availability and enhancing soil structure, thereby supporting the plant's vegetative growth. The nitrogen content in the manure aids in the formation of chlorophyll and vegetative tissue, while phosphorus supports root development and bulb initiation.

4.2 Fresh and Dry Bulb Weight

Manure application had a significant effect on fresh and dry bulb weight. The D3 (30 tons/ha) treatment produced the highest fresh weight, averaging 5.0 kg/plot (equivalent to ±25 tons/ha), whereas the D0 (control) treatment only yielded 2.9 kg/plot (±14.5 tons/ha). The dry bulb weight also increased

from 2.1 kg/plot (D0) to 3.8 kg/plot (D3). Yuliana et al. (2021) explained that higher organic fertilizer doses boost shallot yield because the organic matter content improves the availability of macro and micronutrients. However, it should be noted that the yield increase between the 20 tons/ha and 30 tons/ha doses was relatively small, which suggests that the 20 tons/ha dose can be considered more efficient both agronomically and economically.

4.3 Efficiency and Agronomic Implications

The increase in manure dosage correlated with an increase in yield; however, there is a point of efficiency that must be considered. In this study, the yield from the D2 (20 tons/ha) treatment was nearly comparable to D3 (30 tons/ha). Therefore, applying the 20 tons/ha dose can be recommended as the optimum dosage for the Subak Dangin Umah field. In addition to boosting yield, manure also improves long-term soil quality through the enhancement of organic matter content and soil microbial activity (Sudarta & Astika, 2022). These results are consistent with the view of Setiawan et al. (2020) that the integration of organic fertilizer with basic inorganic fertilization is more efficient than the singular use of inorganic fertilizers, especially within traditional farming systems like subak that prioritize sustainability. Thus, the application of manure not only provides direct benefits to shallot yield but also supports a sustainable agricultural system.

Table 1. Average growth and yield of shallots at various manure dosages

Treatment (Manure Dosage)	Plant Height (cm)	Number of Leaves (sheets)	Fresh Bulb Weight (kg/plot)	Dry Bulb Weight (kg/plot)
D0 (0 ton/ha)	34,4	17,5	2,9	2,1
D1 (10 ton/ha)	38,3	20,0	3,9	2,8
D2 (20 ton/ha)	41,4	22,0	4,7	3,5
D3 (30 ton/ha)	42,9	23,5	5,0	3,8

5. CONCLUSION

The research results indicate that manure application had a significant effect on the growth and yield of shallots (*Allium ascalonicum L.*) in Subak Dangin Umah, Batubulan Kangin Village. Increasing the manure dosage successfully improved plant height, number of leaves, fresh weight, and dry weight of bulbs compared to the treatment without manure. The 20 tons/ha (D2) and 30 tons/ha (D3) doses produced better vegetative growth and yield than the control (D0) and the low dose (D1). Given that the yield difference between the 20 tons/ha and 30 tons/ha doses was relatively small, the 20 tons/ha dose can be recommended as the more agronomically and economically efficient optimum dose. Overall, the use of manure is proven not only to enhance shallot yield but also to potentially improve long-term soil quality, thereby supporting the sustainability of the *subak*-based agricultural system in Bali.

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FINANSIAL FEASIBILITY ANALYSIS OF ARABICA COFFEE FARMING IN MANIKLIYU VILLAGE, KINTAMANI DISTRICT, BALI

Luh Anggreni Dewi[1), 3)], Ni Nyoman Alit Purnami [2)]
[1)] *Agribusiness Study Program, Faculty of Agriculture and Business, Dwijendra University*
[1)] *anggrenidewiluh@gmail.com*
[2)] *Agribusiness Study Program, Faculty of Agriculture and Business, Dwijendra University*
[2)] *ninyomanalitpurnami@gmail.com*
[3)] *Doctoral Study Program in Aricultural Sciences, Udayana University*
[3)] *anggrenidewiluh@gmail.com*

ABSTRACT

This study analyzes the financial feasibility and development prospects of Arabica coffee farming in Manikliyu Village, Kintamani District, Bangli Regency, Bali Province. Arabica coffee represents one of the key highland commodities contributing significantly to the regional economy and rural livelihoods, particularly within the Kintamani Bali Coffee Geographical Indication (GI) area. The research aims to evaluate whether Arabica coffee farming is economically viable and to assess its potential for sustainable agribusiness development. Financial feasibility was analyzed using four standard indicators: Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost Ratio (B/C), and Payback Period (PP). Primary data were collected through structured interviews and surveys with 40 Arabica coffee farmers, while secondary data were obtained from relevant government agencies, cooperatives, and academic references.

The results reveal that Arabica coffee farming in the study area is financially feasible and profitable. The NPV value of IDR 45,860,000 per hectare indicates that the present value of benefits exceeds production costs over the economic life of the coffee plants. The IRR of 18.75% surpasses the prevailing commercial interest rate of 10–12% per year, suggesting that the investment generates attractive returns. The B/C ratio of 1.72 confirms economic efficiency, as every IDR 1.00 invested yields IDR 1.72 in benefits. Moreover, the Payback Period of 3.2 years shows that the initial capital investment can be recovered relatively quickly compared to the 10–15-year productive lifespan of Arabica coffee.

Overall, the findings indicate that Arabica coffee farming in Manikliyu Village is not only financially viable but also has strong potential as a regional flagship commodity. To ensure sustainability, continuous efforts are required to strengthen farmer institutions, enhance production efficiency, and expand access to financing and premium markets.

Keywords: Arabica coffee, financial feasibility, NPV, IRR, B/C ratio, payback period, Kintamani, Bali

1. INTRODUCTION

Arabica coffee (*Coffea arabica* L.) is one of Indonesia's leading plantation commodities with high economic and social value, particularly in highland areas such as Kintamani, Bali. This region is widely recognized as one of the major production centers of Arabica coffee with a geographical indication acknowledged both nationally and internationally (Dewi et al., 2025). The Kintamani agroecosystem, situated at an altitude of 1,000–1,500 meters above sea level, characterized by high rainfall and relatively cool temperatures, provides optimal conditions for the growth of Arabica coffee with its distinctive aroma and premium quality (Yudhari & Anggreni, 2023).

Manikliyu Village, located in Kintamani District, Bangli Regency, plays a significant role in Bali's Arabica coffee production. The majority of the village population relies on agriculture as their primary source of income, particularly coffee farming. However, the productivity and profitability of Arabica coffee farms in this area have not yet reached their full potential due to variations in production costs, labor efficiency, and fluctuating selling prices at the farmer level (Kardi et al., 2023). Dependence on unstable market prices and limited access to financing also affects the financial performance of coffee farms (Sutrisna et al., 2022)

Financial analysis serves as an essential tool for evaluating the economic feasibility of farming enterprises, including Arabica coffee cultivation. Through financial analysis, it is possible to determine the profitability, efficiency, and sustainability of farming activities. Indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost Ratio (B/C), and Payback Period are crucial for assessing the economic performance of an agribusiness (Budiasa & Dewi, 2024). Studies in various Arabica coffee-producing regions across Indonesia indicate that although coffee farming is generally feasible, its profitability largely depends on cost management efficiency and farmers' access to markets (Rinaldi et al., 2021).

Research by Yudhari and Anggreni (2023) revealed that Arabica coffee farming in Kintamani generates substantial net profits, yet the added value received by farmers remains relatively low due to high production costs and weak integration between upstream and downstream activities. Furthermore, recent studies emphasize the importance of locally based financial management, considering that variations in topography, rainfall, and cultivation practices influence cost structures and income levels among villages (Susanti et al., 2022; Dewi et al., 2025). Therefore, financial analysis at the village level, such as in Manikliyu, is highly relevant to provide an empirical understanding of cost efficiency, profit potential, and farmers' economic resilience in facing fluctuations in market prices and input costs. Based on these conditions, this study aims to analyze the financial aspects of Arabica coffee farming in Manikliyu Village, Kintamani District, Bangli Regency. The results of this analysis are expected to serve as a basis for formulating strategies to enhance cost efficiency, optimize profitability, and strengthen the competitiveness of Arabica coffee agribusiness at the farmer level.

2. RESEARCH METODOLOGY

2.1 Research Location and Period

This research was conducted in Manikliyu Village, located in Kintamani District**,** Bangli Regency, Bali Province. The site was selected purposively because it is one of the major Arabica coffee production centers characterized by a distinctive highland agroecosystem and is part of the Geographical Indication (GI) area of Kintamani Arabica Coffee. Data collection activities included field observations, interviews with coffee farmers, and the collection of secondary data from relevant institutions and local coffee farmer groups.

2.2 Types and Sources of Data

This study utilized both quantitative and qualitative data:

1. Primary data were obtained through direct interviews with Arabica coffee farmers in Manikliyu Village using structured questionnaires. The data collected included land area, number of coffee trees, production costs, selling prices, labor utilization, and production output.
2. Secondary data were gathered from official documents and relevant scientific literature related to the financial analysis of Arabica coffee farming.

2.3 Population and Research Sample

The research population consisted of all Arabica coffee farmers in Manikliyu Village. The sampling technique used was proportional random sampling, based on the number of active farmers who are members of local coffee farmer groups. A total of 40 respondents were selected as samples, representing the average financial condition of farmers in the study area.

2.4 Data Collection Methods

Data were collected through several techniques:

1. Direct observation of cultivation and post-harvest activities.
2. In-depth interviews to obtain detailed information on input costs, labor wages, production yields, and marketing channels.
3. Documentation and literature review to complement quantitative data with institutional and socio-economic information about coffee farmers.

2.5 Data Analysis Method

The data were analyzed using a quantitative descriptive approach through farm financial analysis, which includes several key indicators: Net Present Value (NPV)**,** Internal Rate of Return (IRR)**,** Benefit-Cost Ratio (B/C), and Payback Period (PP). These indicators are used to evaluate the economic feasibility and financial performance of Arabica coffee farming.

a. Net Present Value (NPV)

The Net Present Value (NPV) represents the difference between the present value of benefits (revenues) and the present value of costs incurred throughout the economic life of Arabica coffee farming.

$$NPV = \sum_{t=1}^{n} \frac{\mathrm{Bt} - \mathrm{Ct}}{(1+i)^t}$$

Where:

Bt= Benefit or revenue in year *t*

Ct = Cost in year *t*

i = Interest rate or discount rate

n = Project or farm lifetime

Decision Criteria:

NPV > 0 = The farm is financially feasible, as it provides positive net benefits after considering the time value of money.

NPV = 0 = The farm is at the financial break-even point.

NPV < 0 = The farm is not feasible, as total benefits are less than total costs.

b. Internal Rate of Return (IRR)

The Internal Rate of Return (IRR) is the discount rate that makes the NPV equal to zero. It represents the internal rate of profitability of the investment made in Arabica coffee farming.

$$\sum_{t=1}^{n} = \frac{B_{t-}\, c_t}{(1+IRR)^t} = 0$$

Decision Criteria:

IRR > discount rate = The farm is financially feasible.

IRR = discount rate = The farm is financially neutral (break-even).

IRR < discount rate = The farm is not feasible, as the rate of return is lower than the cost of capital.

c. Benefit-Cost Ratio (B/C)

The Benefit-Cost Ratio (B/C) measures the relationship between the present value of benefits and the present value of costs.

$$B/C = \frac{\sum_{t=1}^{n} \frac{B_t}{(1+i)^t}}{\sum_{t=1}^{n} \frac{C_t}{(1=i)^t}}$$

Decision Criteria:
B/C > 1 = The farm is financially feasible, as total benefits exceed total costs.
B/C = 1 = The farm is at the break-even point.
B/C < 1 = The farm is not feasible, as total costs exceed total benefits.
d. Payback Period (PP)
The Payback Period (PP) is an important financial indicator used to determine the length of time required for the initial investment to be recovered from the annual net benefits generated by the farming activities. In the context of Arabica coffee farming, this indicator helps evaluate the efficiency of capital recovery from the initial planting cost until the farm generates sufficient income to cover the total investmen.

$$PP = \frac{Initial\ Investment}{Annual\ Net\ Benefit}$$

Evaluation Criteria:
A shorter PP indicates faster capital recovery and thus higher financial feasibility.
A longer PP indicates slower capital recovery, implying higher investment risk.

3. RELATED RESEARCH/LITERATUR REVIEW

Yudhari and Anggreni conducted an empirical study on Arabica coffee farming in the Kintamani region to evaluate farmers' income and the economic feasibility of coffee farming using standard financial indicators such as the R/C ratio and net profit. The results showed that, both technically and economically, Arabica coffee farming in Kintamani has the potential to generate profits. However, farmers' profitability remains constrained by high input costs (fertilizers and labor) and the limited value added at the upstream level. The study employed a household survey and a cost–revenue analysis per farmer, thus providing a strong local data foundation for financial analysis at the village or farmer group scale. An important finding of the study was the recommendation to improve cost efficiency and strengthen post-harvest processing to increase farmers' profit margins findings that are directly relevant to the financial analysis conducted in Manikliyu Village.

An investment feasibility summary and analysis by Ngage (Martiningsih) presented a model for long-term financial viability assessment (NPV, IRR, B/C Ratio, and Payback Period) for Arabica coffee farming projects, assuming a project lifespan of up to 30 years and a specific discount rate. The study highlighted the importance of assumptions regarding production volume, selling price, and cost structure in determining financial feasibility outcomes. The author also conducted sensitivity simulations to assess risks arising from price fluctuations and input cost variations. The methodology and simulation results offer an analytical framework that is useful for developing sensitivity scenarios in local-level financial studies for instance, identifying break-even points when prices decline or costs increase. The findings support the necessity of incorporating sensitivity analysis into every financial feasibility study of coffee farming.

Several applied studies in the Kintamani region (2023–2024) further examined the downstream aspects processing, packaging, and marketing—as well as the performance of the Arabica Kintamani coffee value chain. These studies revealed that added value from advanced processing and marketing activities (such as roasting, branding, and geographical indication certification) can significantly increase farmers' and entrepreneurs' income, but only when adequate initial investment, market access, and farmer group capacity are present. The value chain analyses also identified several constraints, including

limited post-harvest capacity, weak upstream–downstream integration, and restricted access to financing for processing investments. The direct implication for the financial study in Manikliyu Village is that the analysis should not only consider farm-level costs and revenues but also explore downstream scenarios that could alter the overall economic outcomes for farmers.

4. RESULTS AND DISCUSSION

The financial analysis was conducted to assess the economic feasibility of Arabica coffee farming in Manikliyu Village using four key indicators: Net Present Value (NPV), Internal Rate of Return (IRR), Benefit-Cost Ratio (B/C), and Payback Period (PP). The results indicate that, overall, Arabica coffee farming in the study area is financially feasible and has promising development prospects.

The calculated NPV of IDR 45,860,000 per hectare shows that the total net benefits generated during the economic life of the coffee plants are positive after being discounted at the prevailing interest rate. This means that the revenues derived from the farming activities exceed the total costs incurred, providing real financial gains for farmers. These findings align with those of Dewi *et al*. (2025) and Sudiarta & Gunawan (2023**)**, who reported that Arabica coffee farming in the Kintamani region yields a positive NPV, supported by high productivity and stable selling prices.

The IRR value of 18.75% indicates that the internal rate of return of this investment is higher than the prevailing commercial lending rate, which ranges between 10–12% per year. This reflects that Arabica coffee farming offers a financially attractive return on investment. The results reinforce the findings of Nopitasari et al. (2022), who emphasized that the greater the IRR value compared to the benchmark interest rate, the more viable the business becomes for expansion.

The Benefit-Cost Ratio (B/C) of 1.72 suggests that every IDR 1.00 invested in coffee farming generates an economic benefit of IDR 1.72. In other words, Arabica coffee farming in Manikliyu Village is both efficient and profitable. According to the principles of financial feasibility analysis (Gittinger, 1986; as adapted by Dewi et al., 2025), a B/C ratio greater than one indicates that the enterprise produces benefits exceeding its total costs.

Meanwhile, the Payback Period (PP) of 3.2 years demonstrates that the time required to recover the initial investment is relatively short compared to the productive lifespan of Arabica coffee plants, which can reach 10–15 years. This reflects efficient capital turnover and low financial risk in the medium term. These results are consistent with Krisnawati *et al*. (2023), who found that efficient coffee enterprises generally achieve payback periods of less than five years.

Overall, the financial analysis confirms that Arabica coffee farming in Manikliyu Village is economically feasible in terms of profitability and investment efficiency. The favorable financial performance is supported by suitable agroecological conditions, high productivity, and good market access reinforced by the Geographical Indication (GI) recognition of Kintamani Coffee. Nevertheless, challenges such as input price fluctuations, limited access to capital, and dependence on manual labor remain key considerations to ensure the long-term sustainability of the enterprise.

5. CONCLUSION

The results of this study demonstrate that Arabica coffee farming in Manikliyu Village, Kintamani District, Bangli Regency is financially feasible and holds sustainable development potential. The Net Present Value (NPV) of IDR 45,860,000 per hectare indicates that the net revenue generated exceeds the total costs incurred over the economic lifespan of the crop. The Internal Rate of Return (IRR) of 18.75% reflects an investment return higher than the prevailing commercial interest rate, while the Benefit-Cost Ratio (B/C) of 1.72 illustrates strong economic efficiency. In addition, the Payback Period (PP) of 3.2

years confirms that the initial investment can be recovered within a relatively short time compared to the productive life of the coffee plants. Overall, these findings indicate that Arabica coffee farming in Manikliyu Village is not only profitable but also has the potential to become a regional flagship commodity that contributes to increasing farmers' income and enhancing the competitiveness of the Kintamani coffee agribusiness. To ensure long-term sustainability, support is needed through the strengthening of farmer institutions, improving production efficiency, and expanding access to financing and premium markets.

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THE ROLE OF THE CHILD PROTECTION LAW IN HANDLING SCHOOL BULLYING CASES

I Gede Sujana[1)], Gitania Karmani [2)], Dominggus Wungo[3)], Melkianus Hona Mone[4)]

[1)] *Universitas Dwijendra*
dalungsujana@gmail.com
[2)] *Universitas Dwijendra*
gitaniakarmani270@gmail.com
[3)] *Universitas Dwijendra*
doniswungo@gmail.com
[4)] *Universitas Dwijendra*
melkimone@gmail.com

ABSTRACT

Bullying in schools has become a critical issue affecting the safety, psychological well-being, and educational development of children in Indonesia. Although Law No. 35 of 2014 on Child Protection provides a legal framework to prevent and address violence against children, its implementation in bullying cases remains inconsistent. This study aims to analyze the effectiveness of the Child Protection Law in responding to bullying in school environments, using a normative juridical approach. The research explores the scope of legal protections, the application of criminal sanctions, the use of restorative justice, and the institutional mechanisms involved in handling such cases. Findings indicate that while the law offers a strong foundation in theory, challenges such as limited legal awareness, weak institutional capacity, inadequate victim support, and cultural normalization of bullying reduce its practical effectiveness. The study concludes that a more integrated approach—combining legal enforcement, education, and institutional reform—is essential to realize the law's full protective potential for children in school settings.

Keywords: *Child Protection Law; Bullying; School Violence; Legal Implementation; Restorative Justice; Children's Rights;*

1. INTRODUCTION

The phenomenon of bullying in schools has become an increasingly concerning issue within Indonesia's education system. Bullying is no longer seen as mere mischief or typical childhood behavior; it has evolved into a form of violence that causes serious harm to children's mental, emotional, and even physical development. The forms of bullying are diverse, ranging from verbal abuse and psychological harassment to physical assault and digital bullying (cyberbullying). Bullying involves more than just the perpetrator and the victim—it also affects the overall school climate by creating fear, insecurity, and disrupting the learning process. Ironically, many bullying incidents remain unreported because they are perceived as trivial or because victims fear retaliation or social stigma (Khatimah et al, 2022) .

Data from various institutions such as the Indonesian Child Protection Commission (KPAI) indicates that the number of cases of violence against children in educational settings has increased each year. KPAI's annual reports consistently show that bullying is one of the most frequently occurring forms of violence in schools. This high prevalence confirms that bullying is not a minor problem but rather a systemic issue requiring serious attention and comprehensive handling—including legal intervention. The impact of bullying on victims is complex and long-lasting, often resulting in trauma, declining academic performance, mental health disorders, and even tendencies toward self-harm or suicidal thoughts. These facts

underscore that bullying is not only a social issue but also a matter of human rights and child protection that must be addressed comprehensively.

Indonesia has enacted several legal regulations that govern child protection, particularly in cases involving violence and bullying. One of the most relevant pieces of legislation is Law No. 35 of 2014 on Child Protection, which amended Law No. 23 of 2002. This law affirms that every child has the right to protection from physical and psychological violence, abuse, neglect, exploitation, and discrimination. It also establishes the responsibility of the state, government, society, families, and parents to ensure that children are protected. While this legal framework exists, in practice, its implementation remains suboptimal. Many victims of bullying do not receive adequate legal protection, and perpetrators often evade proportionate sanctions due to various obstacles in law enforcement and public awareness (Kartika & Mustika, 2023).

Another significant issue is the low level of legal literacy among school communities, including educators and parents, regarding the legal rights of children as stipulated in child protection laws. Many still perceive bullying as a normal part of growing up or even as an acceptable form of discipline. This perception is dangerous because it blurs the line between permissible behavior and acts that constitute legal violations. In addition, reporting and handling mechanisms for bullying cases are still underdeveloped. Not all schools have child-friendly reporting systems, and not all reported cases are handled appropriately by law enforcement agencies. Victims and their families often refrain from reporting due to fear of social judgment or community pressure.

This gap between existing legal norms and practical implementation presents a considerable challenge to the enforcement of child protection laws in bullying cases. Although the Child Protection Law outlines children's rights and the responsibilities of all stakeholders, enforcement is often inconsistent. In some cases, legal proceedings against perpetrators are halted prematurely due to pressure from various parties. On the other hand, not all law enforcement officers or educators possess a thorough understanding of the legal substance of child protection, which often leads to mishandled cases and injustice for victims (Santika, 2019).

Beyond criminal prosecution, the Child Protection Law also promotes a rehabilitative approach for both victims and perpetrators. In many cases, bullying perpetrators are also children who have experienced violence or neglect, or who have grown up in unhealthy environments. Therefore, legal intervention should not only focus on punishment but also on education and rehabilitation. Unfortunately, this approach is rarely implemented consistently. Most cases are addressed only through administrative sanctions by the school, without any systematic effort to correct the perpetrator's behavior or to support the victim's psychological recovery(Sila et al, 2024).

The urgency to evaluate and strengthen the role of the Child Protection Law in addressing bullying in schools is becoming increasingly relevant. In today's digital era, bullying has taken on more complex forms, particularly through social media and online platforms. Cyberbullying has emerged as a new threat that is difficult to control, as perpetrators can hide behind anonymous accounts and target victims anytime and anywhere. Although Indonesia's Electronic Information and Transactions Law (ITE Law) provides general provisions for handling cyberbullying, it has not been fully integrated with child protection perspectives. Consequently, there is a growing need to review the Child Protection Law in light of emerging forms of bullying, especially those occurring in digital spaces.

In light of these issues, it is evident that protecting children from bullying in schools is an inseparable part of the state's duty to uphold children's rights. While the Child Protection Law provides a strong legal foundation, its implementation must be evaluated and strengthened to ensure it effectively safeguards children's well-being. Research on the role of this law in school bullying cases is crucial to assess how far the law has been applied, identify implementation barriers, and propose strategies for improvement. It also serves to inform how schools, law enforcement, and the

broader community can create a safe, inclusive, and violence-free educational environment.

2. RESEARCH METODOLOGY

This study employs a normative juridical approach, which focuses on the analysis of legal norms contained within existing laws and regulations relevant to child protection and bullying in Indonesia. The normative juridical method is used to examine the content, principles, and effectiveness of the Child Protection Law (Law No. 35 of 2014) as it relates to bullying in school environments. This approach allows for a comprehensive understanding of how the law regulates the issue of bullying, what legal instruments are currently in place, and how these are interpreted and implemented in practice (Santika, 2021).

Legal sources used in this research consist of primary legal materials, including statutory regulations such as the Child Protection Law, the Criminal Code (KUHP), the Law on the Juvenile Criminal Justice System (UU SPPA), and the Electronic Information and Transactions Law (ITE Law) in the context of cyberbullying (Wijaya, 2023). In addition, secondary legal materials such as scholarly articles, legal commentaries, reports from government bodies (e.g., KPAI), and previous academic studies are used to support the analysis and interpretation of legal norms. Tertiary legal materials, including legal dictionaries and encyclopedias, are also consulted to provide a clearer conceptual understanding (Sujianti et al, 2025).

Data collection is conducted through literature review, involving the systematic gathering and examination of documents relevant to the research problem. These include laws and regulations, journal articles, legal case studies, institutional reports, and other written sources that discuss bullying and child protection in Indonesia. The analysis is carried out using qualitative descriptive methods, where the collected data are categorized, interpreted, and critically evaluated to assess the effectiveness of the existing legal framework in addressing school bullying cases (Santika et al, 2019).

This research does not involve empirical fieldwork or interviews, as the focus is on legal norms and their application in theory and practice. However, documented case studies and published reports on bullying incidents may be used illustratively to highlight the gaps between law and implementation. The expected outcome of this method is to provide a normative-analytical evaluation of the legal instruments regulating child protection from bullying in schools, and to formulate recommendations for improving legal protections and law enforcement mechanisms.

3. RESULTS AND DISCUSSION

The implementation of Law No. 35 of 2014 on Child Protection, particularly in relation to bullying in educational settings, has shown both progress and considerable challenges in Indonesia. This law clearly defines the rights of children to be free from any form of violence, including physical, psychological, and emotional abuse, all of which are encompassed by the term “bullying.” Article 76C of the law prohibits any form of violence against children, while Article 80 outlines the criminal sanctions imposed on perpetrators. However, despite the presence of these legal instruments, their application within the school environment remains inconsistent and often ineffective in creating a deterrent effect (Kandia, 2024).

Several studies and reports by institutions such as the Indonesian Child Protection Commission (KPAI) highlight that bullying remains prevalent in many schools across the country. While some cases have reached public attention and legal follow-up, the majority are handled internally by school authorities without involving formal legal mechanisms. These internal resolutions often lack transparency and accountability, leading to dissatisfaction among victims and their families. Moreover, the administrative sanctions typically imposed—such as warnings or temporary suspensions—fail to address the underlying behavioral

issues and rarely offer rehabilitation for either the victim or the perpetrator (Hymel & Swearer, 2015) .

The legal framework, while comprehensive in theory, often fails in practice due to the limited capacity of schools and local authorities to enforce child protection norms. Many educational institutions lack personnel trained in child protection or legal procedures (Santika, 2020). Consequently, school staff may not recognize bullying as a violation of the law, but rather as a disciplinary issue to be resolved through informal means. This misconception undermines the intent of the law and reinforces a culture of silence, where victims are discouraged from reporting abuse for fear of retaliation or being stigmatized. In addition, many schools do not have clear, child-friendly reporting mechanisms, making it difficult for students to safely and confidently report incidents of bullying.

Another critical issue is the limited application of restorative justice and diversion as alternative legal approaches, especially for child perpetrators. The Juvenile Criminal Justice System Law (Law No. 11 of 2012) emphasizes the use of diversion in handling juvenile offenses, including bullying, as long as certain legal requirements are met. However, in practice, the diversion process is not always applied or is misunderstood by law enforcement officers and educators. Some authorities prefer conventional punitive measures, overlooking the potential of restorative justice to educate and rehabilitate the child offender, while also helping the victim recover emotionally (Batian, 2024). This lack of consistency indicates a gap between legal mandates and institutional capacity to implement them effectively (Brank et al, 2012).

Furthermore, the deterrent effect of the law is called into question by the recurring nature of bullying incidents. KPAI has reported that the handling of bullying cases often lacks a long-term impact, and that perpetrators are not adequately held accountable. In many cases, the sanctions imposed are minimal, and there is little follow-up or monitoring to prevent recidivism (Sujana & Kandia, 2024). Victims often do not receive the psychological support they need, and in some instances, are even transferred to different schools instead of being protected in their current environment (Dewi, 2025). This raises concerns about whether the law, in its current form and implementation, is truly serving its protective function.

he role of institutional support bodies, such as KPAI, the Ministry of Women's Empowerment and Child Protection (KPPPA), and the local child protection units (P2TP2A), is crucial in bridging the gap between law and implementation. These institutions are mandated to provide services such as legal aid, counseling, medical assistance, and shelter for child victims. However, their effectiveness varies widely across regions, depending on the availability of resources, coordination with local governments, and community involvement. In some urban areas, child protection services are more accessible, while in rural or underdeveloped regions, they remain limited or absent. This regional disparity further exacerbates the uneven enforcement of child protection laws.

In addition to criminal proceedings, civil remedies and victim compensation have been discussed in legal literature as complementary approaches. Victims of bullying, particularly those who suffer physical injuries or psychological trauma, should have the right to claim compensation from the perpetrator or responsible institution. However, this aspect of the law is underutilized in practice, partly due to a lack of awareness among victims and their families, and partly due to the complexities of pursuing civil litigation in a child protection context. Legal scholars argue that integrating restitution and compensation more explicitly into the child protection framework would provide a more holistic approach to justice (Azan, 2024).
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Cyberbullying presents another layer of complexity to the enforcement of the Child Protection Law (Wolke & Lereya, 2015). The rapid development of digital communication technologies has created new forms of bullying that are more difficult to detect and regulate. The Electronic Information and Transactions Law (ITE Law) offers some legal basis for handling online harassment, but it is not specifically designed for children, and its enforcement mechanisms are not well integrated with

the child protection system. As a result, victims of cyberbullying often fall through the cracks of both legal frameworks. There is a pressing need for stronger coordination between the Child Protection Law and the ITE Law, along with specialized procedures and units capable of handling digital bullying cases involving minors (Santika et al, 2021).

Cultural factors also play a significant role in the persistence of bullying in schools. In many communities, there is a tendency to downplay bullying as a normal part of childhood or as a rite of passage. Some teachers and parents still hold the belief that harsh discipline or teasing is beneficial in building character, which can normalize violence and inhibit legal reporting. This cultural acceptance of bullying makes it more difficult to implement legal protections, as victims may be reluctant to come forward and adults may not take their complaints seriously. Changing these perceptions requires long-term educational efforts and public campaigns to raise awareness about children's rights and the harms of bullying (Sila, 2024).

In sum, the findings of this study suggest that while Indonesia has a relatively strong legal foundation for addressing bullying through the Child Protection Law, the practical challenges in its implementation significantly reduce its effectiveness. These challenges include limited institutional capacity, lack of public and professional awareness, inconsistent application of restorative justice principles, and cultural norms that hinder legal reporting. Strengthening the role of the Child Protection Law in combating bullying requires a multifaceted approach that includes not only legal reform but also improvements in institutional practice, community engagement, and educational efforts. Only through such a comprehensive strategy can the law fulfill its intended function of protecting children from violence and ensuring a safe and supportive school environment.

4. CONCLUSION

Based on the analysis of the legal framework and its practical implementation, it can be concluded that Law No. 35 of 2014 on Child Protection provides a substantial normative foundation for addressing bullying in schools in Indonesia. The law affirms the rights of children to be protected from all forms of violence, including bullying, and mandates a range of legal sanctions and protective mechanisms. However, in practice, the enforcement and application of these provisions remain inconsistent and often inadequate. Many schools and local authorities lack the capacity, resources, or understanding to properly implement the law, resulting in underreporting of bullying cases, insufficient sanctions for perpetrators, and inadequate support for victims. Although restorative justice and diversion are recognized under the Juvenile Criminal Justice System, their actual use in bullying cases is limited and inconsistent. Cultural perceptions that normalize bullying, combined with a lack of awareness among educators, parents, and even law enforcement officers, further hinder the law's effectiveness. The current system does not yet provide a strong deterrent against bullying nor does it consistently ensure the rehabilitation of offenders or the recovery of victims. Therefore, while the Child Protection Law holds significant potential, its effectiveness depends heavily on improvements in institutional capacity, inter-agency coordination, legal education, and community involvement. Without these reforms, the law will remain strong in theory but weak in practice in protecting children from bullying in educational settings.

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Assessment of Happiness Index among Higher Education Teaching Faculty Using Analytic Hierarchy Process (AHP)

Dr.G.Uma Maheswari
Professor, Department of Management Studies,
Chadalawada Ramanamma Engineering College, Tirpati

ABSTRACT

The well-being of teaching faculty is crucial for sustaining the quality of higher education. This study evaluates the Happiness Index of higher education faculty using a structured multi-criteria decision-making approach based on the Analytic Hierarchy Process (AHP). Key determinants of faculty happiness—work-life balance, institutional support, interpersonal relationships, compensation and benefits, recognition, and personal growth—were identified and prioritized through expert evaluations and faculty surveys. Pairwise comparisons and AHP computations determined the relative weights of each factor, and consistency ratios were verified for reliability. Results revealed that work-life balance and institutional support are the most influential drivers of faculty happiness, followed by recognition and interpersonal relationships. The resulting composite Happiness Index quantitatively represents faculty satisfaction and overall organizational well-being. This methodological framework provides actionable insights for policymakers and administrators to formulate strategies that enhance faculty happiness, teaching effectiveness, and institutional climate.

Keywords: Happiness Index, Teaching Faculty, Higher Education, Analytic Hierarchy Process, Faculty Well-being

1. INTRODUCTION

The happiness and well-being of teaching faculty are vital for ensuring the quality and sustainability of higher education institutions. Teachers play a central role in shaping the intellectual, social, and emotional development of students. Their satisfaction and happiness directly influence teaching effectiveness, student engagement, and institutional reputation. However, faculty members often face multiple stressors such as heavy workloads, administrative pressure, inadequate recognition, and imbalanced work–life integration. These challenges underscore the need to systematically assess and enhance the happiness of higher education faculty members.

Traditional approaches to measuring faculty satisfaction rely on survey scores or descriptive analysis, which may not capture the complex interrelationships among various influencing factors. Therefore, the present study adopts a Multi-criteria decision-making (MCDM) approach, specifically the Analytic Hierarchy Process (AHP), to evaluate and analyze the Happiness Index of teaching faculty. AHP allows the conversion of subjective judgments into quantitative weights, providing a structured and scientific framework for prioritizing determinants of happiness.

Given the rising stress levels, workload pressures, and changing academic environments, there is a growing need for a comprehensive and quantifiable framework to assess faculty happiness. Traditional survey-based or descriptive methods do not adequately capture the relative weight and priority of various factors that shape happiness—such as work–life balance, institutional support, recognition, interpersonal relationships, and compensation. Hence, there is a need to adopt a scientific, structured, and data-driven approach that can integrate both subjective and objective elements of happiness.

The Analytic Hierarchy Process (AHP) offers a suitable methodology for this purpose, as it allows researchers to prioritize multiple criteria through expert judgment and derive relative importance weights systematically. By applying AHP,

this study not only quantifies the complex construct of faculty happiness but also identifies the most influential determinants that require administrative attention.

Although faculty well-being and job satisfaction have been widely explored in the higher education context, there remains a significant gap in the systematic quantification and prioritization of the factors contributing to faculty happiness. Most existing studies on faculty happiness or satisfaction rely primarily on descriptive statistics, correlation analysis, or regression models, which identify relationships but fail to capture the relative importance and interdependence among multiple influencing factors.

Moreover, while the concept of happiness has been studied in psychology and sociology, its application within organizational and academic environments—particularly among Indian higher education faculty—is still in its formative stage. There is limited empirical research that integrates psychological constructs (happiness, well-being, satisfaction) with decision-analytic tools like the Analytic Hierarchy Process (AHP) to develop a composite Happiness Index.

There is also a contextual gap, as much of the available literature originates from Western countries, with relatively few studies addressing faculty happiness within developing nations, where socio-cultural and institutional structures differ significantly.

From the above research gap the following objectives are framed for the study:

1. To identify key factors influencing the happiness of higher education teaching faculty.
2. To construct a hierarchical model for evaluating the Happiness Index using the Analytic Hierarchy Process (AHP).
3. To assign relative weights to the factors and sub-factors affecting faculty happiness.
4. To compute an overall Happiness Index and interpret its implications for institutional management and policy.

2. RESEARCH METODOLOGY

2.1 Research Design

The study adopts a quantitative analytical research design integrating survey-based data with the AHP technique. The research framework consists of three levels: the goal (overall happiness index), criteria (major happiness dimensions), and sub-criteria (specific influencing indicators).

2.2 Identification of Factors

Through a comprehensive literature review and preliminary discussions with 15 senior faculty members, six key dimensions influencing faculty happiness were identified:

1. Work–Life Balance (WLB) – referring to workload, time management, and family–work harmony;
2. Institutional Support (IS) – encompassing administrative efficiency, infrastructure, and research facilitation;
3. Interpersonal Relationships (IR) – covering collegiality, communication, and teamwork within the institution;
4. Recognition and Career Growth (RCG) – including promotion opportunities, acknowledgment of achievements, and professional advancement;
5. Compensation and Benefits (CB) – related to salary, incentives, and job security; and
6. Personal Development and Well-being (PDW) – involving self-improvement, motivation, and mental health aspects.
7. Each dimension was further divided into two or three sub-factors—for example, Work–Life Balance included workload management, flexible scheduling, and family support; Institutional Support included infrastructure adequacy, administrative responsiveness, and research facilitation.

2.3 Conceptual Framework

The conceptual framework of this study is designed to illustrate the logical relationship between the key dimensions influencing faculty happiness and the analytical process used to quantify them through the Analytic Hierarchy Process (AHP). The model positions faculty happiness as the central construct, which is determined by a set of interrelated dimensions representing both organizational and personal factors. These dimensions collectively shape the perceived happiness and well-being of teaching faculty in higher education institutions.

At the first level, the goal of the framework is to determine the overall Happiness Index of teaching faculty. The second level consists of six major criteria or dimensions identified through literature review and expert consultation. Each of these dimensions is further divided into sub-criteria, which represent specific measurable indicators contributing to each main factor. For instance, the Work–Life Balance dimension includes workload management, flexibility of scheduling and institutional family support policies; Institutional Support includes access to resources, leadership responsiveness, and research opportunities.

The AHP methodology operationalizes this conceptual model by enabling pairwise comparisons among the criteria and sub-criteria to derive their relative importance weights. Through this hierarchical structure, subjective judgments from faculty experts are converted into quantitative measures, leading to the computation of a composite Happiness Index. The output of the AHP model provides both the overall happiness score and the priority ranking of factors, highlighting the most influential areas that institutions should address to enhance faculty happiness.

2.4 Data Collection

Data were collected from 120 teaching faculty members representing universities and autonomous colleges in Andhra Pradesh. Respondents provided judgments on the relative importance of the factors using pairwise comparison matrices on a 1–9 Saaty scale* where 1 indicates equal importance and 9 indicates extreme importance of one factor over another.

2.5 Analytical Hierarchy Process (AHP) Procedure

The AHP methodology involved the following steps:

1. Construct Hierarchy: The goal (faculty happiness) at the top, six main criteria in the second level, and sub-criteria in the third.
2. Pairwise Comparison: Experts compared each criterion against others based on their impact on happiness.
3. Calculate Eigenvectors: Derived from normalized comparison matrices to determine priority weights.
4. Consistency Check: Calculated the Consistency Ratio (CR) using Saaty's formula; a CR below 0.1 indicates consistent judgments.
5. Composite Weight Calculation: Final weights for all sub-criteria were obtained by multiplying local weights with corresponding criterion weights.
6. Happiness Index Computation: A weighted summation model was used to derive the overall Happiness Index for the faculty group.

2.6 Data Analysis Tools

Excel-based AHP templates and the Expert Choice software were used for calculations, consistency validation, and weight derivation. Descriptive statistics complemented AHP outputs for further interpretation.

3. RELATED RESEARCH/LITERATUR REVIEW

The concept of happiness, as discussed in positive psychology, is often associated with life satisfaction, job engagement, and emotional well-being (Diener, 2000). In the educational context, faculty happiness has been linked to organizational commitment, intrinsic motivation, and productivity. Studies by

Seligman (2011) and Lyubomirsky (2013) highlight that a positive psychological climate promotes creativity and job performance.

Recent research has extended happiness studies to specific professional sectors. In higher education, factors such as institutional support, autonomy, collegial relationships, remuneration, and recognition have been found to significantly influence well-being (Chong & Monroe, 2015). However, limited attempts have been made to integrate these dimensions within a quantitative analytical model.

The Analytic Hierarchy Process (AHP), proposed by Saaty (1980), offers a robust decision-making tool to handle such complexity. AHP decomposes a complex problem into a hierarchy of goal, criteria, and sub-criteria, followed by pairwise comparisons to derive normalized weights. This approach has been successfully applied in evaluating service quality, employee satisfaction, and organizational performance, but its application in assessing happiness among teaching faculty remains limited—thereby presenting an innovative direction for this study.

4. RESULTS AND DISCUSSION

4.1 Results

1) Weight Distribution of Criteria

The derived weights from pairwise comparisons indicated the following order of importance among criteria:

Criteria	Weight	Rank
Work–Life Balance (WLB)	0.245	1
Institutional Support (IS)	0.218	2
Recognition & Career Growth (RCG)	0.176	3
|Interpersonal Relationships (IR) |	0.152	4
Compensation & Benefits (CB)	0.121	5
Personal Development & Well-being (PDW)	0.088	6

The Consistency Ratio (CR) was 0.07, indicating acceptable consistency in expert judgments.

2) Interpretation

The analysis reveals that work–life balance emerged as the most influential factor determining happiness, reflecting the growing concern over workload and time management among faculty. Institutional support, particularly in terms of academic freedom, administrative assistance, and research opportunities, ranked second. Recognition and career growth were also significant, underscoring the motivational importance of acknowledgment and professional development.

Compensation and interpersonal relations had moderate influence, suggesting that while financial rewards matter, relational and environmental aspects are equally vital. Personal well-being, though important, was perceived as an individual responsibility rather than an institutional one.

3) Happiness Index Calculation

Using the weighted aggregation of normalized scores, the overall Happiness Index for the sampled faculty group was computed at 0.68 (on a scale of 0 to 1), indicating a moderately high level of happiness. However, disparities across institutions were observed—faculty from autonomous and well-funded institutions reported higher happiness levels compared to those in resource-constrained environments.

Implications of the Study

The findings highlight the multidimensional nature of faculty happiness and provide actionable insights for higher education administrators. Institutions aiming to enhance faculty happiness should:

1) Promote flexible and family-friendly policies to improve work–life balance.
2) Strengthen institutional support systems, especially in research facilitation and administrative processes.
3) Introduce transparent recognition and promotion mechanisms.

4) Foster collegiality and mentorship cultures within departments.
5) By incorporating these strategies, institutions can improve both faculty morale and institutional performance.

5. CONCLUSION

This study demonstrates that the Analytic Hierarchy Process (AHP) is an effective tool for quantifying the happiness index of higher education teaching faculty. It enables decision-makers to systematically evaluate multiple qualitative factors and their interrelationships. The derived Happiness Index serves not only as a diagnostic indicator but also as a strategic input for institutional policy formulation.

Future research could integrate AHP with Fuzzy Logic or Analytic Network Process (ANP) to capture uncertainty and interdependencies among factors more precisely. Extending the analysis across different geographical regions and academic disciplines could also enrich the understanding of faculty happiness dynamics in the Indian higher education context.

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TRANSLATING IDIOMATIC EXPRESSIONS: A STUDY OF TRANSLATION METHODS IN OMNISCIENT READER WEBTOON

Ni Wayan Swarniti[1)], I Gusti Bagus Ari Permadi[2)]

[1) 2)] Universitas Dwijendra
swarniti12@gmail.com
aripermadi964@gmail.com

ABSTRACT

This research investigated the translation methods used to analysis idiomatic expressions from English into Indonesian in the Omniscient Reader webtoon. This research employed a descriptive qualitative method, which is suitable for analyzing non- numerical data such as idiomatic expressions in translated webtoon texts. Using Peter Newmark's translation theory as a framework. Twenty episodes were analyzed with a focus on eight methods of translation: word for word translation, literal translation, faithful translation, semantic translation, idiomatic translation, communicative translation, free translation, and adaptation. The findings showed that communicative translation and free translation were most commonly used, reflecting the translator's aim for naturalness and audience comprehension. This research emphasizes the need for strategic adaptation in idiom translation and confirms the relevance of Newmark's framework for modern multimodal narratives.

Keywords: *idiomatic expressions, translation method, webtoon, Newmark's theory, translation analysis*

1. INTRODUCTION

Translation extends beyond the mere substitution of lexical items between languages; it constitutes a complex process of transferring meaning across linguistic, cultural, and contextual boundaries. This complexity is further intensified when translating idiomatic expressions, particularly within multimodal media such as webtoons, where visual cues, cultural nuances, and character interactions intricately shape the interpretation of meaning (Ahmadi et al., 2020; Park, 2021).

Idiomatic expressions present distinctive difficulties for translators because of their figurative meanings and departure from literal interpretation. A direct or word for word translation frequently results in the loss of the idiom's original sense and its embedded cultural significance. Consequently, translators need to adopt strategies that maintain not only the semantic equivalence but also the pragmatic force of the source message (Sipayung, 2020; Gita, 2021). Newmark's framework of translation methods which includes semantic, communicative, idiomatic, faithful, and free translation, among others provides a comprehensive foundation for examining how translators handle such intricate linguistic challenges (Newmark in Sitorus et al., 2021; Swarniti, 2021).

The translation of webtoons offers a particularly fertile ground for scholarly inquiry, as it merges visual and verbal modes of storytelling. Previous research, such as that of Anisah Sitorus et al. (2021), indicates that free and idiomatic translation methods are predominantly employed to enhance readability and ensure cultural accessibility. Likewise, studies by Wulandari (2021), Swarniti (2021), and Suastini highlight the crucial role of idiomatic awareness in translating comics and other forms of digital narratives. The translation of comics, in particular, requires sensitivity to both textual form and narrative content, as idiomatic expressions often intersect with elements of humor and emotional resonance (Naskah Publikasi, 2023).

Several research, including Ari (2020), Nugraha et al. (2017), and Al-Adwan (2020), have emphasized the necessity of maintaining a balance between literal accuracy and interpretative fidelity in comic translation. In a similar vein, Park

(2021), in her research, underscored the significance of adapting figurative language particularly idiomatic expressions in global media translation to prevent potential misinterpretations. Building upon these perspectives, the present research seeks to explore the translator's strategies in rendering idiomatic expressions by examining the English to Indonesian translation of the Omniscient Reader webtoon.

2. RESEARCH METODOLOGY

This research employed a descriptive qualitative approach, deemed appropriate for examining non numerical data such as idiomatic expressions found in translated webtoon texts. As noted by Miles and Huberman (1994, in Ahmadi et al., 2021), this methodological framework allows researchers to systematically observe, categorize, and interpret linguistic patterns through contextual analysis and interpretive insight.

The primary data of this research comprise idiomatic expressions extracted from both the English and Indonesian versions of the Omniscient Reader webtoon, specifically from episodes 1 through 20. Data collection was conducted through purposive sampling, focusing on utterances that exhibit idiomatic features. The identified expressions in the source language (SL) and target language (TL) were subsequently examined using Peter Newmark's (1988) framework of translation methods, with particular attention to faithful, semantic, idiomatic, communicative, and free translation approaches.

The classification of data in this research followed the procedure outlined by Sitorus et al. (2021), which involves mapping each idiomatic expression to Newmark's categories while considering stylistic nuances and cultural adjustments. This analytical approach is further reinforced by the frameworks proposed by Suastini (2021), Wahyudi (2021), Swarniti (2021), and Gita (2021), all of whom employed idiom centered analyses in their respective studies of wise sayings, short stories, and comic translations. In addition, Hartati et al. (2023) and Wulandari (2021) emphasize the importance of contextual fidelity in idiom translation to maintain the clarity and coherence of the narrative.

Furthermore, insights from Ari (2020), Naskah Publikasi (2023), and Park (2021) underscore the increasing importance of adapting idiomatic expressions in the translation of digital native narratives. Each idiom in the dataset was examined based on three key aspects: (1) the translation strategy employed, (2) its cultural appropriateness, and (3) its contribution to narrative coherence. This triangulated approach strengthens the validity of the analysis and supports a comprehensive interpretation of the translator's decision-making process.

3. RESULTS AND DISCUSSION

The findings of the analysis reveal the application of various idiom translation methods in rendering the Omniscient Reader's Viewpoint webtoon (episodes 1–20) from English into Indonesian. The detailed explanation of these methods and their contextual realizations is presented in the following section.

According to Newmark's (1988) theory, there are eight recognized methods of translation. However, this research identified only five of these methods in the English Indonesian translation of the Omniscient Reader's Viewpoint webtoon, namely communicative, idiomatic, faithful, free, and semantic translation. The remaining three methods word for word, literal, and adaptation were not observed in the analyzed data. A detailed explanation of these findings is presented in the following discussion.

1) Faithful Translation
   a) SL: (Episode 1)
      get sucked into your phone
      TL: (Episode 1)
      Kau bisa masuk ke dalam handphone
   b) SL : (Episode 5)

The chances are fifty-fifty anyways
TL: (Episode 5)
Karena kemungkinannya 50 banding 50

c) SL: (Episode 7)
We're nothing but grasshoppers to him
TL: (Episode 7)
Benar kita ini seperti belalang di mata dia

In this first datum, the expression *get sucked into your phone* is rendered as *kau bisa masuk ke dalam handphone*. The translator preserves both the syntactic and lexical composition of the SL, reflecting a direct correspondence between the verb phrase *get sucked into* and *masuk ke dalam*. The figurative nuance of being absorbed or drawn into the digital world is retained without cultural adaptation. This demonstrates a faithful translation approach, as the TL mirrors the original semantic content and structural form while maintaining the intended imagery.

The translator maintains the numerical idiom *fifty-fifty* as *50 banding 50*, a literal transfer that preserves the original statistical equivalence. The addition of *karena* serves a pragmatic function to align with conversational flow in the TL but does not alter the propositional meaning. The translation thus exemplifies faithfulness through semantic and structural consistency, demonstrating the translator's attempt to reproduce meaning precisely without interpretative modification.

This utterance contains a metaphorical comparison in the SL (*grasshoppers*) symbolizing inferiority. The translator retains the metaphor directly as *seperti belalang*, rather than substituting it with a culturally equivalent idiom. This decision preserves the figurative imagery and emotional tone of the source text. The translation is therefore classified as faithful since it maintains the original metaphorical structure and meaning without domestication.

2) Semantic Translation

a) SL: (Episode 4)
It was Namwoon Kim who drove a wedge into the crack Destroyed the sense of morality that had been binding society together.
TL: (Episode 4)
Dalam keadaan di mana dunia dengan moral yang samar mulai hancur .yang membuat keretakan adalah Namwoon Kim.

In this datum, the SL employs a figurative expression destroyed the sense of morality that had been binding society together which metaphorically depicts the disintegration of collective ethical values. The translator does not render the metaphor literally but restructures the sentence to fit Indonesian linguistic and cultural norms, producing *dunia dengan moral yang samar mulai hancur*. This rephrasing maintains the semantic essence of the original namely, the decay of moral order while reformulating the expression to achieve fluency and naturalness in the TL.

3) Free Translation

a) SL: (Episode 1)
Third-rate College
TL :(Episode 1)
Universitas desa kelas kambing

b) SL:(Episode 4)
It was Namwoon Kim who drove a wedge into the crack . Destroyed the sense of morality that had been binding society together.
TL: (Episode 4)
Dalam keadaan di mana dunia dengan moral yang samar mulai hancur .yang membuat keretakan adalah Namwoon Kim

c) SL: (Episode 6)
Jeez , you know-it-alls are all the same.
TL: (Episode 6)
Memang, semua orang kolot itu sama.

In the first datum, the phrase *third-rate college* is a derogatory idiom in English referring to a poor quality or unprestigious educational institution. The translator rendered this as *universitas desa kelas kambing*, which carries an exaggerated connotation in Indonesian, equating it with a rural, low status university. This is not a literal translation but a cultural and humorous reinterpretation of the source phrase. Therefore, free translation was applied, as the translator focused on delivering the message creatively rather than preserving the original form.

Based on the second datum, the idiom *Namwoon Kim who drove a wedge into a crack* was translated as *yang membuat keretakan adalah Namwoon Kim*. The metaphor in the source language, which signifies deepening a division or conflict, was omitted in favor of a more direct statement. The translator prioritized clarity and cultural familiarity, resulting in a rendering that communicates the meaning without preserving the metaphor. Thus, free translation was applied, as the focus was on communicating the idea over literal or idiomatic accuracy.

In the third datum, the idiom *know-it-alls* refer to people who are arrogantly opinionated or believe they know everything. The translator adapted this into *orang kolot*, which typically refers to old fashioned or stubborn individuals in Indonesian. Though this does not carry the exact connotation, it preserves the dismissive and critical tone of the original. Because the translator abandoned a literal approach and instead chose a culturally relevant expression, free translation was used to better suit the target audience.

4) Idiomatic Translation
   a) SL : (Episode 6)
      I knew what he was going to do, it was like i could read his mind
      TL : (Episode 6)
      Aku bisa tahu dengan jelas seperti membaca isi hati namwoon kim
   b) SL: (Episode 7)
      They are the most mysterious being in TWSA and the masterminds behind this treagedy who livestream the scenarios from across the universe.
      TL:(Episode 7)
      Keberadaan paling misterius di dunia TCBHDH dan dalang yang duduk menyaksikan semua cerita tragis ini dari puncak nebula yang jauh itu.
   c) SL:(Episode 16)
      H-how could you be so cold-blooded
      TL : (Episode 16)
      Sa-sadis sekali

In the first datum, the English idiom *read his mind* expresses intuitive understanding or an ability to predict someone's thoughts. The translator renders it as *membaca isi hati*, a culturally familiar Indonesian idiom that conveys a similar intuitive perception. Rather than a literal transfer, this adaptation uses an equivalent idiomatic structure in the TL, effectively preserving both the semantic intent and the emotional nuance of the original. This demonstrates idiomatic translation in practice, where linguistic and cultural equivalence are prioritized over structural correspondence.

Based on the second datum above the term *masterminds* in the SL refers to individuals who secretly orchestrate events. The translator substitutes it with the Indonesian term *dalang*, a culturally embedded metaphor derived from traditional *wayang* (shadow puppetry), symbolizing a figure who controls actions from behind the scenes. This substitution preserves the idiomatic meaning while enriching the translation with local cultural color. The use of *dalang* thus exemplifies idiomatic translation, as it captures both the figurative sense and cultural relevance of the original expression within the TL context.

The idiom *cold-blooded* denotes a lack of empathy or extreme cruelty. In the TL, it is rendered as *sadis*, an Indonesian lexicalized term carrying equivalent emotional and moral connotations. While *sadis* is not a literal translation, it mirrors

the figurative force and affective tone of *cold-blooded*. This demonstrates the translator's idiomatic sensitivity selecting a term that resonates naturally with Indonesian readers while maintaining the expressive impact of the SL.

5) Communicative Translation
   a) SL: (Episode 13)
      You are pisssing of me
      TL: (Episode 13)
      Kau benar- benar membuatku kesal
   b) SL: (Episode 17)
      What a joke. those two faced bastards...
      TL:(Episode 17)
      Ha, Lucu ya. padahal tadi sok ragu- ragu..
   c) SL: (Episode 20)
      You can point fingers at me all you want. I am a despicable grown up
      TL: (Episode 20)
      Tidak ada gunanya menyebutku kejam. karena aku adalah orang dewasa yang licik

Based on the first datum above the phrase "*pissing off*" is an informal and emotionally charged expression used to show irritation or anger. Rather than translating it literally, the translator uses "*membuatku kesal*", a natural and context-appropriate equivalent in Indonesian. This translation conveys the intended emotion clearly and accessibly for the target audience. The goal here is not to preserve the idiomatic structure but to ensure the message is understood effectively, making this an example of communicative translation.

In the second datum that sentence includes informal, harsh expressions like "*what a joke*" and "*two-faced bastards*". The translator simplifies and softens the tone in the TL by rephrasing it as "*padahal tadi sok ragu-ragu,*" which still communicates the speaker's sarcasm and judgment. The specific insult is omitted, but the tone and message remain. This reflects a choice to prioritize natural communication over literal form, fitting the communicative translation method.

Based on the third text above, the figurative expression "*point fingers at me*" is translated into "*menyebutku kejam*", a phrase that aligns with how blame is culturally expressed in Indonesian. The TL also adapts "*despicable grown-up*" into "*orang dewasa yang licik*", which is slightly less dramatic but effectively conveys the meaning. This adaptation ensures that the emotional impact and message are delivered naturally to the target audience, demonstrating a clear case of communicative translation.

4. CONCLUSION

This research examined the translation methods applied in rendering idiomatic expressions from English into Indonesian in the Omniscient Reader webtoon. The analysis employed Peter Newmark's theoretical framework, focusing on idiomatic expressions identified across Episodes 1 to 20. Among Newmark's eight proposed translation methods, five were found in the corpus: faithful, semantic, free, idiomatic, and communicative translation. The results indicate that the translator prioritizes meaning equivalence and cultural naturalness over rigid structural correspondence. Faithful and semantic methods were primarily used to retain the core meaning and metaphorical depth of the source text, whereas free and communicative translations were adopted to ensure fluency and readability in the target language. Additionally, idiomatic translation was effectively utilized to replace English idioms with culturally analogous Indonesian expressions, thereby maintaining both emotional resonance and stylistic tone within the translated text.

This research highlights that translating idiomatic expressions in webtoons requires a high degree of strategic flexibility. The translator's ability to alternate between different translation methods illustrates an intentional effort to balance readability, narrative tone, and cultural resonance. The findings extend the scope of applied translation studies by revealing how idioms operate within multimodal

and serialized storytelling environments such as webtoons. Ultimately, this research emphasizes the significance of idiom awareness and methodological adaptability in both literary and digital translation practices, reaffirming the continued relevance of Newmark's framework as a valuable analytical model for examining idiom translation in contemporary media discourse.

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LEGAL PROTECTION FOR CAR RENTAL COMPANIES IN THE EVENT OF BREACH OF THE RENTAL AGREEMENT(CASE STUDY AT PT. BALI GEDE RENT CAR)

[1)]Dr.Anak Agung Sagung Ngurah Indradewi,S.H.,M.H, [2)]Ngurah Putu Susma Ari Surya Diputra,S.H.,M.H

[1), 2)] Dwijendra University
[1)] indradewi783@gmail.com,
[2)]sngurah@gmail.com

ABSTRACT

Implementing the lease agreement, if a debtor (tenant) does not do what has been agreed upon, he will be said to be in default. So he is negligent or negligent or denial. Problems in implementing the lease agreement will arise in the practice of renting a car, it turns out that the debtor or tenant only paid part of the rent which was not in accordance with the agreed agreement, in this case the debtor is in default. In this study, the author conducted research on car rental service providers at PT. Bali Gede Rent Car which provides daily, weekly, and monthly car rentals for private individuals. renting vehicles in the minibus category throughout Bali, providing vehicle storage for rent during the contract period, opening car rentals and car rental franchises, f*acilitate consumers by providing drivers, both within the city and outside the city at certain rates according to the company's terms and conditions. The driver's price does not include accommodation, therefore it is important for legal protection for the party renting out the car when carrying out car rental activities. Data obtained at PT. Bali Gede Rent Car in the last three (3) years, namely 2023, 2024 and 2025. In 2023 there were 8 cases, in 2024 there were 2 cases, in 2025 there were 5 cases. Based on this, this study raises two problem formulations, namely: 1. Why is the car rental agreement used as the basis for renting cars at PT. Bali Gede Rent Car? and 2. What form of legal protection is provided to the car rental company if the car renter experiences default on the car rental agreement at PT Bali Gede Rent Car? This type of research is descriptive empirical research using primary and secondary data sources where the data collection techniques field research techniques and interviews where the data obtained will be processed and analyzed using the Qualitative Descriptive method. The conclusion of this study is that the car rental agreement is used as the basis for car rental because the rental agreement is an absolute requirement that must be completed before giving the car keys to be rented ,where in the rental agreement there are rules that explain the mechanism of car rental and sanctions that will be imposed if the rental agreement is violated where point - point in the rental agreement must be obeyed by both parties. Forms of legal protection for car rental companies if the car renter defaults on the car rental agreement is a guarantee and compensation provisions contained in the car rental agreement where the car rental agreement starts with the process of picking up the car which is preceded by checking and returning which also ends with checking the condition of the car being rented out, so as to prevent default from both the lessee car or rental car party*

Keywords: Agreement, Car Rental, Default

1. INTRODUCTION

In developing countries like Indonesia, with its high population density, continuously expanding economic activity, and vast archipelagic territory, people are highly dependent on transportation to travel from one place to another (Sahban, M.A., & SE, M: 2018). Without adequate transportation, satisfactory results cannot

be expected in a country's economic development efforts. Car rentals provide car rental services, either on a daily basis or on a contract basis, with a driver or without a driver. The use of car rentals can be developed as a breakthrough for individuals or companies that do not have their own means of transportation for operational purposes (Romadhon, M.H., Yudhistira, Y., & Mukrodin, M. 2021). Car rentals are charged a fee or rental price for the vehicle or car being rented, based on the agreed rental price between the renter and the car rental company. A rental agreement is a consensual agreement, meaning it is valid and binding upon reaching an agreement on its essential elements, namely the goods and the price. In the implementation of a general agreement involving two parties in the use of goods or money, in which there is a creditor and a debtor, the car rental service provider as (creditor) is obliged to hand over the goods in the form of a car worth tens of millions or even hundreds of millions of rupiah to the renter (debtor) for several hours, days, months, or even years. This means there is a possibility of misuse of the goods by the renter. Therefore, it is appropriate to require collateral, both movable and immovable, to protect the creditor in the event that the debtor commits a default or an unlawful act. If a renter commits a default, the creditor is not worried about losses that may arise from the goods handed over to him by the renter. To anticipate this, it is important to pay attention to the importance of legal protection, especially for the renter in the rental activity, to ensure the smooth running of the car rental activity. In the implementation of a rental agreement, if a debtor (renter) does not fulfill what has been promised, he will be considered in default.

So he is negligent or negligent or reneges. Problems in the implementation of the rental agreement will arise in the practice of renting a car, it turns out that the debtor or renter only pays part of the rent that is not in accordance with the agreed agreement, in this case the debtor is in default (Pohan, M. N., & Hidayani, S.: 2020). The personal defaults that have occurred at PT. Bali Gede Rentcar are first the renter is late in returning the rented car, second several vehicles have frequent accidents resulting in dents in the rental car which are not compensated by the renter, third the car rented by the renter is pawned.If the lessee takes certain parts or all of the rented vehicle, it may also occur if the car is not returned according to the agreed time. This certainly results in losses for the lessor, both in terms of time loss and loss of the rented item. Therefore, although many lessees, both individuals and institutions, intend to rent vehicles so that they can provide benefits to the lessor, it is possible that the car is pawned or rented to someone else at a rate higher than the previous rate. Therefore, in the rental agreement, collateral can be imposed so that the creditor does not suffer if at any time a lessee is in default. According to the data obtained at PT. Bali Gede Rent Car in the last three years (3), namely 2023, 2024 and 2025. In 2023 there were 8 cases, in 2024 there were 2 cases, in 2025 there were 5 cases. Based on this, this study raises two problem formulations, namely: 1. Why is the car rental agreement used as a basis for renting a car at PT. Bali Gede Rent Car? and 2. What is the form of legal protection for the car rental company if the car renter experiences a default on the car rental agreement at PT, Bali Gede Rent Car? Therefore, it is important for legal protection for the renting party in carrying out car rental activities. So based on the description above, the author will conduct a study entitled Legal Protection Against Car Rental Companies in the Event of Default on the Car Rental Agreement at PT. Bali Gede Rent Car.

2. RESEARCH METODOLOGY

The type of research used in this study is empirical, a legal research method that utilizes empirical facts derived from human behavior, both verbal behavior obtained through interviews and actual behavior through direct observation. Empirical law is scientific research that explains legal phenomena concerning the gap between norms and societal behavior (the gap between das sollen and das sein).

3. RELATED RESEARCH/LITERATUR REVIEW

A lease is a consensual agreement, meaning it is valid and binding upon reaching an agreement on its essential elements, namely the goods and the price. For a car lease, the lessee first signs the agreement, which serves as proof of payment of the rental fee or a portion of the rental fee to the lessor (Artdityo, A., Busro, A., & Lumbanraja, A.D.: 2019). Furthermore, a lease agreement also contains demands from both parties, both the owner and the lessee, who will naturally sue. fulfillment of the requirements and obligations submitted. The implementation of a car rental agreement begins with an agreement between the two parties who do not want to be disadvantaged. There are two types of car rental agreements, namely a car rental agreement with a driver and a car rental agreement without a driver. A car rental agreement means that the party renting only provides the car rented by the renter. The definition of a named agreement (benoemd/nominaat) is an agreement that has been regulated and given a name by the legislator, because it is most widely used in everyday life. The regulations are contained in Book III of the Civil Code, Chapters V to XVIII. An unnamed agreement (onbenoemde overeenkomst/innominaat) is an agreement that has not been regulated in the Civil Code, but exists in society (Mariam Darus Badrulzaman, : 2011).

Bali tourism is undoubtedly a popular destination for both foreign and domestic tourists. Bali tourism has become a popular world tourist destination in all countries. This is proven by the increasing number of foreign and domestic tourist visits to Bali from year to year (Zebua, M.: 2016). Tourists vacationing in Bali certainly want to visit all the tourist attractions in Bali, therefore, facilities are needed for tourists. Cars are one of the vehicles that can be used by tourists staying in Bali to travel or visit tourist attractions. The use of cars is also very popular among Balinese tourists, given the proliferation of car rental places in Bali. Tourists who want to rent a car can do so with a rental agreement between the lessor and the party providing the rental. Regulations regarding agreements are contained in Article 1313 of the Indonesian Criminal Code, which states that "an agreement is an act by which one or more people bind themselves to one or more other people ."The lessee can benefit from the enjoyment of the object from the rented object and the lessor can benefit by obtaining the rental price that has been given by the lessee. Legal protection for business actors is regulated in Law Number 8 of 1999 concerning Consumer Protection in Article 6 letter b concerning the Rights of Business Actors, namely the right to obtain legal protection from consumer actions with bad intentions. According to Article 1 paragraph 3 of the Consumer Protection Law, it explains that business actors are every individual or business entity, whether in the form of a legal entity or not a legal entity established and domiciled or carrying out activities within the jurisdiction of the Republic of Indonesia, either alone or together through an agreement to organize business activities in various economic fields. The agreement is made without any coercion from other parties, but voluntarily by the parties. The creation of this motor vehicle rental agreement is expected to allow the parties to have a good relationship in implementing the agreement so that the obligations or achievements of the parties are carried out according to their respective obligations.

4. RESULTS AND DISCUSSION

4.1 Agreements are used as the basis for car rentals at PT. Bali Gede Rent Car

The legal term "agreement" or "contract" is a translation of the English word "contract law," while in Dutch it is called "overrnscomsrecht." Based on the definition contained in Article 1313 of the Civil Code, an agreement is an act in which one or more people bind themselves to one or more other people. In other words, an agreement is an event in which one person promises to perform something. From this event, a relationship arises between the two people, called an obligation. Thus, the agreement creates a bond between the two parties who make it. In its formal form, an agreement is a series of words containing promises or commitments,

spoken or written (Agus Sugiarto & Lina Sinatra, 2012). An agreement is a legal relationship between two people or two parties, based on which one party has the right to demand something from the other party and the other party is obliged to fulfill that demand (R. Subekti,: 2007). Agreements in the Civil Code are regulated in Article 1313 which states that "an agreement is an act by which one or more people bind themselves to one or more other people." What are the clauses in the contents of the agreement? According to Subekti, an agreement is an event in which one person promises to another person or where two people promise each other to carry out something. The term agreement comes from the Dutch language, namely overeenkomst. Article 1313 of the Civil Code states that an agreement is an act by which one or more people bind themselves to one or more people. Article 1313 of the Civil Code regulates that an agreement is an act by which one or more people bind themselves to one other person. This article explains simply the meaning of an agreement which describes The existence of two parties who bind themselves to each other. This definition is actually not very complete, but with this definition it is clear that in the agreement there is one party binding himself to another party (Ahmadi Miru and Sakka Pati, 2011). Subekti stated that an agreement is an event where someone promises to another person or where two people promise each other to do something (Ahmadi Miru and Sakka Pati,: 2011). In contrast to Subekti, according to Sudikno Mertokusumo, an agreement is a legal relationship between two or more parties based on an agreement to give rise to legal consequences (Sudikno Ahmadi Miru and Sakka Pati, 2011). Wirdjono Prodjodikoro defines an agreement as a legal relationship regarding property between two parties, in which one party promises or is deemed to have promised to do something, while the other party has the right to demand the implementation of that promise (Wirdjono Prodjodikoro, 2000).

According to Black's Law Dictionary, an agreement is an agreement between two or more people. This agreement creates an obligation to do or not do something partially". The core definition listed in Black's Law Dictionary is that a contract is seen as an agreement of the parties to carry out obligations, either doing or not doing it partially (Salim, HS, :2003). According to Sudikno Mertokusumo, an agreement is a legal relationship between two or more parties based on an agreement to give rise to legal consequences. This means that both parties agree to determine regulations or rules or rights and obligations that bind them to be obeyed and implemented. The agreement is to give rise to legal consequences, namely giving rise to rights and obligations, so that if the agreement is violated there will be legal consequences or sanctions for the violator. Several definitions of the agreement described above show that some define it as an act, an event and some define it as a legal relationship. The author agrees more with the definition given by Maryati Bachtiar, namely an agreement as a legal act between one party and another party based on an agreement, which aims to give rise to rights and obligations that bind the parties who entered into the agreement (Maryati Bachtiar, :2007).

In an agreement, when the time period has expired, the lessee must immediately hand over the goods that are being rented. Regarding the end of the rental period made in a written agreement, it is regulated in Article 1570 of the Civil Code which states: "If the lease is made in writing, then the lease ends by law when the specified time has passed, without any need for termination for that. Therefore, if the rental period specified in the agreement has expired, then the lessee must immediately hand over or return the rented goods in the same condition as when the goods were handed over." The rental agreement is regulated in Article 1548 of the Civil Code which states: "A rental agreement is an agreement by which one party binds himself to provide enjoyment of an item to another party for a certain time by paying a price that the latter party agrees to." Actions or legal actions give rise to contractual legal relations so that one party is given by the other party to obtain achievements, while the other party also fulfills the achievements. So one party obtains the rights and the other party assumes the authority to submit or fulfill achievements. The rights and obligations of the parties are based on certain causes

which are bound by article 1337 which states that "A cause is prohibited, if it is prohibited by law, or if it is contrary to good morality or public order".

Based on an interview with I Putu Pujanam Surya Buana, Marketing Officer at Bali Gede Rent Car, he stated that legal protection for car rental companies in the event of a renter's default under the rental agreement with PT. Bali Gede Rent Car is provided by the rental agreement's terms and conditions, which require a guarantee from the renter. The following points are included in the agreement:

1) For self-drive car rentals in Bali, the renter driving the car is required to have a valid Class A driver's license.

2) Renters are expected to provide complete personal information, such as their residential address, the name of the accommodation, such as a hotel or villa in Bali, along with the room number and the name of the renter registered at the hotel or villa.

3) The renter's identity card (KTP) will be kept or borrowed during the rental period and will be returned upon return of the rental vehicle.

4) If the renter uses the car beyond the agreed rental period, an overtime fee of 10% of the daily rental price will be charged. If the overtime exceeds 5 hours, the rental fee will be calculated as one day's rental fee.

5) Vehicle use is permitted only within the province of Bali. Use of the vehicle outside the province of Bali will be subject to sanctions in accordance with the rules and regulations of the Bali Car Rental Association.

6) PT. Bali Gede Rent Car reserves the right to refuse a customer's booking if the customer exhibits rude behavior, insults, curses, or commits acts of violence.

7) If damage occurs to the rental unit while the vehicle is being used by the renter, the repair costs will be fully borne by the renter.

based on contract theory, the elements of an agreement are necessary to determine whether an agreement is being met, and whether it has legal consequences. Abdulkadir Muhammad describes the elements of an agreement as follows:

1. There are parties. These parties are the subjects of the agreement, consisting of at least two individuals or legal entities and having the authority to perform legal acts under the law.

2. There is an agreement. An agreement is made between the parties and is permanent and not a negotiation.

3. There is a goal to be achieved. This means that the parties' goals do not conflict with public order, morality, or the law.

4. There is a performance to be performed. This means that the performance is an obligation that must be fulfilled by the parties in accordance with the terms of the agreement.

5. There is a specific form, oral or written. This means that the agreement can be expressed orally or in writing. This is in accordance with the provisions of the law, which stipulate that only a specific form will an agreement have binding force and strong evidence.

6. There are certain requirements according to law, in order for an agreement or contract to be valid.

Norms that promote justice must truly function as regulations that are obeyed. Justice and legal certainty are integral parts of law. He argued that justice and legal certainty must be considered, and legal certainty must be maintained for

the sake of a nation's security and order. Ultimately, positive law must always be obeyed. Based on the theory of legal certainty and the values to be achieved, namely the values of justice and happiness. Certainty is a matter (condition) that is certain. Law must be essentially certain and just. Legal certainty is a question that can only be answered normatively, not sociologically. Normative legal certainty is when a regulation is created and enacted with certainty because it regulates precisely and logically. Legal certainty is one of the goals of law and can be said to be an effort to realize justice.

A concrete form of legal certainty is the implementation and enforcement of the law against an action regardless of who commits it. With legal certainty, everyone can predict what will happen if they commit a legal action; certainty is essential for realizing justice. Certainty is one of the inseparable characteristics of law, especially for written legal norms. Law without certainty will lose its meaning because it cannot be used as a guideline for behavior for everyone. Legal certainty refers to the application of clear, precise, consistent, and consequential laws whose implementation cannot be influenced by subjective circumstances. Law is a collection of regulations or rules in a communal life, the entire regulation of behavior that applies in a communal life whose implementation can be enforced with a sanction. Legal certainty is an inseparable characteristic of law, especially for written legal norms.

4.2. Legal protection for car rental companies if the renter defaults on the car rental agreement at PT. Bali Gede Rent Car

Rosa Agustina concluded that a tort is a civil wrong in which a person commits an act that results in harm to another person by violating rights and obligations established by law, and does not arise from a contract or trust, requiring compensation for the resulting loss (Agustina, Rosa, 2013). However, in terms of legal theory and legal history, tort and contract are not always considered independent or separate concepts. According to Subekti, an agreement is an event in which one person promises to another or where two people mutually promise to perform something (R. Subekti:2004.). Agreements in the Civil Code are regulated in Article 1313 which states that "an agreement is an act by which one or more people bind themselves to one or more other people." What are the clauses in the contents of the agreement? Car rental agreements are new agreements but have experienced very rapid progress. This is evidenced by the many existing car rental services. Rental agreements are regulated in Article 1548 of the Civil Code which reads: "Renting is an agreement by which one party binds itself to provide enjoyment of an item to another party for a certain period of time by paying a price agreed by the latter party." In an agreement, when the time period has expired, the lessee must immediately hand over the item being rented. Regarding the end of the rental period made in a written agreement, it is regulated in Article 1570 of the Civil Code which states: "If the lease is made in writing, then the lease ends by law when the specified time has passed, without any need for termination for that. Therefore, if the rental period specified in the agreement has expired, then the lessee must immediately hand over or return the rented goods in the same condition as when the goods were handed over." Legal actions or deeds create a legal relationship of agreement so that one party is given by the other party to obtain performance, while the other party also fulfills the performance. So one party obtains rights and the other party bears the authority to submit or fulfill the performance. The rights and obligations of the parties are based on certain reasons that are bound by article 1337 which states that "A reason is prohibited, if it is prohibited by law, or if it is contrary to good morals or public order" Default is: "Implementation of an agreement that is not on time or is carried out improperly or is not carried out at all." (Yahya Harahap: 2000) In general, default is: "A situation where a debtor (owing) does not fulfill or carry out the performance as stipulated in an agreement". Default occurs when one party does not fulfill what is his obligation that has been stipulated in the agreement, both the agreement that arises from the agreement or the law.

Default can occur either intentionally or unintentionally. An unintentional default can occur due to a party's inability to fulfill the obligation or being forced to refrain from performing the obligation (Ahmadi Miru, 2007). In the implementation of an agreement, if a situation arises where the obligated party fails to perform an obligation (obligation) not due to force majeure, the obligated party will be asked for compensation (J. Satrio, 2010).

There are four consequences of default, as follows:

a. The obligation remains in existence.

b. The obligated party must pay compensation to the creditor (Article 1243 of the Civil Code).

c. The burden of risk shifts to the debtor's losses if the obstacle arises after the debtor's default, unless there is a gap or major error on the part of the creditor. Therefore, the debtor is not permitted to rely on force majeure.

d. If the obligation arises from a reciprocal agreement, the creditor can be released from its obligation to provide counter-performance by using Article 1266 of the Civil Code.

A breach of contract results in the other party (the counterparty to the defaulting party) being harmed. Because the other party is harmed by the breach, the party in breach of contract must bear the consequences of the counterparty's demands, which may include:

a. Cancellation of the agreement only
b. Cancellation of the agreement accompanied by a demand for compensation, in the form of costs, losses, and interest.
c. Fulfillment of the contract only, where the creditor only demands the debtor's performance.
d. Fulfillment of the contract accompanied by a demand for compensation. The creditor demands that the debtor, in addition to performance, also provide compensation (Article 1267 of the Civil Code).
e. Demanding compensation only.

All of the above issues will have legal consequences, namely that the party in breach of contract must bear the consequences or penalties in the form of:

a. Compensation for costs, losses, and interest due to the failure to fulfill an agreement. Therefore, compensation is essentially compensation for losses incurred by the debtor due to the debtor's breach of contract.According to Article 1246 of the Civil Code, compensation consists of three elements:

   a) Costs, namely all expenses or costs actually incurred.

   b) Losses, namely losses due to damage to the creditor's property caused by the debtor's negligence.

   c) Interest, which is the profit that the creditor would have received or expected if the debtor had not defaulted. Compensation for default has limitations. The law stipulates that the losses that must be paid by the debtor to the creditor as a result of default are as follows:

      1) Losses that were foreseeable when the agreement was made. According to Article 1247 of the Civil Code, the debtor is only required to pay compensation for losses that were actually foreseeable or should have been foreseen at the time the agreement was made, unless the failure to fulfill the agreement was due to fraud on his part.
      2) Losses as a direct result of default. According to Article 1248 of the Civil Code, if the failure to fulfill the agreement is due to the debtor's fraud, the

payment of compensation only covers the losses suffered by the creditor and the profits lost, consisting only of what.

3) Based on the principle of Exceptio Non Adimpleti Contractus, the party harmed by a default can only be compensated for those losses that are a direct result of the failure to fulfill the agreement.

b. Cancellation of the agreement or breaking of the agreement. Cancellation of an agreement or breaking of an agreement aims to bring both parties back to the situation before the agreement was entered into.

c. Transfer of Risk, Transfer of risk is the obligation to bear losses if an event occurs beyond the fault of one of the parties which affects the goods and becomes the object of the agreement in accordance with Article 1237 of the Civil Code

Based on an interview with Prana Mukti as the Owner at Bali Gede Rent Car, he said that legal protection for car rental companies if the car renter experiences a default on the car rental agreement at PT. Bali Gede Rent Car is the existence of guarantees and compensation provisions stated in the car rental agreement where the car rental agreement begins from the car pick-up process which is preceded by an inspection and return which also ends with an inspection of the condition of the rented car, so that it can prevent default from both the car renter and the rent car party. Legal protection is one of the most important things in the elements of a state of law. This is considered important, because in the formation of a state, laws will also be formed that regulate each of its citizens, (Indradewi, A. S. N.: 2015). In its development, a reciprocal relationship will be established between a state and its citizens, which results in the existence of rights and obligations between each other, and legal protection is one of the rights that must be provided by a state to its citizens. Legal protection is closely related to the concept of a state based on law, because the birth of this concept is the aim of recognizing and protecting human rights (Dewi, N. M. L.: 2019).

5. CONCLUSION

5.1. Conclusion

1) The agreement serves as the basis for car rentals at PT. Bali Gede Rent Car because it is an absolute requirement that must be fulfilled before providing the car for rent. The rental agreement contains rules explaining the car rental mechanism and sanctions that will be imposed if any violations occur. All points in the rental agreement must be complied with by both parties.

2) Legal protection for the car rental company in the event of a car renter's default under the car rental agreement at PT. Bali Gede Rent Car is provided by the guarantee and compensation provisions stipulated in the car rental agreement. The car rental agreement begins with the car pick-up process, followed by an inspection and return, and ends with an inspection of the condition of the rented car. Therefore, in the event of a default, the car renter can immediately claim damages in accordance with the agreement.

5.2. Suggestions

1) Car rental business owners are advised to enter into a written agreement with specific terms and conditions before renting a car. This agreement serves as a basis for seeking compensation in the event of a default.

2) Car rental owners are advised to be thorough when renting a car. This is expected to minimize the risk of default due to a lack of understanding of the terms of the rental agreement.

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EMPOWERING FARMERS THROUGH SUBAK INSTITUTIONS TO SUSTAIN CULTURAL AND ECOTOURISM IN BALI

(Empowering Farmers Through Subak Institutions to Support Sustainable Cultural Tourism and Ecotourism in Bali)

Ni Putu Nina Eka Lestari[1)], Made Kembar Sri Budhi[2)], Nyoman Windu Surya Sidantha[3)]

[1)]Faculty of Economics and Business, Universitas Pendidikan Nasional, Bali, Indonesia
putuninaekalestari@undiknas.ac.id
[2)]Faculty of Economics and Business, Udayana University, Bali, Indonesia
kadek_dedek@unud.ac.id
[3)]Faculty of Communication, Universitas Dwijendra, Bali, Indonesia
windusuryasidanta2000@gmail.com

ABSTRACT

This study explores the empowerment of farmers through the traditional Subak institution as a strategic model to sustain cultural and ecotourism in Bali. Subak, as a UNESCO-recognized cultural heritage, operates based on the Tri Hita Karana philosophy that harmonizes relationships among humans, nature, and the divine. Using a qualitative approach through observation, interviews, and focus group discussions in Subak Pulagan, Tampaksiring District, Gianyar Regency, this study identifies the social and economic functions of Subak that support both agricultural sustainability and tourism development. The findings reveal that Subak maintains traditional management practices emphasizing cooperation, trust, and community-based rituals that attract cultural tourists. Farmer empowerment occurs through targeted participation, group collaboration, and economic strengthening, including capital access and agritourism development. The study formulates a model of empowerment that integrates local wisdom, institutional participation, and socio-economic transformation, enabling Subak to function as a sustainable cultural and economic entity. This research contributes to the discourse on community-based tourism, sustainable agriculture, and cultural preservation, providing insights for policymakers and stakeholders in rural tourism development.

Keywords: *cultural heritage, farmer empowerment, local wisdom, subak, sustainable tourism*

INTRODUCTION

The introduction provides the background and rationale of the study. It describes the importance of Subak as a traditional agricultural institution in Bali recognized by UNESCO, which embodies the Tri Hita Karana philosophy that balances human, natural, and divine relationships. Tourism in Bali heavily depends on agricultural landscapes and water systems maintained by Subak. However, modernization and land conversion threaten the sustainability of both agriculture and cultural tourism. Therefore, empowering Subak farmers becomes a crucial strategy to sustain the socio-cultural and economic balance while strengthening community-based tourism. This study aims to identify the social and economic functions of Subak that support sustainable tourism and to formulate a model of farmer empowerment through Subak institutions.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Farmer Empowerment

Farmer empowerment refers to the process of enabling farmers to gain access, control, and decision-making power over resources affecting their livelihoods. Suharto (2007) defines empowerment as enhancing people's capacity to meet basic needs, increase income, and participate in decision-making.

Subak Institution

Subak is a unique social and irrigation system that integrates agricultural, religious, and cultural dimensions. Its principles are rooted in the Tri Hita Karana philosophy: Parahyangan (relationship with God), Pawongan (relationship among people), and Palemahan (relationship with nature).

Sustainable Tourism and Local Wisdom

Sustainable tourism emphasizes environmental preservation, community empowerment, and cultural continuity. The integration of local wisdom—such as Subak traditions—ensures tourism benefits local communities while maintaining ecological balance.

RESEARCH METHODOLOGY

This study applied a qualitative descriptive approach with field observations, in-depth interviews, and focus group discussions (FGDs). Location: Subak Pulagan, Tampaksiring District, Gianyar Regency, Bali Province. Participants: Subak leaders (Pekaseh), farmers, agricultural officers, and local government representatives. Data Collection: Observation of rituals, Subak meetings, and interviews on empowerment practices. Data Analysis: Triangulation and thematic analysis to derive empowerment models from the social and economic dimensions of Subak.

RESULTS AND DISCUSSION

Social Functions of Subak in Empowering Farmers

Subak functions as a community-based organization that promotes cooperation, shared values, and mutual assistance (gotong royong). Trust among members supports fair water distribution and joint participation in rituals, which strengthen social cohesion.

Economic Functions and Agritourism Development

Subak's economic role extends beyond irrigation management to collective production, marketing, and development of agro-based tourism. Establishing a Subak Economic Institution allows better access to capital, processing facilities, and product branding, enhancing farmer income and sustainability.

Empowerment Model through Subak

The empowerment model derived from the research consists of: (1) Targeted Empowerment – programs adapted to farmers' needs and capabilities; (2) Group Approach – collective decision-making and problem-solving; (3) Economic Strengthening – capital access, partnerships, and market expansion; (4) Capacity Building – training to enhance agricultural and tourism-related skills; (5) Integration with Sustainable Tourism – promoting Subak as an ecotourism and cultural learning site. These strategies align with sustainable development principles by integrating culture, economy, and environment through community participation.

CONCLUSION

The empowerment of farmers through Subak institutions contributes significantly to sustainable tourism in Bali. Subak serves not only as a traditional irrigation system but also as a social, economic, and cultural institution. Empowerment should prioritize local participation, group collaboration, and the economic transformation of Subak into a tourism-supporting institution. Policymakers and tourism managers are encouraged to collaborate with Subak communities to ensure the preservation of cultural landscapes while enhancing local welfare.

Recommendations:
- Integrate Subak empowerment programs into regional tourism policy.
- Develop capacity-building training for Subak leaders.
- Promote Subak-based ecotourism packages highlighting ritual and agricultural practices.

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INTEGRATION OF CULTURAL VALUES IN DEVELOPMENT COMMUNICATION STRATEGIES IN THE ERA OF GLOBALIZATION

Nyoman Windu Surya Sidantha [1)], Anak Agung Gede Bagus [2)], Ketut Rahardyan Pracasta Putra [3)]

[1)] faculty of communication and business science, Dwijendra University
windusuryasidanta2000@gmail.com
[2)] faculty of communication and business science, Dwijendra University
agungbagus@gmail.com
[3)] faculty of communication and business science, Dwijendra University
rahadianpracasta66@gmail.com

ABSTRACT

Globalization has brought significant changes to the social, economic, and cultural dynamics of society, including in the practice of development communication. In this context, integrating local cultural values becomes an essential strategy to ensure that the development process remains relevant to the community's social characteristics. This study aims to analyze how cultural values are integrated into development communication strategies to strengthen community participation and ensure sustainable development in the era of globalization. This research employs a qualitative method with a literature review and descriptive analysis approach toward various models of development communication that emphasize local wisdom. The findings indicate that the integration of cultural values—such as mutual cooperation, deliberation, and a sense of solidarity—enhances the effectiveness of development messages and strengthens the social legitimacy of local governance. Furthermore, the use of cultural symbols and narratives in development communication serves as a bridge between modernization and the preservation of local identity. Thus, development communication strategies grounded in cultural values function not only as tools for information dissemination but also as instruments for achieving harmonious and sustainable social transformation amidst globalization.

Keywords: *community participation, cultural values, development communication, globalization, local wisdom*

INTRODUCTION

The development of globalization has transformed how people interact, produce, and participate in development processes. In the context of development communication, globalization has accelerated the dissemination of information and social transformation, but often neglects the cultural dimension that underpins the social life of communities (Cvijanovic et al., 2023). Therefore, it is essential to reexamine the role of cultural values in communication strategies to ensure that development is not only material but also social and cultural in nature. Development communication has historically been dominated by a top-down paradigm, where governments and institutions act as message senders, and communities serve as passive receivers (de Sousa et al., 2023). However, such an approach has often proven ineffective because it overlooks the socio-cultural contexts of communities. Currently, the participatory communication paradigm emphasizes the active involvement of the community through dialogue, deliberation, and collaboration. Indonesia, as a multicultural nation, possesses a wealth of cultural values that serve as a foundation for social cohesion. Values such as gotong royong, musyawarah mufakat (consensual decision-making), and

social solidarity form the basis of community-oriented communication. Integrating these cultural values into development communication strategies is crucial to ensuring that development aligns with community needs while preserving local identity amid the forces of globalization. The integration of cultural values in development communication strategies not only strengthens the effectiveness of development messages but also creates stronger social legitimacy at the community level (Selanno & Rahawarin, 2024). When the communication process pays attention to local norms, customs, and symbols, the community will feel valued as the subject of development, not just an object.

Thus, this approach enables inclusive and dialogical two-way communication, where the process of exchanging information not only conveys instructions but also fosters mutual understanding. This is in line with the concept of culturally oriented communication, which emphasizes the importance of sensitivity to social context in every stage of development. In addition, strengthening the cultural dimension in development communication can act as an adaptive mechanism to the challenges of globalization that tend to standardize social values and practices (Dhamo & Canaj, 2024). Local cultural values such as cooperation and togetherness can be a moral basis that strengthens community participation in sustainable development. By prioritizing local wisdom, development communication strategies can build bridges between modernity and tradition, so that innovation and progress do not erode cultural identity. This approach has the potential to create a more humanistic and sustainable development model, where economic progress does not come at the expense of social harmony. Furthermore, the implementation of culture-based development communication can also increase the effectiveness of public policy implementation (Ullauri Carrion et al., 2024). When development messages are conveyed through media and languages that are appropriate to the local context, the chances of misunderstandings and social resistance can be minimized. On the other hand, collaboration between governments, social institutions, and indigenous peoples can result in more adaptive and innovative communication strategies. Therefore, efforts to integrate local cultural values into development communication are not only an alternative approach but a necessity for achieving a just, sustainable, and rooted development of the nation's identity.

RESEARCH METHODOLOGY

This study employs a qualitative method with a literature review approach. Data were collected from academic journals, books, and research reports focusing on development communication and local cultural integration. This approach allows for in-depth analysis of concepts, theories, and practices related to the incorporation of cultural values in communication strategies. A descriptive-analytical method was applied to examine relationships between cultural values and development communication strategies. The focus of analysis includes: How local cultural values are integrated into development communication; The impact of such integration on community participation; The relevance of culture-based strategies for sustainable development in the globalization era. Data validity was ensured through triangulation by comparing multiple credible literature sources. The analysis results were synthesized into a conceptual framework illustrating the interrelation between culture, communication, and sustainable development.

RESULTS AND DISCUSSION

Development communication is the process of sharing information, ideas, and innovations to support deliberate social and economic change. According to (Balogh-Pécsi et al., 2024) Development communication is not merely the transmission of messages from government to society but a participatory process involving dialogue and negotiation among stakeholders. This approach aims to create critical awareness and empower communities to play active roles in development. Globalization accelerates cultural and informational exchange but

poses challenges to the preservation of local values. Giddens (1990) argued that globalization leads to social “disembedding,” in which traditional practices become detached from their local contexts and replaced by homogenized global values. In this situation, development efforts that disregard local wisdom risk triggering social resistance and the erosion of cultural identity. Local cultural values function as social capital that supports effective development communication. These values can underpin humanistic, empathetic, and collaborative communication. Moreover, using cultural symbols, local languages, and traditional narratives strengthens the acceptability and resonance of development messages (de Rosa, 2024).

Participatory communication models emphasize community involvement in development planning and implementation. (Ekman & Widholm, 2024), highlighted that the success of development communication depends on the communicator’s ability to understand the cultural context of target communities. Thus, an approach grounded in local wisdom can bridge modernization goals and the preservation of social traditions. Cultural values such as *gotong royong*, *musyawarah*, and social solidarity play essential roles in local communication practices. For example, in Java, *rembug desa* (village deliberation meetings) serve as collective communication forums for planning local development programs. These practices encourage communities to act not as passive recipients but as active contributors to decision-making processes. The integration of cultural values makes development communication more empowering. When messages are delivered through familiar symbols and languages, communities can understand and internalize development goals more effectively. This process fosters mutual trust between the government and citizens, reinforcing the social legitimacy of development programs. Cultural symbols such as rituals, folklore, and traditional arts can be used as effective media for development communication. Using local narratives not only enhances message attractiveness but also embeds moral and social values that drive behavioral change. For instance, public health campaigns in Bali that adopt the *Tri Hita Karana* philosophy (harmony between humans, nature, and spirituality) have successfully increased public engagement.

Despite its potential, integrating cultural values into communication strategies presents several challenges. The influence of modernization and global media often erodes traditional norms and practices. Furthermore, Indonesia’s cultural diversity means that localized communication strategies cannot be uniformly applied nationwide. Therefore, context-sensitive adaptation is required to ensure relevance and acceptance. Integrating local cultural values contributes to sustainable development by strengthening social cohesion, enhancing community ownership of development initiatives, and maintaining harmony between humans and the environment. Thus, culture-based communication strategies serve not only as channels of information but also as instruments for achieving socially inclusive and environmentally sustainable transformation.

In the context of national development, a communication approach rooted in local cultural values plays an important role in building mutual understanding between the government, development institutions, and communities. Culturally sensitive communication allows development messages to be translated into a form that is more acceptable and understood by local communities. This is because cultural values reflect the way of view, beliefs, and social norms that shape individual and group communication behavior. Thus, the success of a development communication strategy is highly dependent on the extent to which these cultural values are accommodated in each process of message formulation and implementation.

In addition, integrating local cultural values can strengthen the legitimacy of development programs in the eyes of the community. When communication strategies are prepared with local traditions, languages, and symbols, people will feel valued and recognized. This recognition fosters a sense of ownership of the development programs implemented, so that community participation increases

significantly. In this context, communication not only functions as a means of conveying information, but also as a mechanism for establishing mutually respectful social relationships between development actors and beneficiary communities. However, the implementation of culture-based communication strategies is inseparable from complex challenges. The process of massive globalization often creates a clash between local values and universal values brought about by global information flows. In this situation, people face a dilemma between maintaining their cultural identity or adapting to modern values that are considered more progressive. Therefore, a communication policy that is able to balance cultural preservation and adaptation to global dynamics is needed so that the development process remains contextual without losing its international relevance.

In addition to the challenges of globalization, Indonesia's cultural diversity also demands a flexible and adaptive approach to communication. Each region has different local wisdom, language, and social structure, so an effective message in one region may not have the same impact in another. Therefore, development communication strategies must be decentralized by providing space for local actors to design and implement communication approaches that are appropriate to their context. A participatory approach is the key so that the community is not only an object of communication, but also a subject who plays an active role in formulating messages and methods of delivery. In its implementation, the integration of local cultural values also contributes to the preservation of national identity. In the midst of the rapid flow of cultural homogenization due to global media, the use of symbols, narratives, and cultural practices in communication strategies can be a means to strengthen the nation's identity. For example, in environmental development campaigns, the use of indigenous values that teach a balance between humans and nature can deepen the meaning of the message while fostering ecological awareness based on one's own cultural roots. Thus, development communication becomes more meaningful because it is connected to the value system that has lived in society.

In addition, the application of cultural values in development communication can increase the effectiveness of social behavior change. In many cases, approaches that emphasize moral and socio-cultural values have proven to be more able to motivate people to be actively involved than approaches that are purely rational or economic (Balakrishnan et al., 2024). Values such as cooperation, deliberation, and social solidarity, for example, can be used as a basis for building communication that encourages collective participation. By harnessing this cultural potential, development communication strategies can create a process of social transformation that takes place naturally and sustainably. Furthermore, the integration of local cultural values also provides an ethical dimension in development communication practices. An approach that respects local culture affirms the principles of justice and equality in relations between development actors. This avoids dominant or top-down communication practices, which often ignore the aspirations and values of the community. Culture-based communication ethics ensure that every development process is carried out with respect for human dignity and prioritizes the principle of mutual respect in social interaction. In addition to strengthening the ethical dimension, the integration of cultural values also enriches creativity and innovation in the design of communication messages. Elements of art, language, symbols, and folklore can be used as effective communication media to reach various levels of society. The use of this cultural narrative not only embellishes the message but also enhances the audience's memory and emotional engagement. Thus, culture-based communication is not only informative but also deeply persuasive because it can touch the affective aspect of the recipient of the message.

In the long term, communication strategies based on local cultural values play a role in strengthening social cohesion and community resilience. By instilling the

values of togetherness, mutual trust, and social responsibility, communities will be better prepared to face development challenges, including social conflicts and environmental changes. Strong social cohesion is an important foundation for the creation of sustainable development, because a solid society is better able to manage resources collectively and fairly. Thus, the integration of cultural values into development communication strategies has not only practical, but also conceptual implications for the development of a more contextual communication theory. This approach shifts the communication paradigm from a mere information transfer process to a dialogical process that respects cultural diversity. Therefore, the success of development communication in the global era is not only measured by the level of message spread, but also by the extent to which local cultural values can be used as a source of strength to build an inclusive, harmonious, and sustainable society.

CONCLUSION

This study concludes that integrating local cultural values into development communication strategies is a strategic step to ensure the effectiveness and sustainability of development in the era of globalization. Values such as *gotong royong*, *musyawarah*, and social solidarity strengthen community participation and enhance governmental legitimacy. A culture-based communication approach serves not only as a tool for information dissemination but also as a foundation for fostering awareness, trust, and social harmony.

For future practice, development communication should be adaptive to local contexts and utilize community-based media. Collaboration between governments, communication practitioners, and traditional leaders is essential to ensure that communication processes remain inclusive and grounded in local social values.

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RESILIENT AND BIOCLIMATIC DESIGN STRATEGIES IN BALINESE ARCHITECTURE FOR SUSTAINABLE DEVELOPMENT

Arya Bagus Mahadwijati Wijaatmaja[1)], Putu Gde Ery Suardana [2)], I Made Agus Eka Mahardika [3)], and Putu Gede Darmadi[4)]

[1)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
aku@aryabagus.com
[2)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
erysuardana@gmail.com
[3)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
agusbungsil13@gmail.com
[4)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
pdarmadi7@gmail.com

ABSTRACT

Balinese architecture reflects a harmonious integration between local wisdom, ecological adaptation, and cultural resilience. This paper explores how traditional and contemporary Balinese architectural approaches utilize bioclimatic design strategies to address challenges of sustainable development in the context of Bali. Key principles such as building orientation, natural ventilation, material selection, and spatial zoning—rooted in Tri Hita Karana and Asta Kosala-Kosali philosophies—not only ensure thermal comfort and energy efficiency but also strengthen the local identity and resilience of Balinese communities. Through multidisciplinary analysis, the study highlights the adaptation of vernacular techniques with modern innovations, demonstrating how resilient and bioclimatic architecture contributes significantly to several Sustainable Development Goals (SDGs), including climate action, sustainable cities, and cultural preservation. This approach offers a valuable model for regions facing rapid urbanization and environmental changes, affirming that sustainable architecture must embrace both tradition and innovation to achieve long-term resilience and ecological harmony.

Keywords: *balinese architecture, bioclimatic design, local wisdom, resilience, sustainable development*

1. INTRODUCTION

Balinese architecture represents a unique intersection of culture, ecology, and spirituality—an enduring manifestation of environmental adaptation and cultural continuity that has evolved over centuries. Rooted deeply in local wisdom, particularly the Tri Hita Karana and Asta Kosala-Kosali philosophies, Balinese architecture emphasizes harmony between humans, nature, and the divine. These philosophical foundations inform spatial organization, material selection, and climatic responsiveness, leading to architecture that not only meets human needs but also sustains ecological balance and spiritual meaning. (Aryani and Tanuwidjaja, 2013; Senjaya and Sudarwani, 2025)

In the context of architectural theory, Balinese design can be understood as a vernacular response to its tropical environment. Scholars such as Oliver (1997) argue that vernacular architecture emerges as an adaptive system to local ecological and cultural contexts, shaping design features such as orientation, openness, and material use to enhance thermal comfort, energy efficiency, and spatial harmony. For instance, traditional Balinese structures like the *bale* are

typically designed with open layouts, elevated floors, and steeply sloped roofs, which optimize natural ventilation and shading—key bioclimatic principles for maintaining indoor comfort in humid climates. These strategies not only respond to climatic demands but also embody a symbolic expression of social hierarchy and spiritual balance, aligning architecture with cosmological beliefs intrinsic to Balinese identity (Aryani and Tanuwidjaja, 2013; Senjaya and Sudarwani, 2025).

Recent academic literature underscores the growing relevance of traditional Balinese architectural methods within the sustainability discourse. In modern development contexts, the integration of traditional design wisdom with contemporary innovations—such as passive cooling systems, green materials, and digital design tools—has emerged as a model for resilient and sustainable architecture. This reflects the principles of bioclimatic design identified by Victor Olgyay, which advocate for building forms that adapt to their immediate environmental context, using natural airflow, sunlight, and thermal mass to minimize reliance on mechanical systems. Applying these principles in Balinese architectural design has proven to create thermally comfortable and energy-efficient spaces while preserving cultural identity and environmental ethics. (Aryani and Tanuwidjaja, 2013; Dewi et al., 2025; Dwijendra et al., 2025; Senjaya and Sudarwani, 2025)

Moreover, the rapid urbanization of Bali and the pressures of global tourism have amplified the necessity for sustainable architectural practices that balance modernization with cultural preservation. Studies demonstrate that adopting climate-responsive design and local materials, such as bamboo, timber, and natural stone, significantly reduces environmental impact while promoting cultural resilience. These findings align with the broader goals of the United Nations Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 15 (Life on Land), as they emphasize sustainable resource management, heritage conservation, and adaptive resilience in architectural development. (Aryani and Tanuwidjaja, 2013; Dewi et al., 2025; Dwijendra et al., 2025)

Thus, exploring resilient and bioclimatic design strategies in Balinese architecture provides valuable insight into how indigenous knowledge systems can inform contemporary sustainable design practices. The adaptive principles embedded in Balinese architecture—through its holistic integration of ecology, spirituality, and technology—offer a replicable framework for sustainable design not only in tropical regions but also within global efforts to mitigate climate change while preserving cultural uniqueness.(Aryani and Tanuwidjaja, 2013; Dewi et al., 2025; Dwijendra et al., 2025)

2. RESEARCH METODOLOGY

This study employs a qualitative phenomenological approach to identify resilient and bioclimatic design strategies embedded within traditional Balinese architecture as exemplified in the Bayung Gede Traditional Village, Kintamani, Bangli. The overarching aim of this methodology is to systematically interpret traditional ecological wisdom and spatial resilience found in Bayung Gede’s built environment, and to extract architectural principles applicable to contemporary sustainable design.

The methodological framework is grounded in Edmund Husserl’s phenomenology, as applied in existing local theory development from prior Bayung Gede research. This paradigm emphasizes understanding architectural phenomena through the lived experiences and consciousness of the local community. The analysis follows three sequential processes—empirical reduction, eidetic reduction, and

transcendental reduction—to uncover deep structural meaning and conceptual essence within Bayung Gede's spatial organization.

This framework allows interpretation of tangible (sekala) and intangible (niskala) elements of the built environment, integrating spiritual, ecological, and social dimensions of resilience. The combination of these levels enables a holistic understanding of how architectural practices sustain equilibrium between tradition and environmental adaptation.

Historical and cultural documentation, such as the Bayung Gede monograph and academic architectural texts, were analyzed to identify traditional site planning, cosmology (Kaja–Kelod and Kangin–Kauh axes), and building typologies. This includes the analysis of layout systems based on *Tri Mandala*, *Sanga Mandala*, *Tri Angga*, and the syncretic local concept *Dwitya A Tunggil*—representing dual yet unified spatial harmony.

Field research examined spatial orientation, material use, and thermal behavior of traditional buildings (e.g., *Paon*, *Bale Pegaman*, *Jineng*, *Sanggah*). Documentation involved mapping airflow patterns, humidity levels, and solar exposure to infer the bioclimatic functions embedded in vernacular design, especially for humidity control and passive cooling in a tropical highland climate.

The analytical framework synthesizes traditional ecological and spatial knowledge using a multi-layered thematic analysis:

- Spatial-Ecological Analysis: Understanding climate-responsive strategies within dwellings and communal layouts—such as airflow orientation, vegetative shading, and positioning of sacred and profane zones.
- Cultural-Phenomenological Analysis: Interpreting how symbolic dualities (e.g., *Hulu–Teben*, *Sekala–Niskala*, *Sunia–Patala*) correspond to spatial and environmental order.
- Resilience and Adaptation Analysis: Identifying architectural features that enhance durability, renewability, and adaptability to climatic shifts—evaluating structures that balance protection from rainfall, optimal ventilation, and communal flexibility.

Thematic coding of spatial data isolates core principles forming the theoretical base of resilient bioclimatic design, such as:

(1) Dwitya A Tunggil — dual harmony of ecological and spiritual balance;
(2) Jaga Baya Sekala lan Niskala — resilience through tangible and intangible protection;
(3) Nemu Gelang Paumahan lan Wewengkon — circular ecological continuity across settlement and territory;
(4) Hulu lan Teben Karang Umah — elevation-based hydrological adaptation.

By interpreting the Bayung Gede traditional layout through both phenomenological and ecological lenses, the research identifies transferable strategies for modern architectural contexts. Cultural balancing mechanisms, climatic zoning, and local resource utilization serve as prototypes for sustainable, context-driven contemporary architecture. The resilient logic found in Bayung Gede—where water flow, ventilation, and community interaction construct a living environmental system—provides valuable guidance for integrating vernacular intelligence with technological innovation to meet current sustainability goals.

3. LITERATUR REVIEW

The conceptualization of resilience and bioclimatic design in traditional Balinese architecture derives from a convergence of indigenous spatial order, ecological intelligence, and cosmological worldview. The literature demonstrates that Balinese architecture—particularly in traditional villages such as Bayung Gede, Tenganan, and Kedonganan—constitutes an integrated environmental system combining climate-responsive construction, material conservation, and social sustainability. This section critically synthesizes relevant theories, field-based studies, and heritage frameworks to establish a multidisciplinary foundation for understanding adaptive and sustainable design strategies.

a. Traditional Architecture as a Model of Resilience

Balinese vernacular architecture serves as a microcosm of resilience, where spatial composition expresses interdependence between human, ecological, and spiritual dimensions. Dwijendra (2020) and Muliawan (2017) underscore the resilience of the Undagi tradition, wherein master builders sustain continuity in knowledge transfer and construction practices despite modernization pressures. Similarly, Aryani (2013) explains that the Tri Mandala zoning system promotes environmental adaptation by ensuring cross ventilation, natural lighting, and spatial separation that minimizes health risks while maintaining ritual order (Aryani and Tanuwidjaja, 2013).

In Bayung Gede, as discussed in Vianthi & Putra (2021), the settlement pattern follows the Tri Angga (head–body–legs) logic, symbolizing hierarchical harmony between sacred, communal, and profane spaces. The village structure configures climate-sensitive architecture where the upper zone (*Hulu*) receives spiritual functions, the middle zone houses residences, and the lower zone serves as agricultural and waterflow space—indicating a spatial metabolism parallel to natural biophysical cycles (Suastika et al., 2019; Vianthi and Putra, 2022).

Moreover, resilience manifests socially and ecologically through ritualized land management and adaptability to changing socio-environmental contexts. Mahastuti (2019) described the Hulu–Teben system in Bayung Gede as a spatial order dictating both environmental flow and cultural hierarchy, providing equilibrium between sacred orientation and practical hydrological management. This dual logic—cosmic and ecological—is what makes Balinese villages living laboratories of environmental adaptation within cultural frameworks (Mahastuti et al., 2019).

b. Bioclimatic Design Principles and Local Wisdom

Bioclimatic design theory, as developed by Victor Olgyay (1963), emphasizes designing buildings in harmony with natural climate forces—utilizing sun orientation, airflow, thermal mass, and vegetation to reduce reliance on artificial energy sources. In the Balinese context, this principle naturally aligns with traditional design practices. Rahmadiah (2019) integrates bioclimatic architecture and local wisdom, showing how elements such as open pavilions, thatched roofing, and spatial zoning enhance thermal comfort and microclimatic balance (Rahmadiah, 2019; Senjaya and Sudarwani, 2025).

The bioclimatic dimension of Balinese houses extends beyond comfort to embody ethical environmental interaction. In Kedonganan, the *Tri Hita Karana* philosophy—emphasizing harmony among humans, nature, and God—continues to shape spatial practices, material use, and community cooperation in environmental management. The same principle guides contemporary sustainability frameworks, such as the *Tri Hita Karana Sustainable Development Forum (2025)*, which aligns Balinese heritage with the UN Sustainable Development Goals (SDGs),

demonstrating how cultural ecology can formalize sustainable design policies (Mildawani et al., 2024).

In Bayung Gede, the combination of open courtyard systems (natah), cross-ventilation, and vegetation layers functions as a passive cooling mechanism consistent with bioclimatic parameters. The village's highland topography enhances airflow orientation, contributing to its natural microclimate regulation. Vianthi (2022) identifies these features as physical components distinguishing Bayung Gede's architecture from coastal villages, marking it as a unique example of resonant spatial ecology (Vianthi and Putra, 2022).

c. Cultural Resilience and Architectural Continuity

Resilience in Balinese architecture is not limited to material form but sustained through the cultural code of Undagi craftsmanship. Traditional builders serve as cultural mediators, embodying an epistemology of environmental ethics and ritual order. The study of Undagi's role reveals challenges in intergenerational knowledge transfer, yet also underscores its continued contribution to sustainable architecture through syncretic modernization processes(Dwijendra and Adhika, 2022).

Moreover, the integration of biophilic principles—as introduced by Artha (2022)—further expands the dialogue between traditional and modern contexts. Biophilic design reinforces human–nature connection, enhancing health and well-being while preserving traditional spatial syntax. This approach situates traditional Balinese architecture within the global discourse of eco-humanistic design, promoting continuity between heritage and emergent ecological science (Artha et al., 2022)

The *Bayung Gede research corpus* reaffirm that the village's design encapsulates a "living resilience," where ancestral cosmology becomes an ecological algorithm that informs layout, material choice, and symbolic hierarchy. The continued presence of rituals such as placenta burial ceremonies, bamboo forest conservation, and the spatial practice of *Tri Angga–Tri Hita Karana* reflects the dynamic equilibrium of socio-spiritual and climatic adaptation (Suastika et al., 2019; Vianthi and Putra, 2022).

d. Integrating Vernacular Knowledge into Contemporary Practice

Contemporary architectural discourse increasingly recognizes the value of vernacular strategies as adaptive models for urban resilience. Vianthi & Putra (2021) proposed that Bayung Gede's morphological order—a tri-layered zoning model and communal governance—provides structural metaphors for sustainable tourism and eco-architecture (Vianthi and Putra, 2022). Mamou-Mani's *Tri Hita Karana Tower* (2024), an AI-assisted bamboo-rattan structure, exemplifies such translation of local philosophical principles into modern technological expression, signifying the global relevance of Balinese design ethics (Sunil, 2024)

Integrating these vernacular systems into modern architecture aligns with the circular economy paradigm, emphasizing renewable materials and low-energy design. Collaboration between traditional communities and architects, as seen in several eco-projects in Bali and Java, fosters a **hybrid architectural model**—one that honors cultural heritage while addressing pressing sustainability issues such as climate change mitigation and carbon neutrality (Salain et al., 2025).

e. Summary of Theoretical Insights

The literature collectively outlines three fundamental intersections relevant to this study:

1) Resilience – Defined by continuous adaptation of spatial and social structures through cosmological order (*Tri Mandala*, *Hulu–Teben*, *Dwitya A Tunggil*) and social cohesion rooted in customs and rituals.
2) Bioclimatic Responsiveness – Achieved through passive environmental design, thermal regulation, and material efficiency embedded within traditional practices.
3) Translatability to Contemporary Architecture – The integration of traditional ecologies and modern technological innovation offers a replicable framework for resilient tropical design.

Together, these frameworks illuminate that traditional Balinese architecture—particularly in Bayung Gede—is not a fossilized heritage but a dynamic environmental system. Its embedded knowledge provides valuable parameters for designing context-driven, culturally aligned, and climate-resilient

4. RESULTS AND DISCUSSION

A. Identification of Resilient Strategies in Bayung Gede Traditional Architecture

Bayung Gede represents one of Bali's most distinctive traditional villages where resilience is deeply embedded in its architecture, spatial logic, and cultural practices. The identification of resilient strategies in this context requires analyzing several core dimensions: spatial organization, material choice, environmental adaptation, and socio-cultural norms.

1) Spatial and Organizational Resilience

Bayung Gede implements a zoning system consisting of macro (village territory), meso (settlement cluster), and micro (compound/home) scales. At the macro level, the village is characterized by the Tri Angga concept—mirroring the hierarchical division of head, body, and foot, where the central temple zone (*utama mandala*) is surrounded by residential layers (*madya mandala*) and bordered by agricultural and cemetery zones (*nista mandala*). This spatial composition is not only symbolic but provides practical resilience against environmental threats and external pressures (Suastika et al., 2019; Vianthi and Putra, 2022).

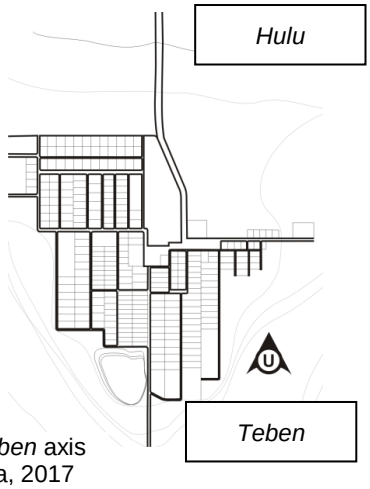

Figure 1 *Hulu-Teben* axis
Source: Adiputra, 2017

The unique application of the Hulu–Teben axis (center–periphery), which prioritizes the center as the most sacred and gradually transitions to profane and functional spaces outward, further strengthens spatial resilience by structuring security, access, and climate responsiveness, and minimizing vulnerability (Adiputra et al., 2019; Suastika et al., 2019)

2) Material and Structural Adaptation

Bayung Gede's architecture relies on locally sourced, renewable materials such as bamboo, timber, and stone. The use of bamboo is especially prominent in kitchens (*paon*) and ceremonial buildings due to local beliefs about its spiritual and protective qualities, as well as its bioclimatic advantages for airflow, humidity mitigation, and thermal performance. Bamboo forests are conserved as a communal resource, insuring a sustainable supply, supporting erosion control, and strengthening community rituals tied to both ecological and spiritual cycles.
Structural layouts integrate open plans, courtyards (*natah*), and vegetative buffers, which maximize passive cooling and natural lighting, providing both environmental comfort and energy efficiency. The building orientation and placement are optimized for prevailing wind flow and solar path, reflecting a vernacular understanding of site-specific bioclimatic adaptation.

Figure 2 Passive cooling and natural lighting through natah
Source: Adiputra, 2017

Structural layouts integrate open plans, courtyards (*natah*), and vegetative buffers, which maximize passive cooling and natural lighting, providing both environmental comfort and energy efficiency. The building orientation and placement are optimized for prevailing wind flow and solar path, reflecting a vernacular understanding of site-specific bioclimatic adaptation.

3) Ritual, Social, and Governance Mechanisms

The role of *Undagi* (traditional master builders) and communal governance are critical for maintaining architectural resilience and perpetuating local wisdom. Regulations around building techniques, gate and wall design, and community-wide rituals—such as the unique placenta burial practice—reinforce hygiene, social control, and symbolic protection, fostering a sense of collective ownership and stewardship of the built environment. Social cohesion is deepened through mutual cooperation (gotong royong), regulation of material use, and preservation of the

custom house and communal forest, all of which contribute to ongoing resilience and identity maintenance (Dwijendra and Adhika, 2022; Pratiwi and Wikantiyoso, 2022).

4) Hydrological and Environmental Management

Hydrological resilience is evident in the orientation of pathways and building zones to optimize water drainage and safeguard against erosion. The bamboo forest, besides cultural and material significance, functions as a landscape buffer, while the layout of agricultural zones connects ecological cycles directly to the built environment. Conservation practices and ritual regulation of forest use help stabilize microclimates, reinforce water management strategies, and conserve biodiversity in the village territory.

B. Bioclimatic Design Principles in Bayung Gede

Bayung Gede Village provides a rich example of how bioclimatic strategies are inherently woven into traditional Balinese architecture and settlement design. These principles address climatic adaptation, resource efficiency, comfort, and sustainability using vernacular wisdom and locally available materials.

1) Settlement Orientation and Zoning

The settlement layout in Bayung Gede is governed by cosmological and environmental logic, notably the Hulu–Teben (mountain–sea) axis and Tri Mandala or zonal hierarchy. Houses are oriented to maximize cross-ventilation, take advantage of prevailing wind, and avoid direct sun exposure during peak hours, promoting passive cooling and reducing heat gain in interior spaces. Spatial zoning divides areas into sacred, communal, and profane, aligning environmental control with ritual functions and microclimate creation.

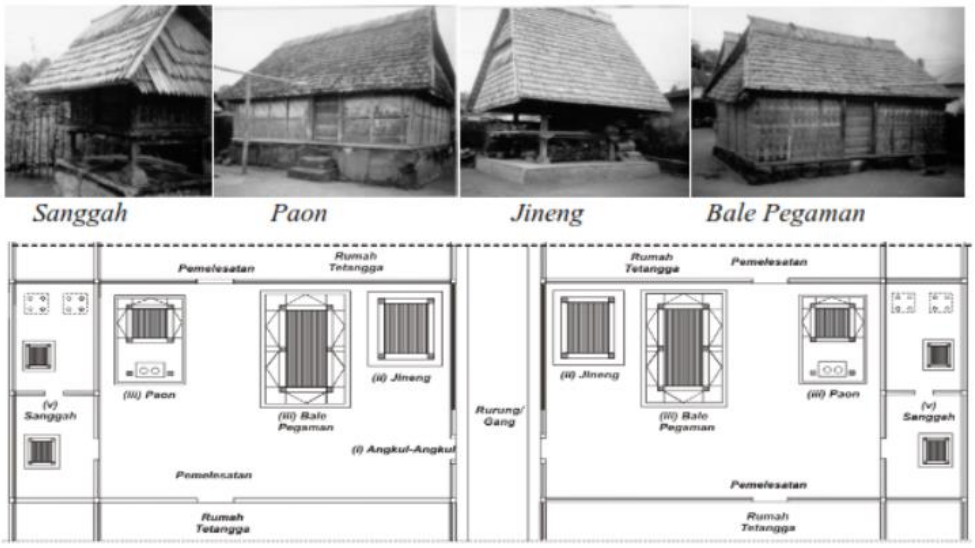

Figure 3 Settlement orientation and zoning
Source: Adiputra, 2017

2) Passive Cooling and Ventilation Systems

Traditional houses utilize features such as *natah* (courtyards) and open-sided pavilions (bale), enhancing airflow and facilitating thermal dissipation. Ventilation

gaps, elevated flooring, and minimal internal partitions allow air movement through living spaces, preventing humidity buildup and maintaining comfort without mechanical intervention. Large roof overhangs and vegetation buffers help shade walls and windows, further reducing solar heat gain.

3) Material Selection and Thermal Performance

Construction in Bayung Gede prioritizes locally sourced, renewable materials—bamboo, timber, and volcanic stone. Bamboo is frequently used for its ability to facilitate airflow, as well as its rapid renewability and carbon sequestration properties. Thatch or palm-leaf roofing provides excellent insulation and breathability, with steep pitches to shed rainwater efficiently and minimize overheating. Walls constructed of wood and permeable panels enable further climatic adaptation by balancing insulation and air flow.

4) Vegetation and Landscape Integration

The use of landscape elements such as communal bamboo forests, shading trees, and layered planting integrates architecture with natural surroundings. Vegetative buffers around house compounds reduce reflected heat, store moisture, and enhance microclimate comfort. Courtyards may include water features or ground cover, aiding evaporative cooling and further regulating temperature.

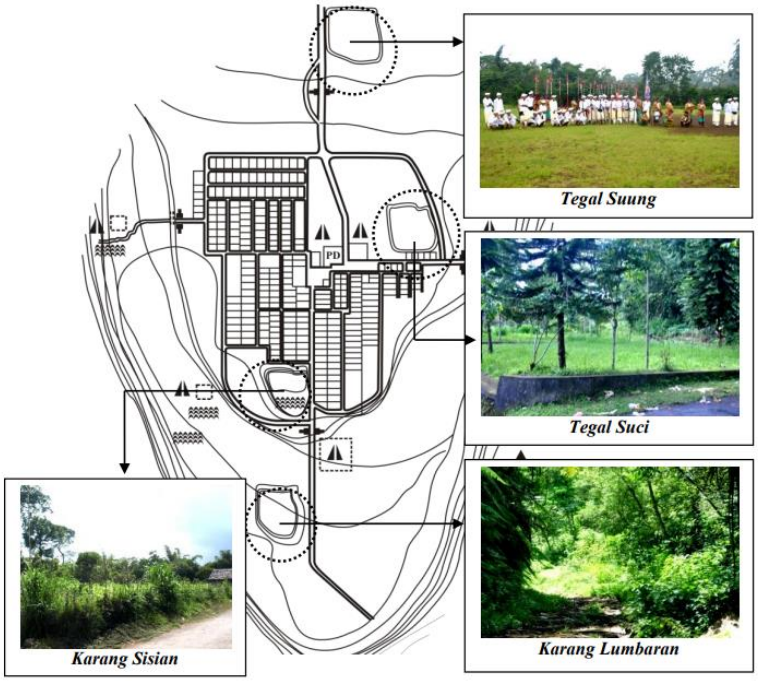

Figure 4 Vegetation and landscape surrounding the village
Source: Adiputra, 2017

5) Water Management and Adaptation

Bayung Gede's hydrological logic aligns settlement and building placement with drainage and water conservation patterns. Roofs channel rainwater away from compounds, village pathways follow natural contours to minimize erosion, and home gardens utilize runoff or stored water for irrigation—demonstrating resource-sensitive design embedded in daily practice.

C. Comparative Adaptation: Traditional vs Contemporary Contexts

The evolution of Balinese architecture from its traditional roots toward contemporary adaptation is marked by a dynamic interplay between preservation of essential cultural values and the integration of new technologies, materials, and spatial needs.

1) Preservation and Transformation of Core Principles

Traditional architecture in Bayung Gede features distinct zoning, orientation (Tri Angga, Tri Mandala, Hulu–Teben), use of natural materials, passive cooling, and strong ritual components. Contemporary Balinese architecture retains many of these principles but often adapts them through open floor plans, integration of minimalist styles, and flexible zoning to meet modern lifestyles, while still preserving spiritual and ecological values.

2) Hybrid Architectural Approaches

Modern villas, resorts, and public buildings in Bali increasingly adopt a hybrid style that fuses local identity and craftsmanship—from carved gateways and bamboo details to the use of indigenous spatial concepts—with global design trends and technologies. Materials such as bamboo, timber, and stone remain central but are now combined with reinforced concrete, glass, and metal for durability, seismic safety, and design innovation. Zoning logic inspired by traditional hierarchy (head–body–foot, sacred–profane–functional) is modernized in villa compounds for privacy, comfort, and aesthetic appeal.

3) Bioclimatic Strategies: Past and Present

Contemporary buildings continue deploying bioclimatic strategies inherent in Bayung Gede architecture: maximizing cross-ventilation, shading through overhangs and landscape, use of courtyards, and orientation strategies. Passive cooling, natural lighting, rainwater harvesting, and renewable energy technologies such as solar panels reflect both continuity and advancement in sustainable design. However, increased commercial development and density pose challenges for microclimate management and preservation of communal green buffers.

4) Ritual Adaptation and Cultural Integrity

While traditional rituals and social regulations remain foundational for local communities, contemporary spaces often reframe ritual zones for hospitality, wellness, and cultural tourism programs. The adaptation or commercial reinterpretation of sacred spaces requires careful balancing to avoid loss of cultural authenticity and dilution of social resilience. Some developers and architects collaborate with local Undagi to fuse ritual and contemporary needs in new settings, preserving essential spiritual values within modern developments.

D. Synthesis and Implications for Sustainable Design

The cumulative findings from the Bayung Gede case study indicate that resilient and bioclimatic principles in traditional Balinese architecture hold significant implications for contemporary sustainable design, policy, and community development.

1) Adaptive Strategies for Climate and Culture

Traditional spatial logic (Tri Angga, Tri Mandala, Hulu–Teben) and building orientation in Bayung Gede maximize passive cooling, natural lighting, and

resource efficiency, providing context-driven frameworks for modern energy-conscious design. The integration of open courtyards, strategic zoning, and landscape elements demonstrates how climate-responsive adaptation is harmonized with ritual, social, and ecological needs.

The use of local materials (bamboo, timber, stone) maintains low embodied energy, supports circular resource cycles, and anchors contemporary projects in place-based aesthetics and sustainability. Neo-vernacular approaches—melding modern technologies and building standards with indigenous design principles—enabled ongoing experimentation and innovation without sacrificing heritage values.

2) Heritage Preservation, Tourism, and Community-Based Development

The preservation of vernacular architecture, especially under social and economic pressures from modernization and tourism, requires adaptive regulation, incentives, and education. Bayung Gede's transformation into a tourism village leverages its unique settlement layout, special interest tourism (ritual, culture, agro-tourism), and community-managed branding as drivers for sustainable local development.

Special interest tourism, which values novelty, cultural learning, and experiential rewards, can promote sustainable revenue streams while raising awareness for traditional architectural preservation. However, strong local governance (customary law, awig-awig) and collaborative partnerships are essential for ensuring authenticity and mitigating negative commodification of heritage.

3) Sustainability Policy and Education

For lasting resilience, policy frameworks must support mixed material strategies, encourage the use of local resources, and provide incentives for conservation and community engagement. Education and capacity building—both among villagers and the broader public—are vital for transferring traditional knowledge, fostering creative adaptation, and upholding socio-cultural resilience in changing contexts.

The lessons from Bayung Gede illustrate that sustainable design is best achieved through dialogical processes—merging past wisdom with present needs and future visions—where local, cultural, and ecological logics are given equivalent priority.

4) Transferability and Future Research

Bayung Gede’s adaptive strategies, zoning logic, material utilization, and communal management offer transferable models for other tropical vernacular and modern settings. Further research is recommended in areas such as optimizing hybrid construction methods, monitoring long-term environmental performance, and evaluating the socio-economic impacts of tourism on tradition and design.

Efforts to brand, document, and regulate sustainable architecture must continually involve local stakeholders to maintain core values and responsiveness to local change.

5. CONCLUSION

The findings from the case study of Bayung Gede, supported by broader literature on traditional Balinese architecture, underscore that resilience and bioclimatic adaptation are deeply integrated within indigenous spatial, material, and socio-cultural practices. Spatial organization based on cosmological axes (Tri Angga, Tri

Mandala, Hulu–Teben) and ritual zoning ensures optimal orientation, climate responsiveness, and environmental harmony, while communal regulatory frameworks and mutual cooperation (gotong royong) strengthen both social and ecological resilience.

Traditional material choices—bamboo, timber, stone—and passive cooling strategies such as natah courtyards and open pavilion layouts further illustrate the adaptive intelligence of vernacular construction, supporting thermal comfort and energy efficiency. The role of undagi (master builder) and transmission of ritual knowledge maintain the integrity, adaptability, and renewal of local design traditions.

Comparatively, contemporary applications of Bayung Gede's principles in modern Bali demonstrate that these strategies can be hybridized with new technologies and materials, as long as core ethical, cultural, and environmental logics are respected. The critical implication for sustainable design is that context-specific and culturally-rooted approaches—those that valorize local wisdom, environmental ethics, and community engagement—are most effective for realizing resilient architecture in the face of climate and social change.

Ultimately, the study confirms that traditional Balinese architecture embodies a dynamic and living heritage of resilience, providing replicable models for sustainable architecture and policy, both within Bali and in other tropical settings. Continued research, policy support, and educational efforts are essential to safeguard and creatively adapt these principles for future generations.

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SPECTROSCOPIC AND THERMAL ANALYSIS OF TiO_2 BASED QUATERNARY GLASS SYSTEM

Dr.P.Shalini Priya Dharsini[1*] and Dr.S.Ponkumar[1]
1Department of Physics, Government Arts College for Women, Salem-636008 .India

ABSTRACT

The quaternary glass systems of B_2O_3 – CdO – R_2O – TiO_2 (R=Li, Na and K) with different compositions of TiO_2 are prepared by melt - quench technique. Amorphous nature of these glasses has been confirmed from their XRD profiles. SEM analysis is carried out to study the morphological modification created by the modifier oxide. IR technique is used to investigate the structural changes with respect to composition in the glass systems and functional groups at different modification levels. Differential thermal analysis is used to identify the glass transition temperature, crystallization temperature and melting temperature of the glass samples. The glass stability factor and Hruby's parameter are calculated from the above mentioned temperatures. The properties and structural features of glasses are discussed in terms of relative proportion as well as field strength of alkali oxide.

Keywords: Cadmium Borate glasses, Non bridging oxygen, Hruby's parameter

*Corresponding author shalpurush@gmail.com

1. INTRODUCTION

Titanium is an important transition metal in the areas of glass science and glasses doped by them earn high interest in different scientific and technological fields. The d-orbital contribution towards non-linear polarizability is more for bond length within 2Á, as the bond length of Ti-O is estimated to be 1.96 Á they have gained much importance in recent years due to their possible applications in non-linear optical devices such as ultrafast switch and power limiter[1]. In addition, glasses containing TiO_2 possess negative non-linear refractive index

that induces self-focusing radiation beam in the material; as a result, those devices can be operative at a smaller input power and occasionally as a nucleating agent in the preparation of bioactive glass ceramics [2]**.** TiO_2 is considered intermediate oxides and cannot build their own glassy network i.e. they play a dual role and enter the glass structure, as the glass former, network modifier and rarely with the pyramid (intermediate) structure of TiO_5. According to [3**],** ions of titanium exist in following electronic states in the glass networks: in the form of Ti^{4+} state, they participate as glass network former with TiO_4 tetrahedral.

2. Experimental: Synthesis of quaternary glass system

Glass samples belong to BCdRT [$(70B_2O_3 – 25CdO – (5\text{-}x)\ R_2O – xTiO_2$), where x=0.5, 1.0, 1.5 and 2.0 mol% respectively, R=Li, Na, K] using B_2O_3, CdO, Li_2O, Na_2O, K_2O and TiO_2 as starting materials of reagent purity grade .The homogenization of the appropriate mixture of the components of chemicals is effected by repeated grinding using a mortar. The homogeneous mixture is put in a silica crucible and placed in a furnace. Melting is carried out under controlled conditions at a temperature from 700 to 950 ºC for all the systems. The molten mixture was cast into a copper mould having the dimension of 10mm diameter and 6mm thickness. Then the glass samples were annealed at 250 ºC for two hours to avoid the mechanical strain developed during the quenching process. The prepared glass samples were grinded into a fine homogeneous mixture for study. The samples prepared were chemically stable and non-hygroscopic.

3. Characterization Techniques

3.1 X-ray Diffraction Technique

The XRD spectrograms (Fig.1) show no continuous or discrete sharp peak, but exhibit broad halo, which reflects the characteristic of amorphous glass structures [4].The

appearance of the broad hump indicates the existence of short range order in the glass network**.**

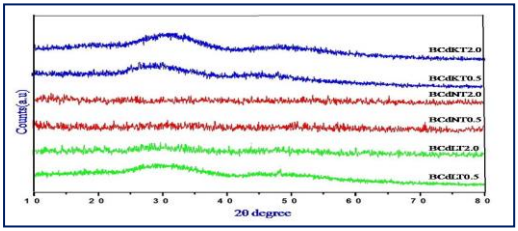

Fig.1 XRD pattern of BCdLT, BCdNT and BCdKT glasses

3.2 SEM Analysis

In order to investigate the morphology of the BCdLT, BCdNT and BCdKT glass samples, scanning electron micrograph images are taken, which are shown in Fig.2.From the SEM picture, it is observed that different sized grain particles are distributed. These images clearly indicate that there is no crystalline phase existing in the overall surface of the samples. Some sphere like agglomerates were found spreading in the glass surface, due to the deposition of amorphous apatite. These results are in agreement with the information provided by the XRD patterns.

3.3 FTIR analysis

Fig.3 depicts the FTIR spectra of BCdRT glass systems and the assignments of the detected band as summarized. The addition of TiO_2 on ternary cadmium borate glasses creates well-resolved bands supporting the amorphous nature of the investigated sample. The increasing concentrations of titanium oxide produce similar type of IR spectra as in the case of ternary cadmium borate glasses with main characteristic bands due to trigonal and tetrahedral units but with following variations. The band lying between 1365 cm^{-1} and 1384 cm^{-1} is characteristic of the asymmetric stretching vibrations of B-O bond of trigonal BO_3 units. Another set of bands appearing in the region 1015 - 1078 cm^{-1} is due to

asymmetric stretching vibrations of tetrahedral BO_4 units. The addition of TiO_2 at the expense of alkali oxide, the intensity of bands due to BO_3 units increases and its wavenumber gets shifted to higher range. The reverse trend is observed in the bands due to BO_4 units.

This suggests that titanium ions disrupt the bridging oxygen of BO_4 units and convert into BO_3units. This means that the titanium ions acts as a network modifier and enter into the glass network as TiO_6 octahedral, which develop weak B-O-Ti linkages in the BCdRT glasses.

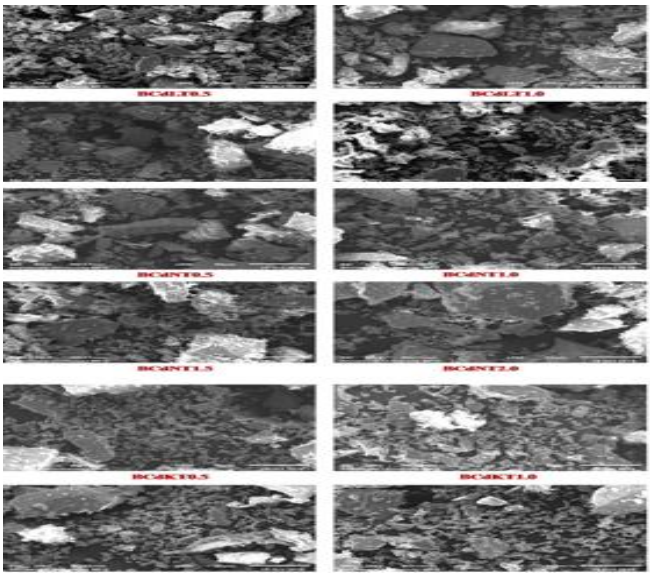

Fig.2 SEM photograph of BCdLT, BCdNT and BCdKT glasses

A similar type of interpretation was discussed [5], where increase in the concentration of TiO_2 on alkali borate glasses acts as a modifier and creates more number of non-bridging oxygen.Similar result was also given [**6],** with the replacement of Na_2O for TiO_2 resulting in back conversion and

loose BO_4 units. These support the present study. The additional shoulder peak centered at 683-703cm^{-1} is assigned to B-O-B bending vibration of BO_3 groups or symmetric stretching vibrations of Ti-O-Ti of TiO_6.

A weak band appeared around 400-500cm^{-1} in all the glass samples due to the specific vibrations of alkali metal cations. In general, the bands around 3200-3800 cm^{-1} in the present glass systems represents molecular water as well as O-H stretching vibration in hydroxyl group.

3.4 Thermal analysis

DTA provides information on glass transition temperature (T_g), which indicates structural changes associated with change in composition (TiO_2 content), because it is very sensitive to change in coordination number of network forming atoms and non-bridging oxygens. Generally the effect of cations on T_g is related to (i) the density of covalent cross-linking, (ii) oxygen density of the network, and (iii) the number and strength of the cross-links between oxygen and cation.

BCdLT Glass System

The DTA traces of BCdLT glasses are shown in Fig.4.These traces shows an endothermic change in the the range 645-610 ºC attributed to the crystallization temperature(T_c).Another endothermic peak is observed in the range 792-776 ºC showing melting temperature. range 360-336 ºC corresponding to the temperature indicator of glass transition (T_g)

BCdNT Glass System

The glass transition (T_g), crystallization (T_c) and melting temperatures of BCdNT glasses decrease with increasing TiO_2 at the expense of Na_2O content. Fig.4 shows that T_g appears in the region 346-326 ºC, T_c at 627-598ºC and T_m at 788-771ºC.

BCdKT Glass System

Fig.4 shows the differential thermal analysis curves of BCdKT glasses as a function of the TiO_2 content. From the Figure, it is observed that the first endothermic hump appeared at the region 340-310 ºC followed by a exothermic peak at 617-566ºC and another endothermic peak appeared at 780-743ºC.

Generally, unstable glasses show crystallization peak close to the glass transition temperature. Therefore, the temperature difference (T_c-T_g) is a good indication of thermal stability, because the higher value of this difference causes delay in nucleation **.** From the measured values of T_g, T_c and T_m, the glass stability factor (s) and Hruby's parameters (K_{gl}) are calculated and shown in Table.1. At lower concentration of TiO_2, the BCdRT glasses are more stable and the gradual replacement of R_2O by TiO_2 decreases the values of S and K_{gl}. The maximum value of stability and Hruby's parameter for BCdLT glasses indicates their highest thermal stability and glass forming ability among the glasses under investigation.

4. CONCLUSION

From the present investigation, the following conclusions are drawn:

XRD studies confirm the amorphous nature of the prepared samplesSEM analysis supports the amorphous nature and homogeneity of the glass samples. FT-IR spectra indicate the presence of borate and titanium structural units in the form of BO_3, BO_4 and TiO_6 structural units.

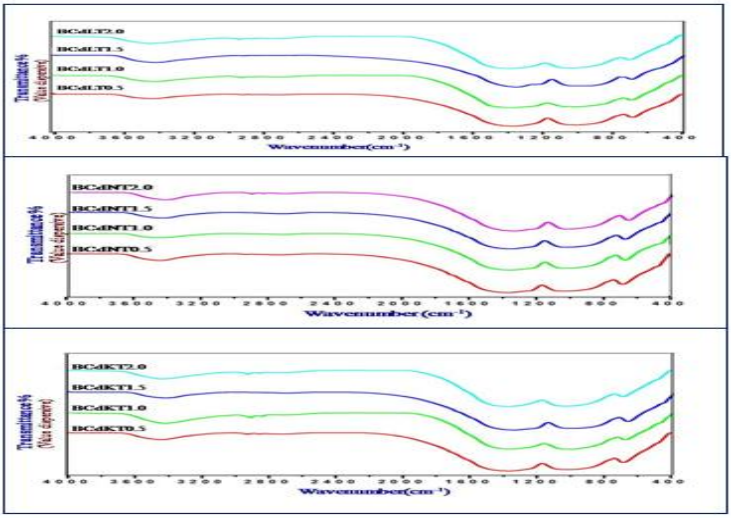

Fig.3 FTIR spectra for BCdLT, BCdNT and BCdKT glasses with different concentration of TiO_2

The decreased values of T_g, T_c and T_m reflect decreased packing density on account of formation of TiO_6 octahedral units because of back conversion effect. Similarly stability and Hruby's parameter also decreases and proclaims that for the studied glasses the stability against devetrification decreases with increasing concentration of TiO_2.

From FT-IR and thermal studies of the alkali doped cadmium borate glasses, BCdLT glasses have better thermal stability and glass forming ability.

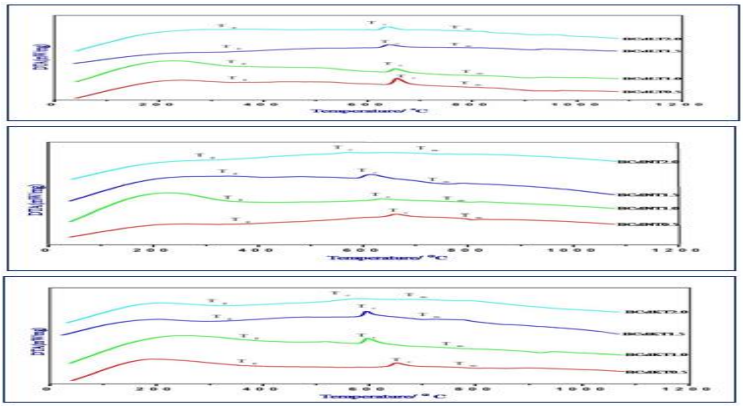

Fig.4 DTA curves of BCdLT,BCdNT andBCdK

Table .1 values of glass transition temperature (T_g), crystallization temperature (T_c), melting temperature(T_m), thermal Stability (s) and Hruby's parameter (K_{gl}) of BCdRT glass system

Name of the sample	Glass transition temperature (°C)	Crystallization temperature (°C)	Melting temeprature (°C)	Thermal stability	Hruby's parameter
B_2O_3 – CdO – Li_2O -TiO_2					
BCdLT0.5	360	645	792	285	1.9388
BCdLT1.0	353	635	789	282	1.8312
BCdLT1.5	342	619	780	277	1.7205
BCdLT2.0	336	610	776	274	1.6506
B_2O_3 – CdO – Na_2O- TiO_2					
BCdNT0.5	346	630	788	281	1.7453
BCdNT1.0	338	619	784	280	1.6970
BCdNT1.5	331	607	779	268	1.6353
BCdNT2.0	326	601	771	272	1.5723
B_2O_3 – CdO – K_2O-TiO_2					
BCdKT0.5	340	617	780	277	1.6994
BCdKT1.0	336	610	773	275	1.6375
BCdKT1.5	324	589	759	265	1.5588
BCdKT2.0	310	566	743	256	1.4463

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EXPLORING STUDENTS' PERCEPTIONS OF CHAT PDF INTEGRATED TO TRI HITA KARANA FOR ENHANCING STUDENTS' READING COMPREHENSION

Ni Made Yuniari[1)], Veronika Vebiola Nanga [2)]

[1)] *Dwijendra University*
yuniari6868@gmail.com
[2)] *Dwijendra University*
vebiolananga@gmail.com

ABSTRACT

This study will focus on how Chat PDF AI can be incorporated with the philosophy of Tri Hita Karana in order to enhance reading comprehension among the students in a critical reading course. Tri Hita Karana reflects the concepts of harmony and balance in the three basic relationships, i.e. humans and God (parhyangan), humans and fellow human beings (pawongan) and humans and nature (palemahan). In this study a sequential explanatory design was employed with mixed methods whereby 20 respondents were sampled using quantitative data and 5 students were sampled using qualitative data who were students in the Department of English Education, Dwijendra University. The results were predominantly positive in the affective area because 86.7 percent of students had their attitudes towards critical reading improved, 80 percent said that it was easier to read a text, and 70 percent said that they were confident in difficult material. This integration enhanced the affective and cognitive motivational dimension qualitatively as 66.7% of them said their motivation increased and 80 percent of the respondents enjoyed the critical reading integration exercise. The three major themes that were found with the use of qualitative methods included affective domain, learning, and ease of use and accessibility. The fusion between the local philosophy and the AI technology and culturally responsive pedagogy highlighted the work.

Keywords: *Chat PDF AI, Critical Reading, Perception, Reading Comprehension, Tri Hita Karana*

1. INTRODUCTION

Reading comprehension is a complicated mental activity that entails a variety of linguistic and mental elements (Hogan et al., 2011; Kim et al., 2011). Simple View of Reading model confirms that understanding works on the access to the word-decoding and linguistic comprehension skills (Kieffer et al., 2012; Yan et al., 2020). Some of the key subcomponents are the word reading, phonological and morphological awareness, vocabulary development, and listening skills (Cárnio et al., 2017; D'Alessio et al., 2019; Harlaar et al., 2012; Li and Wu, 2015; Tong et al., 2017; Yan et al., 2020). Moreover, background knowledge, reading experience, and early reading skills play a major role in the results of comprehension (Combrinck et al., 2014; Gilakjani and Sabouri, 2016; Syafitri, 2019).

Critical reading is not just a matter of simple understanding, as it involves the processes of analyzing and evaluating textual information, including authorial point of view and judgment of the validity of the argument (Rojalai et al., 2021). The most important elements are the comprehension of key ideas, authorial intention, the possibility to determine whether the presented information can be trusted, and the

ability to relate a text with the real world (Rini, 2018). The ability has become very useful in all academic, professional, and personal aspects, as the individual is able to interpret new information in a productive manner and identify possible biases (Al Roomy, 2022; Mohseni Takaloo and Ahmadi, 2017).

Technological integration has brought massive change in the education sector especially in the field of reading (Remizantseva and Ablyazov, 2019). The transition in traditional printed material into the digital space requires the development of the approaches to teaching. The contemporary reading skills include a growing number of websites, video presentations, and online articles interpretation (Murray et al., 2022). That transition necessitates the acquisition of such complementary skills as information literacy, media literacy, and digital literacy.

Artificial Intelligence has been seen as a revolution in English language teaching and has shown beneficial effects in terms of student motivation, flexible learning, and differentiated learning (Moybeka, 2023). Intelligent tutoring systems and chatbots are AI powered tools that make the experience of learning approachable and personal to learners and are not confined to a physical classroom (AbuSahyon, 2023). The technologies assist in the different areas of language learning such as listening training, error correction, consultation services, and translation support (Sheng, 2023).

Chat PDF is a new application in this technological ecosystem that allows making interactions with PDF documents convenient and productive with the help of artificial intelligence (Huynh-The et al., 2023). The tool enables the students to question documents in real-time, get an explanation of difficult ideas, and become more involved with reading materials. Although there has been an increased interest in AI-assisted reading instruction, the quantity of literature investigating the perceptions of students towards certain AI-assisted tools such as Chat PDF AI is still low.

Tri Hita Karana is a Bali-based Indonesian idea of focusing on harmony and balance in three core relationships: humans with God (parhyangan), humans with other humans (pawongan), and humans with nature (palemahan) (Dewi et al., 2022; Ermiana et al., 2023; Mada and Putri, 2023; Redana and Mujiyono, 2023; Sukarma, 2016). It is a complete philosophy that facilitates a balanced life that is seen to be indispensable to human life, happiness, and wealth (Dewi et al., 2022; Ermiana et al., 2023; Mada and Putri, 2023; Redana and Mujiyono, 2023).

In academic settings, Tri Hita Karana implementation is not limited to academic performance, but it also includes moral and social progress (Mayuni et al., 2023; Trisnawati and Sukmana, 2020; Wirahyuni et al., 2021). Research indicates that UNESCO appreciates the importance of this philosophy to character building and whole person education (Permatasari et al., 2020). Tri Hita Karana incorporated into school programs enables students to both acquire environmental awareness, social responsibility, and spiritualism, as well as academic skills (Redana & Mujiyono, 2023). The strategy will be in line with the principles of character education, which will positively impact the physical, socio-emotional, and cognitive well-being of students (Jaya, 2019; Permatasari et al., 2020).

The studies have attested beneficial effects of Tri Hita Karana incorporation on learning outcomes, character development among students, and classroom environment (Jaya, 2019; Trisnawati and Sukmana, 2020). The attitude of both the students and teachers towards adding these values to the learning processes is favorable (Wirahyuni et al., 2021). The philosophy has been applied to textbooks, development of assessment instruments, and other educational situations (Mayuni et al., 2023; Parwati and Trianasari, 2016; Parwati et al., 2022; Solihin and

Sumawidari, 2021), and has been shown to be versatile in a wide range of educational contexts (Anggreswari and Gorda, 2020; Parwati et al., 2022; Solihin and Sumawidari, 20

The incorporation of digital learning platforms with the cultural philosophies is a under-explored learning frontier. Although both studies have reported the effectiveness of Newsela in increasing the reading engagement and Tri Hita Karana in the development of character, the interaction between the two variables has not been investigated thoroughly. This gap offers the chance to investigate the way the culturally responsive pedagogy can be used to improve the effectiveness of technological tools.

A combination of Chat PDF AI and Tri Hita Karana principles provides a possibility of building both critical thinking and moral reasoning. By using this combined system of reading texts, students are able to learn the contents and at the same time to analyze moral and social aspects. The method encourages the value of harmonious relationships among people, nature, and spirituality when attaining academic competencies.

2. RESEARCH METODOLOGY

2.1 Research Design

The proposed study is mixed-method sequential explanatory research (Creswell) that includes the examination of student perception of the Chat PDF AI involvement along with the philosophy of Tri Hita Karana comprehensively (Bagnini and Russo, 2021; Campbell et al., 2012; Guetterman and Perez, 2023). The design will entail the gathering of both quantitative data by way of surveys and qualitative data by way of interviews to issue explanations and expound on the findings of the surveys. This strategy offers breadth in the statistical analysis and depth in the narrative description of experiences of the students.

The sequential aspect allows one to first deal with quantitative measures in determining the pattern and trend and then do qualitative analysis to gain insightful insight into the factors that are operating behind the curve as a consequence of the pattern. This research approach is very appropriate to investigate complicated educational phenomena in which both objective results and subjective experiences are measuring.

2.2 Participants and Setting

The study was done at the English Education Department of the Dwijendra University and the sample was restricted to third-semester students who were enrolled in the critical reading classes using Chat PDF AI combined with Tri Hita Karana concepts. Purposive sampling was used to sample through participants who had the firsthand experience with the integrated approach (Pinandhita & Daroin, 2023; Tscherning and Mathiassen, 2010).

The quantitative stage involved twenty students who filled in structured questionnaires on their perceptions in various dimensions. Afterwards, five students were involved in qualitative interviews where they gave an in-depth narrative of their experiences, challenges, and reflections about the integration. Such sampling strategy provided the participants with the appropriate experience and at the same time made data collection and analysis manageable.

2.3 Data Collection Instruments

2.3.1 Questionnaires

A structured questionnaire based on Likert scale items was used in the research employing four principal domains. The former domain concentrates on general satisfaction and integration quality and measures student satisfaction with the usage of Chat PDF AI, its contribution to the level of engagement, and its ability to facilitate the understanding. The second area conducts research on self-reported

gains in reading comprehension which involves determining changes in the ability of students to comprehend texts, learn and acquire challenging material as well as develop confidence when confronted by complex reading. The third domain deals with engagement, motivation, and affective factors by evaluating the changes in the motivation, engagement levels, enthusiasm in reading activities, and complete enjoyment of the learning process. Lastly, the fourth domain highlights relevance of Tri Hita Karana principles, the perceived relationships between the philosophy and the content of learning, the perceived understanding of balanced relationships and the cultural relevance of the same. Google Forms was used to distribute the questionnaire, and data collection was effectively carried out, as well as initial quantitative analysis was performed.

2.3.2 Interviews

In order to augment the survey data, semi-structured interviews were carried out on five students in order to give more qualitative information. The interview protocols discussed some of the main topics, such as the first experiences of the students with Chat PDF AI, perceived advantages and disadvantages of the tool usage, the effect it has on reading and critical thinking, and motivation and engagement. Moreover, students and their perception of Tri Hita Karana principles integration and their recommendations on how it could be enhanced were also discussed in the interviews. This adaptable strategy enabled the discussion to explore the new themes but maintain a focus on the research questions, thus providing the opportunity to capture subtle views and situational influences that determined the student perceptions.

2.4 Data Analysis

2.4.1 Quantitative Analysis

Data obtained in the survey was analyzed using the descriptive statistics to determine the frequency and the percentage of each questionnaire item. Findings were given in thematic order matching to the research questions, where the patterns of the effects of the results on the various areas measured were apparent.

3.4.2 Qualitative Analysis

Thematic analysis was applied to the results of the interviews, and the analysis was conducted according to the procedures of qualitative research approaches by Miles et al. (2014). It was initiated by familiarizing the data by going through the transcripts numerous times to create an extensive picture. This was then succeeded by initial coding which involved making meaningful segments and coding them with descriptive codes. The codes were then lumped into themes and these were reviewed and polished to make sense and uniqueness. Lastly, the interpretation of the themes was made according to the research questions and theoretical frameworks. This methodology gave the study a strict analysis leading to valid and reliable results.

3.4.3 Integration

The interpretation was done by integrating both quantitative and qualitative results where the qualitative data gave more details, provided explanations, and context to the quantitative trends. This combination generated the in-depth knowledge of student perceptions both at the level of measurable trends and lived experiences.

3. LITERATUR REVIEW

3.1 Reading Comprehension and Critical Reading

Reading comprehension involves decoding print and processing of language on decoded information (Hogan et al., 2011; Kim et al., 2011). The studies support a close correlation between morphological awareness and reading comprehension in a variety of linguistic settings (Cárnio et al., 2017; D'Alessio et al., 2019; Kieffer et al., 2012). The Simple View of Reading proves that the understanding is a product

of the interaction of word decoding skills and linguistic comprehension skills (Kieffer et al., 2012; Yan et al., 2020).
Critical reading entails the need to actively engage with the texts, evaluate the arguments put forward by the authors, assess the quality of evidence, and tie the material to the larger contexts (Rojalai et al., 2021). This competency helps the readers to comprehend information in detail and recognize possible sources of bias and evaluate the credibility (Rini, 2018). Research confirms that the skills of critical reading teachability enhance the comprehension and ability to analyze (Arifin, 2020; Babashamasi, 2022).
Some of these factors are prior knowledge, reading practice, initial competencies, and metacognitive awareness (Combrinck et al., 2014; Gilakjani and Sabouri, 2016; Syafitri, 2019). The studies have shown that motivation has a strong influence on reading comprehension in EFL students, and interested readers have a better understanding (Mohseni Takaloo and Ahmadi, 2017). These results highlight the need to establish cognitive skills and affective variables to facilitate the growth of reading.

3.2 AI Integration in Language Education

The use of the Artificial Intelligence in the English language teaching shows significant potential to improve the learning outcomes (Sharadgah and Sa'di, 2022). It has been shown that AI-driven technologies make students more motivated, offer them more flexible learning prospects, and allow them to get instruction tailored to their needs (Moybeka, 2023). The results of studies that study teacher and student perceptions in the context of AI integration in language learning always suggest positive attitudes towards the use of AI (Hazaymeh, 2024; Moulieswaran and Kumar N S, 2023; Sumakul et al., 2022).
Certain AI applications have been shown to apply successfully in the context of different language abilities. Voice chatbots enhance speaking fluency (Duong, 2024; Kemelbekova, 2024), and writing assistant technologies increase the quality of the writing (Lee, 2024; Muslimin, 2024). Reading AI-powered systems offer adaptive reading content based on the needs and levels of certain learners (Housel and Oranjian, 2020; Patel, 2024a). These technologies promote differentiated instruction, which causes content to be available to various groups of learners (Mahoney and Hall, 2017).
Chat PDF AI is a dedicated app that allows one to interact with PDFs directly. The tool enables the students to ask questions regarding material of reading, demand some explanation on the unknown terms, and obtain instant feedback. Also, the wider use of AI in education has been given great research attention but the educational effect of Chat PDF AI has not been clearly researched, thus necessitating the specialized study of this new technology.

3.3 Tri Hita Karana in Educational Contexts

Tri Hita Karana philosophy offers an extensive model of the holistic education with the focus on the balanced development in spiritual, social, and environmental contexts (Dewi et al., 2022; Ermiana et al., 2023; Sukarma, 2016). Applications in schools prove to have a beneficial impact on learning performance, personality development, and school climate (Jaya, 2019; Trisnawati and Sukmana, 2020). The philosophy facilitates environmental, social responsibility, and spiritual development in addition to academic competencies (Redana and Mujiyono, 2023).
The literature is filled with successful Tri Hita Karana integration reports in all areas of education such as curriculum development, assessment design, and educational tourism (Mayuni et al., 2023; Paragae, 2023; Parwati and Trianasari, 2016). Research also indicates that values-based education that includes this philosophy is positively reacted by students and teachers (Wirahyuni et al., 2021). It fosters the development of character and establishes harmonious learning conditions in favor of holistic student development (Jaya, 2019; Permatasari et al., 2020; Sedana et al., 2022).

The focus on balance and harmony in the philosophy is in line with the modern educational objectives of producing well-rounded individuals. Tri Hita Karana offers a model of ethical education not only in relation to academic success but in relation to moral and social growth, and by discussing the relationships between man and God and man and other humans, and man and nature (Bithara et al., 2020; Wiweka, 2014).

3.4 Technology and Cultural Values Integration

Combining technology and cultural values is a relatively new field of study in education (Fioretti et al., 2019; Popovici and Opriş, 2024; Zhang, 2022). Research has shown that, culturally responsive pedagogy not only improves the engagement of students and their learning but also their learning results by relating the content to their cultural identities. Students are more motivated and interact with learning materials more when educational technologies are used in a manner that allows those technologies to be culturally relevant.

The studies on the integration of technology have underlined the significance of perceived usefulness and ease of use in the way of deciding whether to accept and adopt it or not (Davis, 1989). According to the Technology Acceptance Model, users adopt those technologies that they believe to be advantageous and reachable (Jonatan and Igor, 2023). The educational tools with obvious learning advantages and user friendly interfaces have more adoptions and greater positive learning returns (Baird et al., 2004).

There is little literature on the integration of traditional cultural philosophies with the modern educational technologies. This divide opens the possibility to find a union between indigenous knowledge and modern instruments. Exploring student perceptions towards the use of integrations gives information on how the successful application of culturally responsive technology in educational institutions should take place (Dewi, 2024).

4. RESULTS AND DISCUSSION

RESULT

4.1 Quantitative Findings

4.1.1 Overall Satisfaction with Integration

Survey results demonstrated predominantly positive perceptions of Chat PDF AI integrated with Tri Hita Karana principles. Table 1 presents the distribution of responses regarding overall satisfaction with the integration.

Table 1. Overall Satisfaction with the Integration of Chat PDF AI and Tri Hita Karana

NO	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	**I am satisfied with the use of Chat PDF AI integrated with the Tri Hita Karana principle in learning**	0%	15%	45%	20%
2	**The use of Chat PDF AI, which incorporates the Tri Hita Karana principle, makes learning more engaging**	0%	0%	55%	45%
3	**I feel that learning using Chat PDF AI with Tri Hita Karana is effective in helping my understanding**	0%	10%	45%	30%

Table 1 demonstrates that the overall level of satisfaction is high, as 65 percent of the respondents indicated agreement or strong agreement with the satisfaction (20 percent strongly agreed and 45 percent agreed). Moreover, 100% of the respondents are sure that this integration enhances learning engagement (45 of them strongly agree, and 55 of them agree). Further, three-quarters of them

support the fact that the integration is useful in supporting their understanding (30 percent strongly and 45 percent agree), showing a substantial positive attitude to the approach.

4.1.2 Self-Reported Improvements in Reading Comprehension

Students reported notable improvements in reading comprehension capabilities. Table 2 summarizes student perceptions regarding improvements in their reading comprehension after using the integrated approach.

Table 2. Self-Reported Improvements in Reading Comprehension

NO	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	**I find it easier to understand reading texts after using Chat PDF AI integrated with Tri Hita Karana**	0%	15%	40%	40%
2	**Learning with Chat PDF AI helps me understand topics that I previously found difficult to grasp**	0%	5%	55%	25%
3	**I feel more confident in understanding more complex readings after using Chat PDF AI**	0%	10%	40%	30%

Table 2 showed that there are positive attitudes related to the improvement of comprehension, 80 percent of students strongly agree or agree that they better understand reading texts. Also, 80 percent of students felt that Chat PDF AI can be used to clarify issues that they could not grasp before. In addition, 70 percent of students reported feeling more confident when exposed to complicated reading materials, which indicates that the integration enhances the level of confidence that they have in understanding tricky reading materials.

4.1.3 Engagement, Motivation, and Affective Factors

The integration demonstrated significant impact on affective dimensions of learning. Table 3 presents student responses regarding their level of engagement and motivation.

Table 3. Level of Engagement and Motivation

NO	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	**I feel more motivated to read after using Chat PDF AI with the Tri Hita Karana integration**	0%	15%	40%	35%
2	**I feel more engaged in reading activities that use Chat PDF AI**	0%	15%	40%	35%
3	**Learning using Chat PDF AI integrated with Tri Hita Karana makes me more enthusiastic about attending class**	0%	10%	55%	30%

Table 3 considers the level at which the integration affects the motivation and reading activities among the students. The findings indicate that three quarters of the students (35 percent strongly agree and 40 percent agree) are more motivated to read having used the integration. On the same note, 75 percent are more engaged in reading activities on the Chat PDF AI. Moreover, 85 percent of students (30% strongly agree and 55 percent agree) say that the integration causes them to become more eager to attend a class.

Table 4 further explores the impact on students' affective domain specifically related to critical reading attitudes.

Table 4. Impact of Chat PDF AI on Students' Affective Domain in Critical Reading

NO	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	**Chat PDF AI fosters a positive attitude towards critical reading**	0%	0%	13.3%	86.7%
2	**Using Chat PDF AI increases my motivation to engage with the reading materials**	0%	6.7%	26.7%	66.7%
3	**Chat PDF AI makes the reading assignments more interesting**	0%	6.7%	13.3%	80%
4	**My experience using Chat PDF AI has been enjoyable**	0%	0%	20%	80%

In Table 4, there is significant positive influence on student attitudes and motivation. An impressive 86.7% strongly agreed that Chat PDF AI helped them develop positive attitudes towards critical reading and 66.7% strongly agreed that it gave them more motivation to read materials. Also, 80% were firm that the approach made assignments interesting, and 80 percent were firm that they found the experience enjoyable.

4.1.4 Relevance of Tri Hita Karana Principles

Students recognized connections between Tri Hita Karana philosophy and their learning experiences. Table 5 presents student perceptions of the relevance of Tri Hita Karana principles in their learning process.

Table 5. Relevance of the Tri Hita Karana Principle in Learning

NO	STATEMENTS	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	**The Tri Hita Karana principle makes me feel more connected to local learning and culture**	5%	15%	35%	40%
2	**I feel that the principles of Tri Hita Karana support my understanding of the values contained in the reading text**	0%	25%	40%	15%
3	**Learning with integration Tri Hita Karana enhances my understanding of the relationship between humans, nature, and God**	0%	5%	45%	50%

Table 5 is aimed at the attitudes of students in the context of the relevance of Tri Hita Karana principles in the learning process. The findings indicate that 75 percent (40% strongly agree and 35% agree) admit that the principle promotes the attachment to the local culture and learning. In addition, 55% (15% strongly agree and 40% agree) held that it assists in understanding values in reading texts with moderate correlation with content understanding. Importantly, the vast majority (95% strongly agree and 45% agree) state that the application of such a principle enhances their perception of the interdependence of humans, nature, and God, which proves the holistic approach of the effect of the philosophy.

Such results show that the perceptions are mainly positive in all the dimensions measured with strong agreement on the engagement enhancement, affective benefits, and the understanding of the holistic relationships as the core value of Tri Hita Karana philosophy.

4.2 Qualitative Findings

Thematic analysis of interview data revealed three major themes elaborating quantitative findings and providing deeper insight into student experiences.

4.2.1 Theme 1: Ease of Use and Accessibility

Students consistently emphasized Chat PDF AI's user-friendly design and accessibility. One respondent described her initial experience as "relatively effortless and pleasurable," appreciating the intuitive interface and seamless course integration. She explained: "The interface was user-friendly and I quickly grasped its functionality without encountering significant challenges."

However, some students experienced initial difficulties. One respondent noted: "My initial experience with Chat PDF AI was somewhat intricate. The design is inherently straightforward, yet there are several functions that lack clarity regarding their usage." Despite these initial challenges, most students quickly adapted to the tool.

Another student confirmed accessibility benefits: "It is quite easy the way the method is implemented because I was in a position to grasp it in a short span of time." This ease of use removed technological barriers, allowing students to focus on learning content rather than navigating complex interfaces.

The integration with course materials proved particularly valuable. Students appreciated that Chat PDF AI worked seamlessly with assigned readings, eliminating need to switch between multiple platforms or applications. This streamlined approach enhanced efficiency and reduced cognitive load associated with technology management.

4.2.2 Theme 2: Effectiveness in Learning

Interviews revealed that Chat PDF AI significantly enhanced learning effectiveness, particularly for comprehending challenging academic texts. One student explained: "Indeed, I have derived advantages from Chat PDF AI, particularly when I encounter a challenging text like an academic article. Chat PDF AI helps me comprehend unfamiliar terms, enabling me to read more quickly."

Students valued the tool's ability to provide immediate explanations and clarifications. This responsiveness proved especially beneficial when encountering specialized vocabulary or complex concepts. Rather than interrupting reading flow to consult external resources, students could query the AI directly and receive contextually relevant explanations.

The integration with Tri Hita Karana principles added depth to learning experiences. One respondent noted: "I feel that the integration of Newsela with Tri Hita Karana makes learning more engaging and beneficial because this approach not only develops reading skills but also introduces students to very important cultural values."

However, one student expressed concern about explanation complexity: "Not particularly beneficial. Occasionally, the explanations provided are overly detailed, leading to confusion rather than providing assistance." This feedback suggests the need for adjustable explanation depth accommodating diverse student preferences and comprehension levels.

Another student confirmed effectiveness for vocabulary development: "Yes, indeed! When seeing a challenging article, I found Chat PDF AI to be helpful in providing explanations for unfamiliar terminology." This capability supported autonomous learning, enabling students to advance through materials independently while accessing support when needed.

4.2.3 Theme 3: Impact on Affective Factors

The integration demonstrated substantial influence on students' attitudes, motivation, and emotional engagement with reading activities. One respondent explained: "Chat PDF AI has made me more interested and positive towards critical reading activities because it makes reading to be more fun."

Students appreciated the interactive nature of engaging with texts through AI assistance. This interactivity transformed potentially monotonous reading assignments into dynamic learning experiences. One student elaborated: "I have always had a positive impression using Newsela during reading lessons related to

Tri Hita Karana. The articles that were available allowed me to gain an insight as to various matters more in depth, the principles studied within Tri Hita Karana emphasized to me the intertwining of learning process with the harmonious life balance."

The cultural relevance provided by Tri Hita Karana integration enhanced engagement. Students connected more deeply with materials when they recognized cultural values and philosophical principles reflecting their own heritage. This connection fostered sense of ownership and personal relevance in learning activities.

However, experiences varied among students. One respondent noted: "It makes me lazy. Instead of getting excited, sometimes I feel like the reading task is harder." This negative response suggests that overly complex explanations or technical difficulties could diminish motivation for some learners.

Another student emphasized positive motivational impact: "Chat PDF AI makes me more excited to read critically. It makes it more fun." Features like immediate vocabulary explanations and interactive questioning reduced frustration often associated with challenging academic texts, replacing anxiety with curiosity and engagement.

DISCUSSION

4.3 Integration Effectiveness for Reading Comprehension

Findings prove that the combination of Chat PDF AI and Tri Hita Karana philosophy had a positive impact on reading comprehension development in students. The fact that 80 percent of the students indicated more easily comprehending the text and 70 percent indicated that they felt more confident reading more complex material shows that the strategy was successful in overcoming cognitive and affective barriers to understanding.

Such results are consistent with the studies that record the value of personalized learning technologies in reading development (Housel and Oranjian, 2020; Patel, 2024a). The feature of Chat PDF to give immediate and contextually relevant explanations on any given piece of information is an important solution to the problem of academic reading, where the visualization of an unfamiliar word or concept may hinder understanding and reduce the desire to study (Gilakjani and Sabouri, 2016). The tool facilitates smoother, more efficient reading through allowing students an opportunity to clarify meaning without having to stop the reading.

This combination with Tri Hita Karana values provided cultural relatability to improve understanding. Having identified cultural values in the learning content enables students to engage in more profound and significant knowledge beyond the superficial reading of the text (Wirahyuni et al., 2021). This observation highlights the existing studies on culturally responsive pedagogy that show that relevance of material to cultural backgrounds of students improves engagement and learning.

4.4 Ease of Use and Technology Acceptance

The observation that 86.7 percent of students strongly concurred on Easy use by Chat PDF AI is an indication of successful implementation of technology. The Technology Acceptance Model (Davis, 1989) demonstrates that perceived ease of use is a significant factor that determines technology acceptance and technology continuance. Students interact more, and get more advantages when the educational technologies imply minimum learning curves and fit well into the current practice (Jonatan & Igor, 2023).

User friendly interfaces are especially significant in learning environments whereby cognitive resources are meant to be on the learning content and not on technology navigation (Baird et al., 2004). The way the accessibility of Chat PDF AI is positively perceived indicates that the tool was effective in reducing the technological barriers and the students could focus on the progress of reading comprehension.

Nonetheless, the information gained in the course of interviews that showed that some students have encountered the initial issues emphasizes the significance of proper orientation and assistance in case of introducing new technologies. Majority of the students adjusted easily, but specific training on functionality of the tools would increase the accessibility and decrease the initial frustration levels.

4.5 Affective Dimension Enhancement

The significant influence on affective factors is one such finding that is worth mentioning. The fact that 86.7% of them reported better attitudes to critical reading and 66.7% of them felt more motivated proves the effectiveness of the integration in covering emotional and motivational aspects that were ignored in the traditional reading instruction.

It has been observed repeatedly that motivation, engagement, and reading comprehension have strong relations (Gilakjani and Sabouri, 2016; Mohseni Takaloo and Ahmadi, 2017). When students are positive and have interest when reading, they can understand better and continue to read longer in case they are faced with challenges (Babashamasi, 2022). The success of the integration in improving these affective factors probably helped to achieve improvements in comprehension which resulted in a positive feedback loop where a higher level of motivation resulted in a higher level of comprehension which produced an even higher level of motivation.

Chat PDF AI has an interactive feature that contributed to the improvement of the engagement (AbuSahyon, 2023; Moybeka, 2023). Instead of reading passively, students actively interrogated the tool, read and thought about ideas and created meaning in a conversation. This participatory learning method is consistent with the constructivist theory, which focuses on the agency of the learner and knowledge building.

4.6 Cultural Integration Benefits

Successful cultural integration also shows through the fact that 95 percent of students said that the integration improved their knowledge of relationships between human beings, nature, and God. Tri Hita Karana philosophy offered a valuable system of relationship between lectured material and wider life concepts and cultural values.

It is a cultural dimension that causes school-going children more often than not to overlook the importance of education being able to know how academic education is connected to ethical living and cultural identity. The inclusion of Tri Hita Karana principles explicitly in the integration made the integration to produce holistic education that produced students, who were intellectually, morally and culturally well-rounded.

The average score (55) on the extent to which the principles facilitated comprehension of the values in texts indicates the possibility of enhancing clear relationships between Tri Hita Karana philosophy and content of the readings. The implementation in the future can be slightly more organized with the guidance assisting students in distinguishing and examining value dimensions in texts through the Tri Hita Karana framework.

4.7 Implications for Practice

These conclusions are quite significant to educators and curriculum developers as they indicate that the education technologies do not always stand in opposition to the traditional cultural values. To the contrary, they may form synergies when combined intelligently to add to the technological functionality and cultural relevance. To apply the same techniques, teachers ought to focus on the choice of user-friendly technologies that have easy to use interfaces so that learning can be minimized and ample orientation must be offered so that the students are aware of the functionality and learning uses of the tools. Also, explicit cultural connections can be made to enable the students to realize the applicability of technological tools in their cultural environment. It is also important to support independent

learning in which students have the opportunity to learn on their own but still have a source to seek help when they require it. Lastly, different needs are considered to guarantee that the students with different levels of technological comfort and learning preferences are considered which would make the learning processes more inclusive and effective.

4.8 Limitations and Future Research

Although the results are promising, there are a few weaknesses that should be mentioned. The sample which was used in the study was relatively small hence limiting to a single institution. Future studies ought to look at the integration in various educational settings involving bigger and diversified groups of participants.

The research was on the short-term perception and self-reported outcomes. Tracking longitudinal studies of the continued effects of reading comprehension, critical thinking ability, and academic achievement would be a great source of information on long-term effects.

Also, exploring the interactions between various aspects of Chat PDF AI and various aspects of Tri Hita Karana philosophy to affect learning would improve knowledge. Comparison of various integration techniques through experimental designs may help in establishing the most effective implementation strategies.

Lastly, the studies on the effectiveness of educators in facilitating such integrations would help those practitioners who wish to apply the same. This would be helpful in understanding teacher preparation requirements, instruction, and assessment techniques to adopt them in a broader more viable manner.

5. CONCLUSION

This paper examined how students are perceiving the use of Chat PDF AI in combination with Tri Hita Karana philosophy to assist in improving the reading comprehension of students who are taking critical reading classes. Findings indicated that mostly, perceptions about the intervention were positive in cognitive, affective and cultural aspects.

According to the students, the level of understanding of reading comprehension significantly improved, and 80 percent of them felt that reading was more accessible, and 70 percent of students felt more confident reading complicated texts. The integration had a positive impact on the affective factors with 86.7% of them stating their improved attitudes towards critical reading and 66.7% stating that they felt more motivated. The students found the tool easy to use, with 86.7% attesting the ease of use, and 73.3% attesting to its ready accessibility.

Cultural integration was not in vain, as 95 percent of the respondents concurred that the method helped them gain an insight into the relationship among the human thought, nature, and God, which is the core of Tri Hita Karana philosophy. These patterns were expounded with qualitative findings, which indicated how the integration resulted in reading becoming interactive and engaging and that the academic information was linked to cultural values.

The findings are useful in the study of how educational technologies can be successfully integrated with the traditional cultural philosophies to form the full body of learning. The effective integration of the recent AI technologies with the local knowledge proves that culturally responsive education is possible and can make a student not only academically but also morally and socially developed.

The study refutes the supposition that there is an antagonistic relationship between technology and tradition, and it shows that they can be synergized fruitfully. Respecting cultural heritage and at the same time adopting technological advances, educators will be able to build learning spaces where the identity of students can be touched upon in the most significant way and at the same time, equip them with the skills necessary to cope with the present-day demands.

The research in the future must focus on this integration in various contexts with different populations to determine the generalizability. It would be more profound to

provide longitudinal studies that would track long-term effects on reading abilities, growth of critical thinking, and academic success. Research into best implementation solutions and teacher training requirements would facilitate wider introduction of similar culturally responsive technological integrations.

This research paper conclusively supports the fact that tradition and innovation can and should be reconciled in education and they can consult the cultural inheritance to the advantage of students in terms of greater engagement with modern tools.

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MULTIDISCIPLINARY SYNERGY IN DRIVING SUSTAINABLE INNOVATION: TRANSFORMING THE MANAGEMENT ECOSYSTEM TOWARD ACHIEVING THE SDGs

Gusti Ayu Mahanavami[1)], Ni Nyoman Menuh[2)], Wiryawan Suputra Gumi[3)] and Ida Bagus Ngurah Wimpascima[4)]
[1)] STIMI Handayani, Denpasar
Email: gustiayumahanavami@gmail.com
[2)] STIMI Handayani, Denpasar
[3)] STIMI Handayani, Denpasar
[4)] STIMI Handayani, Denpasar

ABSTRACT

The transformation towards sustainable development demands a collaborative and interdisciplinary management ecosystem. This study aims to analyze the dynamics of multidisciplinary synergy in driving sustainable innovation in Bali, a region with a unique socio-cultural structure. The research approach uses exploratory qualitative methods with in-depth analysis. The results show that multidisciplinary synergy is formed through the interaction of technical, social, and managerial knowledge integrated in the practice of innovation based on the local culture of Tri Hita Karana. Collaborative leadership and adaptive governance are the main catalysts for the successful integration of economic, social, and environmental dimensions. This study contributes theoretically by offering a conceptual model of the Local-Based Multidisciplinary Synergy Framework, which integrates the Quadruple Helix with Balinese local wisdom values. Practically, the research results provide direction for local governments and educational institutions to strengthen the collaborative ecosystem in realizing the SDGs at the local level.

Keywords*: Multidisciplinary Synergy, Sustainable Innovation, Management Ecosystem, Tri Hita Karana, SDGs.*

1. INTRODUCTION

In an era of globalization and economic uncertainty, achieving the Sustainable Development Goals (SDGs) is a complex challenge that demands synergy across disciplines and sectors. Sustainable development cannot be achieved through a purely technocratic approach but requires the integration of management, social sciences, technology, and culture to create inclusive and competitive innovation (Carayannis & Campbell, 2021). Multidisciplinary synergy is a strategic approach to addressing social, economic, and environmental complexities through collaboration between government, academics, business actors, and the community. Bali is a relevant context for research due to its success in combining tourism-based economic growth with the preservation of socio-cultural and environmental values. Sustainable development in Bali not only demands economic efficiency but also emphasizes harmony between social, environmental, and cultural dimensions. In this context, sustainable innovation is at the heart of efforts to address the global challenges of the SDGs. Multidisciplinary synergy serves as a bridge to integrate diverse knowledge, technologies, and local values to produce contextually relevant, innovative solutions. The Tri Hita Karana values, as a Balinese

philosophy of life, provide a moral and cultural framework to support innovation rooted in local wisdom while remaining open to global change. However, the pressures of globalization, climate change, and dependence on the tourism sector present new challenges that demand cross-disciplinary innovation and adaptation in resource management. This research aims to analyze the dynamics of multidisciplinary synergy in fostering sustainable innovation in Bali, a region with a unique socio-cultural structure.

2. RESEARCH METODOLOGY

This study uses a qualitative approach with an exploratory type. This approach was chosen because the aim of the study is to deeply understand the phenomenon of multidisciplinary synergy in driving sustainable innovation, which is still relatively new and complex, especially in the context of transforming the management ecosystem towards achieving the Sustainable Development Goals (SDGs). The data collection technique is a documentation study to obtain comprehensive and in-depth data. Data analysis is carried out by the steps of compiling themes, reviewing themes, and interpreting results to build a conceptual model of the Multidisciplinary Synergy Framework for Sustainable Innovation.

3. RELATED RESEARCH/LITERATUR REVIEW

A Sustainable Business Model (SBM) is a strategic framework that combines economic value creation with social responsibility and environmental preservation (Bocken, 2020). This approach emphasizes the integration of the people, profit, and planet dimensions into organizational strategy and performance, so that businesses are oriented not only toward financial gain but also toward social welfare and ecological sustainability. In the Balinese context, the application of SBM principles is relevant because it is supported by the values of Tri Hita Karana—the concept of harmony between humans, nature, and spirituality—which serves as an ethical and philosophical foundation for sustainable business practices. Cross-sector collaboration between government, academics, business actors, and the community is key to creating business models that are not only economically profitable but also strengthen social and ecological balance. The integration of Tri Hita Karana into the local innovation ecosystem can strengthen management transformation towards achieving the SDGs, while maintaining social and environmental sustainability (Kristinayanti et al., 2025; Negara et al., 2025). In line with this, Baldassarre et al. (2020) developed a sustainable design framework that combines ecodesign, product-service systems, sustainable business models, and collaborative ecosystem design. Meanwhile, the Quadruple Helix model proposed by Carayannis and Campbell (2009) emphasizes the importance of integrating cultural and media-based public perspectives within the innovation ecosystem, thereby creating a dynamic, adaptive, and layered knowledge system to support a knowledge-based economy.

4. RESULTS AND DISCUSSION

Cross-disciplinary Knowledge Integration is the process of combining perspectives, methods, and knowledge from diverse scientific fields to produce more comprehensive solutions to complex problems, such as sustainable innovation. In this context, collaboration between academics, business actors, and local communities is key. Academics contribute through research and the development of scientific concepts, business actors provide resources and implementation strategies, and local communities bring cultural wisdom and contextual social practices. This cross-disciplinary collaboration can foster social innovations, such

as the development of environmentally friendly products, organic farming systems, and culture-based tourism that empowers local communities. Such integration not only generates economic value but also strengthens the social and environmental dimensions as part of sustainable development. However, in practice, the knowledge integration process often faces various structural and cultural barriers. One of these is the lack of effective communication platforms, which limits the exchange of information and knowledge between actors. Furthermore, there are capacity gaps between the parties involved—for example, differences in research capabilities, access to technology, and understanding of sustainability principles. As a result, the collaborative potential that should be synergistic is often not optimally maximized. Overall, the success of cross-disciplinary knowledge integration depends on the creation of open communication mechanisms, strengthening the capacity of each actor, and the existence of collaborative governance that can bridge differences in perspectives and interests.

The research results show that multidisciplinary synergy is formed through the integration of cross-disciplinary knowledge and collaboration between various actors within the innovation ecosystem. This collaboration not only connects the fields of management, economics, technology, and social sciences, but also involves stakeholders from the public sector, academia, business actors, and the community. Cross-disciplinary integration enables a mutually enriching exchange of knowledge, creating more contextual and sustainable innovative solutions. Thus, multidisciplinary synergy serves as a mechanism that brings together diverse perspectives to address the complex challenges of sustainable development.

Furthermore, Collaborative Leadership and Adaptive Governance play a crucial role in maintaining a balance between economic, social, and environmental interests. In Bali, local figures serve as collaborative leaders, bringing together various actors—government, business, academics, and the community—to realize sustainability initiatives. Adaptive governance approaches are reflected in communities' ability to adjust strategies and policies based on changing social and environmental conditions. Examples include eco-village projects that integrate environmentally friendly practices with local culture, and waste-to-value programs that transform waste into new economic resources. Through inclusive leadership and flexible governance, cross-sector collaboration in Bali is enabling sustainable innovations rooted in local values and community needs. Collaborative leadership and adaptive governance emerge as key elements in maintaining the sustainability of this synergy. Collaborative leadership emphasizes a facilitative role, open communication, and equality among actors in the decision-making process. Meanwhile, adaptive governance plays a role in ensuring that the system can flexibly respond to change without losing its strategic direction toward sustainability goals. The combination of the two creates a structure that enables the harmonious integration of economic, social, and environmental dimensions in organizational practices and public policies.

The role of local cultural values (Tri Hita Karana) serves as an ethical and moral foundation for driving sustainable innovation in Bali. The principle of harmony between humans, nature, and God creates a balance that guides every development initiative to align with humanitarian values and environmental sustainability. The integration of Tri Hita Karana values into sustainability programs not only strengthens social legitimacy but also increases community participation. When innovations are based on mutually understood and respected cultural values, communities are more receptive and committed to their implementation.

Thus, these local values serve as a bridge between the spiritual, social, and ecological aspects of sustainable development. In the Balinese context, the values of Tri Hita Karana serve as an ethical and cultural foundation that strengthens the social legitimacy of sustainable innovation. The principle of harmony between humans, nature, and God serves as a moral guideline in all forms of collaboration and decision-making. Rooted in these local cultural values, sustainable innovation practices are not only socially accepted but also possess profound spiritual and moral significance for the Balinese people. This makes Tri Hita Karana not merely a cultural value but also a transformational instrument in strengthening a sustainable innovation ecosystem.

Theoretically, this research expands the Quadruple Helix model into the Quintuple Helix by adding the local cultural dimension as a key factor in the innovation process. While the Quadruple Helix model encompasses the roles of government, academia, business, and society, the fifth dimension of the Quintuple Helix model—culture and environment—emphasizes the importance of local context in creating relevant and sustainable innovation. Thus, incorporating local cultural values such as Tri Hita Karana into innovation models not only enriches theory but also provides a practical contribution to building a more inclusive, adaptive management paradigm rooted in local wisdom.

These findings suggest that the Quadruple Helix model, which originally emphasized collaboration between government, academics, business actors, and the community, can be expanded into a Quintuple Helix by adding a local cultural dimension as a fifth pillar. In the Balinese context, cultural values such as Tri Hita Karana play a crucial role in shaping the orientation and practice of sustainable innovation. The addition of this cultural dimension explains why sustainable innovation in Bali tends to be communitarian and participatory, as each initiative focuses not only on economic outcomes but also considers social harmony and environmental sustainability. Local culture serves as a binding force that fosters a sense of collective responsibility and strengthens collaboration between actors in the innovation system. Thus, the Quintuple Helix in Bali represents an innovation ecosystem rooted in local wisdom while supporting the achievement of the sustainable development goals (SDGs).

5. CONCLUSION

This research confirms that multidisciplinary synergy is a prerequisite for sustainable innovation rooted in local values. Collaboration among actors in the Balinese management ecosystem demonstrates that the integration of cross-disciplinary knowledge, collaborative leadership, and adaptive governance are essential foundations for realizing the SDGs at the local level. The theoretical implication of this research is the strengthening of the Local-Based Multidisciplinary Synergy framework, which extends the Quadruple Helix model with a cultural dimension. Practically, the findings of this research encourage local governments and universities to develop collaborative innovation platforms based on local culture and socio-environmental sustainability.

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MEKARE-KARE TRADITION AS SPORTSMANSHIP AND CULTURAL RESILIENCE

Putu Ronny Angga Mahendra[1)], I Made Erpan[2)], Rini Julita Maitang[3)]

[1)] Dwijendra University
puturonny87@gmail.com
[2)] Dwijendra University
imadeerpan26@gmail.com
[3)] Dwijendra University
maitangrinijulita@gmail.com

ABSTRACT

This study explores the Mekare-kare tradition as a means of cultivating sportsmanship and cultural resilience. Mekare-kare, a traditional ritual from Tenganan Pegringsingan, Bali, involves a mock battle with pandan leaves. The research employs a qualitative approach with a case study design, gathering data through interviews, observation, and document analysis. The findings reveal that Mekare-kare embodies values of respect, discipline, and humility, fostering fair play and cultural identity. It serves as a platform for community engagement, cultural preservation, and character education, highlighting the potential of local traditions in shaping a generation that is both competitive and culturally aware. This tradition also fosters values for individuals to maintain their culture in the face of globalization and modernization.

Keywords: *Mekare-kare; Balinese Tradition; Sportsmanship; Cultural Resilience; Character Education*

1. INTRODUCTION

Local wisdom is a philosophy of life and knowledge, as well as various life strategies in the form of activities carried out by local communities in answering various problems in fulfilling their needs. Local wisdom is also defined as the ability to adapt, manage, and cultivate the influence of nature and other cultures that become the driving force for transformation and the creation of extraordinary Indonesian cultural diversity. Local wisdom is one aspect that is very closely related to culture. Local wisdom is a way of life of a society and relates specifically to a particular culture. Each region has local wisdom that contains socio-cultural values that must be preserved. Local wisdom is passed down from generation to generation through stories from word of mouth. Local wisdom is usually found in folk tales, proverbs, songs, and folk games.

Characteristics of local wisdom include: 1) must incorporate knowledge of virtues that teach people about ethics and moral values; 2) local wisdom must teach people to love nature, not to destroy it; 3) local wisdom must come from older members of the community; 4) local wisdom can be in the form of values, norms, ethics, beliefs, customs, laws, customs, and special rules. Local wisdom has the following characteristics: 1) able to survive in the midst of increasingly active foreign cultural attacks, 2) has the ability to provide something to fulfill elements from foreign cultures, 3) has the ability to combine or blend foreign cultural elements into the original culture, 4) has the ability to control, give direction to cultural development. The traditional village of Tenganan Pegeringsingan is still classified as one of the ancient villages in Bali located in the Karangasem regency.

Then it is classified as an ancient village, as seen from the influence of culture that entered this area. According to Philip Frick McKean (1973), the life of Balinese society today, as a whole, illustrates characteristics that can be distinguished into small tradition types, large traditions and modern traditions (Geriya, 1996: 3). The characteristics of small traditions according to Swellengrebel (1960), are described as (1) a rice field economic system with irrigation; (2) raising chickens for their meat and cockfighting; (3) house buildings with small rooms made of bamboo and wood; (4) crafts including iron, bronze, dyeing and weaving; (5) a temple system related to family, village and territory; (6) in the temple there is a sufficiently complex ritual and ceremony system; (7) the local language with oral literature; (8) dances and tabuh are used in the context of ceremonies at the temple which includes selunding, angklung and Tari Sanghyang (Geriya, 1996: 3).

Based on the characteristics and criteria that have been explained above, the traditional village of Tenganan Pegeringsingan is classified into small traditions, with other terms besides ancient Bali, such as mountainous Bali or Bali-Aga (native Balinese people). As a form of dichotomy that is contrary to Balinese plains or Balinese immigrants (wong "Majapahit). Because it still shows distinctive characteristics in terms of the antiquity of community life which is still surviving today. Even though Balinese culture in this phase of development has entered a transition period from traditional culture to industrial culture (modern). Mekare-kare (pandan war) is a form of ritual ceremony that is held once every year, by the local community it is called the sambah ceremony which takes place in the fifth month according to the local village calendar. This Sambah ceremony lasts for one month, starting when entering the penanggal (towards the full moon) and when panglong (entering the new moon), when the transition from the full moon to the new moon.

The Mekare-kare tradition, also known as Perang Pandan, is one of the unique cultural heritages of Tenganan Pegringsingan and several surrounding areas. This tradition takes place from generation to generation and has a deep meaning as a symbol of courage, strength, and the cultural identity of the local community. In this activity, participants divided into two groups face each other to fight using tools made of woven bamboo from pandan leaves, called pandan. Although it looks like a tough physical competition, Mekare-kare not only emphasizes strength and courage, but also contains moral messages, sportsmanship, and respect for opponents and tradition.

Along with the times, the Mekare-kare tradition needs to be seen from a character education perspective. In this day and age, this context becomes relevant as a medium for instilling values of sportsmanship, responsibility, discipline, and a sense of brotherhood among the younger generation. This is important considering the pressures of modernization and foreign cultural influences that can erode local cultural identity and heritage. In this context, the Mekare-kare tradition can become an effective learning medium if it is packaged positively and educatively, so that it can strengthen cultural resilience while building a society of good character.

Apart from being a means of sportsmanship education, Mekare-kare also plays a role in strengthening cultural resilience. This tradition is not only as entertainment or a mere spectacle, but also as a form of preserving local wisdom and cultural identity that must be preserved. Through this activity, the community is taught to appreciate and maintain traditional values, so that they are able to survive in the midst of globalization and modernization that threaten the sustainability of local culture. Thus, the Mekare-kare tradition can be considered a symbol of cultural resilience which affirms that the success of a community is not only measured by physical strength, but also by the endurance and sustainability of the culture they have.

The sustainability of the Mekare-kare tradition requires attention from all parties, starting from the government, traditional communities, to educational institutions. Strategic efforts are needed to document, preserve, and develop this tradition so that it remains relevant and able to provide pedagogical benefits in the lives of present and future communities. Through a deeper understanding of the meaning and values contained within, it is hoped that the Mekare-kare tradition will not only develop as a traditional activity, but also as a form of education that can strengthen the sportsmanship and cultural resilience of the Indonesian nation.

2. RESEARCH METODOLOGY

The qualitative research method was chosen in this study because the main goal is to understand the meaning, perceptions, cultural values, and subjective experiences of participants and communities who are directly involved in the Mekare-kare tradition. This approach allows researchers to investigate complex cultural phenomena, which cannot be measured quantitatively, in depth and contextually. This research aims to explore the values of sportsmanship and cultural resilience that are inherent in the Mekare-kare tradition. Because these aspects are subjective, contextual, and rooted in social meaning, an approach is needed that can reveal the experiences and perceptions of the community in depth. The qualitative method supports this process by opening up a rich interpretation space, allowing for a description of cultural aspects that are not visible.

The approach used is a case study and exploratory, which allows researchers to focus on a specific location with a specific community to deepen investigations related to cultural patterns, meanings and practices. Data analysis was carried out thematically, categorizing findings based on main themes such as sportsmanship, maturity, and cultural resilience. Thus, the research results are expected to provide meaningful and relevant insights for the development of cultural preservation and community character education.

3. RESULTS AND DISCUSSION

Mekara-kare Ceremony Tradition (Pandan War)

The Mekare-Kare Ceremony procession is an attraction for foreign and domestic tourists. To describe the uniqueness of the Adat Tenganan Pegeringan village, this discussion only highlights one aspect of the religious life of the Adat Tenganan Pegeringsingan Village regarding the mekare-kare ceremony procession. Mekare-kare (Pandan War) is a form of ritual ceremony held once a year, by the local community it is called. The sambah ceremony which takes place in the fifth month according to the local village calendar. This Sambah ceremony lasts for one month, starting when entering the penanggal (towards the full moon) and when panglong (entering the new moon), when the transition from the full moon to the new moon. An interesting event in this ceremony is Mekare-kare or the pandan war four times.

Related to this Muran Sambah ceremony, the implementation of Mekare-kare begins at Hud 5th which is held in front of the Bale Agung. This is followed by the implementation of Mekare kare at Hud 12th, which is carried out alternately from the front of Petemu Kelod (place in the South), continuing to Petemu Kaja (place in the North) and ending in front of Petemu tengah (place in the Middle) which is held at Hud 13th. The fifth Sambah sasih is distinguished according to its level into two parts, namely (1) the level of the main fifth Sambah sasih ceremony. At the Ordinary Sambah ceremony, Mekare-kare (Pandan War) starts at Hud 4th, held in front of Bale Agung. At the same time, the Ngelawad ceremony is also held, which is carried out by Krama Desa Luh (members of the banjar from the wife's side) together with Daha (teenage girls), Teruna Temu Kelod (youth groups located in

the South) and Pasek (Pasek citizens group). This Ngelawad ceremony takes place at Pura Puseh and Pura Petung, as well as the sacred Pakuwon place.
Ceremonies like this are also held every two years at Pura Rambut Pule and Pura Batu Taikik. Furthermore, at Hud 8th, Mekare-kare takes place in front of Petemu Kelod (place in the South), followed by Hud 9th, Mekare-kare is held in front of Petemu Kaja (place in the North, and Mekare- kare ends at Petemu Tengah (the place in the middle) which is held at Hud 10th, and is also followed by a mecundang ceremony held at Petemu Kaja (place in the North). The involvement of the community in Mekare-kare (Pandan War) not only involves the Teruna sekeha (youth groups) from the 3 existing sekehas (Petemu Kelod, Tengah and Kaja, as mentioned above). However, it is also followed by all krama banjar (community members) of the Adat Tenganan Pegeringsingan village, and also invites krama banjar Pande (Pande banjar residents), Tenganan Dauh Tukad, Bukit Kangin, Bukit Kauh, Bukit Kaja and Ngis villages which are outside the residents of Adat Tenganan Pegringsingan village. Mekare-kare (Pandan War) a duel in the form of a duel which is individual in nature, meaning one person against one person. However, those involved in Mekare- kare are not limited to the general group, free meaning children, teenagers and adults (already married and only men play.
In the pandan struggle, each war participant carries a bundle of pandan leaves that have been cut into pieces with a length of approximately 25-30 cm. This bundle of pandan leaves is held by the right hand, to be used to scratch the opponent's body until it bleeds (blood comes out of the scratched body). The left hand holds a shield with a diameter of approximately 1 meter made of strong woven bamboo as a shield to prevent scratches from sharp pandan thorn leaves from the enemy. To assess who wins and loses between two people competing in Mekare-kare (Pandan War), there are several judges as referees during the fight. This jury has very high authority in deciding and determining who wins or loses in the match.
In Mekare-kare (Pandan War) the process of implementing the fight each round advances two people which lasts approximately 5-10 minutes. During this fight, whoever of the Mekare-kare participants (Pandan War) is hit by pandan scratches first, that participant is considered defeated. Furthermore, the jury quickly separates or mediates so that the fight does not last long. Because what is hoped for by the people of Adat Tenganan Pegeringsingan, is that in Mekare-kare there should be no feelings of revenge. For Mekara-kare participants (Pandan War) who are injured due to pandan scratches from their opponent or enemy. The wounds on the body that are scratched by pandan thorns are treated with a liquid (boreh) made from types of plant tubers, such as lengkuwas (isen) and kunir (turmeric). Lengkuwas and turmeric are grated and the grated results are mixed with vinegar. Then apply to the body that is injured due to being scratched by pandan thorns. At the beginning of treatment it does feel very sore, but it doesn't last long, after the medication has soaked in until it dries, the scars from Mekara-kare (Pandan War) also become dry, at the same time healing without any scars left. While the Mekara-kare (Pandan War) is taking place, it is accompanied by the gamelan selonding (a kind of music) performance.
The actual purpose of holding the Mekara-kare (Pandan War) ceremony is related to the Ngusaba ceremony Sambah in the village of Adat Tenganan Pegringsingan still requires a more in-depth understanding. The form of Mekara-kare (Pandan War) is the only one that still exists today in Bali which is centered in the village of Adat Tenganan Pegeringsingan. There is a discourse that has emerged that the possibility of Mekara-kare (Pandan War) is related to the tabuh rah ceremony

(sacrifice ceremony) as is the case in Bali in general. Because a series of events with the Ngusaba Sambah ceremony in the village of Adat Tenganan Pegeringsingan, apart from Mekara-kare (Pandan War), a cockfight (tajen) is also held alternately as many as 3 pairs in front of Bale Agung. Then the cockfight is held at Petemu Kelod (place in the South, followed by Petemu Kaje (temapat in the North) and ending at Petemu Tengah (the place in the middle). In this cockfight (tajen) there is no money betting (gambling), which prioritizes the ceremonial as the tabuh rah ceremony (sacrifice ceremony) which aims to maintain a balance between human life and the natural environment.

Study of Sportsmanship Values and Cultural Resilience Character in the Mekare-kare Tradition (Pandan War) as Sportsmanship and Cultural Resilience Education

The Mekare-kare tradition, or known as Perang Pandan, is a cultural heritage that has been going on for generations. This tradition introduces elements of violence which are packaged in the context of customs and rituals, but behind it contains deep moral, social and educational values. This tradition not only functions as entertainment or a traditional ceremony, but also as a learning medium about sportsmanship and cultural resilience that is relevant in efforts to build a community with integrity and culture.

Sportsmanship is an attitude and behavior that is honest, respectful, disciplined, and respects opponents during competition. In the context of Mekare-kare, this value emerges through the attitude of participants both during and after the match. Participants show respect for opponents and follow traditional rules, prioritizing safety together, even in a harsh and competitive atmosphere. Participants are taught not to be angry or resentful, to accept defeat with an open heart, and not to take actions that demean their opponents. Success is not only seen from physical strength, but also from aspects of maturity and sportsmanship in competing. This tradition fosters an attitude of humbleness, respects opponents, and develops mature character and local wisdom.

Through the Mekare-kare tradition, participants and the community are taught that physical strength must be balanced with honesty and respect for others. This message becomes one of the foundations for forming positive character and sportsmanship in everyday life. Cultural resilience is the ability of a community to preserve, maintain, and develop its cultural values amid increasing influence from foreign culture and modernization. Mekare-kare is a symbol of the cultural identity of a community that is continuously preserved by the younger generation and traditional communities so that it remains alive and relevant. Mekare-kare becomes an educational medium about the importance of maintaining, respecting, and developing local culture while introducing the values of local wisdom to the younger generation.

Pandan War is able to become a arena for maintain and strengthen the cultural character of society, while expanding their insights in appreciating the diversity and history as part of the identity of the Indonesian nation. The Mekare-kare tradition can be integrated into the character education curriculum through an educational approach and direct experience-based teaching. Teachers and educators can use this tradition as a medium to instill values of sportsmanship and cultural resilience.

In the context of the Mekare-kare tradition, sportsmanship is not just an attitude of being honest and fair in competing, but also includes an attitude of mutual respect, discipline, and self-control during or after battle. This tradition contains the message that physical violence must be balanced with affection, respect, and

honesty as part of the life learning process. Mekare-kare teaches important values in competing in a healthy and characterful manner. Participants learn that defeat does not reduce self-esteem, but becomes a lesson to become a more mature, honest, and respectful person towards others. This message is important in building a society that is characterful and has integrity.

Cultural resilience is the ability of the community to maintain, develop and strengthen their cultural values and identity, especially in the midst of very rapid currents of modernization and globalization. The Mekare-kare tradition as part of local cultural wealth has a vital role in maintaining identity and strengthening a sense of togetherness and the continuity of customs. This tradition is preserved through rituals, teachings and routine practices that are passed down from generation to generation. Through the implementation of traditions on a routine basis, the community strengthens cultural identity and shows that they are capable maintaining the cultural heritage of their ancestors. The sense of togetherness that is fostered during activities strengthens social cohesion. This tradition contains local values such as respect for nature, mutual cooperation, and polite behavior which are cultural assets that must be preserved and developed. Mekare-kare becomes an effective vehicle for instilling cultural values in the younger generation through direct experience and observation

4. CONCLUSION

The Mekare-kare or Pandan War tradition is a cultural heritage that has a deep meaning in building community character, especially in aspects of sportsmanship and cultural resilience. Although it appears to be a tough physical battle, this tradition essentially contains the values of honesty, respect, discipline, and self-control which support the formation of a sporting attitude. These values are very important in character education which instills fair play and moral innovation in competing. Apart from functioning as a vehicle for sportsmanship learning, Mekare-kare also plays a role in strengthening local cultural resilience. With the existence of this tradition, the community is able to maintain and strengthen the values of local wisdom, as well as build collective social and cultural cohesion in facing the challenges of the times. Overall, Mekare-kare is not only a traditional tradition, but also a media effective education to instill values of sportsmanship and foster cultural resilience. Through preserving and developing this tradition on an ongoing basis, the community can face various modern challenges while still maintaining their cultural identity which also strengthens the character of the Indonesian nation in general.

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BAMBOO ARCHITECTURE IN BALI: A MULTIDISCIPLINARY PATHWAY TOWARD SUSTAINABLE TOURISM AND SDGs

Ni Putu Yunita Laura Vianthi[1)], Frysa Wiriantari [2)], and Wayan Warta Yasa [3)]

[1)] Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, Indonesia
laura.vianthi@gmail.com
[2)] Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, Indonesia
maheswarimolek@gmail.com
[3)] Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, wartayasaiwayan@gmail.com

ABSTRACT

This research examines bamboo architecture in Bali as a multidisciplinary approach to sustainable tourism and SDG achievement. Through qualitative analysis of Green School Bali, Green Village, and Penglipuran Bamboo Forest, the study investigates how bamboo construction integrates traditional wisdom with modern sustainability principles. Findings demonstrate that bamboo architecture significantly contributes to SDG 8, 11, 12, and 13 through green job creation, carbon emission reduction, and community empowerment. Cross-disciplinary collaboration among architects, engineers, and local communities enables effective sustainable tourism development. This study provides a replicable model for community-based sustainable architecture that balances economic growth, environmental preservation, and cultural heritage conservation globally.

Keywords: *bamboo architecture, multidisciplinary approach, SDGs, sustainable tourism*

1. INTRODUCTION

Sustainable tourism has become a global priority in efforts to achieve the Sustainable Development Goals (SDGs), particularly in tourist destinations facing intensive environmental and social pressures such as Bali (UNWTO & UNDP, 2018). As an island with a high economic dependence on the tourism sector, Bali faces complex challenges in balancing economic growth with environmental and local cultural preservation (World Bank, 2022). Data shows that the tourism sector in Bali contributed 20.8% of Indonesia's total national tourism investment in the first semester of 2025. However, this growth also presents serious problems such as environmental degradation, social inequality, and cultural erosion (Antara News, 2025; Putra, 2020).

The growth of mass tourism in Bali has created various negative impacts that threaten long-term well-being. The tourism sector, which consumes up to 65% of Bali's total water supply, causes water shortages for local communities and drought during dry conditions (Cole, 2012). Waste production reached 4,281 tons per day in 2021, with 11% consisting of plastic waste causing serious environmental pollution (BPS Provinsi Bali, 2023). Furthermore, the conversion of agricultural land for tourism infrastructure development reaches 1,000 hectares per year, threatening food security and ecological balance (Suryawan, 2022). From a socio-cultural perspective, the commercialization of Balinese culture for tourism purposes has led to the dilution of traditional practices and the transformation of spiritual values into mere entertainment (Putra, 2020). Property price increases of up to 30% have made housing no longer affordable for local communities, while economic inequality

continues to widen as most tourism profits flow to large corporations and outside investors (Center for Sustainable Development, Udayana University, 2023).

Amid these challenges, bamboo architecture emerges as an innovative approach capable of integrating Balinese traditional values with sustainable development principles. Bamboo has superior characteristics as a sustainable construction material: extremely rapid growth (can reach one meter per day), higher tensile strength than wood, and a strength-to-weight ratio 3-4 times greater than steel (FAO, 2021). Moreover, bamboo can absorb up to 35% more CO_2 compared to other tree species with equivalent biomass, making it a strategic material for carbon sequestration (Iswanto, 2017). Traditionally, bamboo has been an integral part of Bali Aga architecture, such as in Tenganan and Pedawa villages, where traditional houses are built with Tri Mandala principles to support functionality, thermal comfort, and social continuity (Putra, 2020). The application of Tri Hita Karana philosophy in traditional architecture creates harmony between humans, nature, and God, aligning with sustainable development principles (Suryawan, 2022).

Modern bamboo processing technology developments have overcome the weaknesses of this traditional material. Green School Bali, founded by the Hardy family in 2006, became a pioneer of contemporary bamboo architecture with more than 50 structures demonstrating bamboo's potential as a sustainable construction material (Hardy, Hardy, & Hardy, 2013). Preservation technology using boron has increased bamboo's durability to a lifetime (FAO, 2021). The IBUKU architecture studio has also developed more than 60 bamboo structures in Bali, such as Green Village, Sharma Springs, and Bambu Indah Eco Resort, which have gained international recognition as models of sustainable development (IBUKU, 2024).

Although the potential of bamboo architecture has been proven, research integrating bamboo architecture with sustainability and SDG achievement remains limited. Most studies still focus on technical aspects of construction or the economic impacts of tourism separately, without examining the multidisciplinary synergy between architecture, culture, community, and economy (Gössling, Scott, & Hall, 2020). This limitation highlights the need for a cross-disciplinary approach to understand the complex interactions between sustainable architecture, cultural preservation, community empowerment, and inclusive economic development (Center for Sustainable Development, Udayana University, 2023).

Bamboo architecture has great potential in supporting the achievement of various SDGs. In the context of SDG 8 (Decent Work and Economic Growth), the bamboo industry creates quality jobs while preserving local communities' traditional skills. SDG 11 (Sustainable Cities and Communities) can be achieved through the development of community-based environmentally friendly tourism infrastructure. SDG 12 (Responsible Consumption and Production) is realized through the utilization of renewable materials and circular construction. Within the framework of SDG 13 (Climate Action), bamboo can significantly reduce carbon emissions compared to concrete or steel (FAO, 2021). In addition, SDG 14 (Life Below Water) and SDG 15 (Life on Land) are also supported through the reduction of natural resource exploitation and conservation of local ecosystems (UN, 2023).

The urgency of this research is reinforced by post-pandemic conditions that demand the transformation of the tourism sector toward a more resilient and regenerative model. Bali is now at a crossroads between economic and ecological needs, where bamboo architecture has the potential to be a catalyst for this change (Gössling et al., 2020). The Indonesian government has demonstrated commitment to achieving 61.4% of SDG indicators, with sustainable tourism becoming a priority in the national development strategy (Bappenas, 2024). This research is directed to explore how bamboo architecture can become a multidisciplinary pathway for sustainable tourism

in Bali, considering technical, social, economic, cultural, and environmental dimensions in an integrated manner.

2. RESEARCH METODOLOGY

This research employs a qualitative descriptive approach focusing on understanding the meanings, values, and processes occurring in the phenomenon of bamboo use in Balinese architecture and its relevance to sustainable tourism development. The research design emphasizes in-depth exploration of various forms of bamboo architecture applications—including educational buildings such as Green School, accommodations such as Green Village Bali, and ecological tourism areas such as Penglipuran Bamboo Forest—to illustrate the contribution and cross-disciplinary relationships among architectural, environmental, economic, and socio-cultural aspects.

The research is conducted in Bali, with primary focus on three representative areas, including:

1. Green School Bali (Badung) – representation of innovation in education and sustainable bamboo architecture.
2. Green Village Bali (Abiansemal) – example of commercial-organic bamboo architecture supporting ecotourism.
3. Penglipuran Bamboo Forest (Bangli) – example of bamboo preservation and local community empowerment in ecotourism.

Research subjects include bamboo architects and designers (IBUKU Studio, Bamboo U), bamboo-based tourism managers, local communities, and tourists visiting the research sites. The types and sources of data used in this research are primary data and secondary data. Primary data are obtained through field observations and in-depth interviews with various informants such as architects, craftsmen, tourism managers, and local community leaders. Meanwhile, secondary data are sourced from literature reviews, policy reports, tourism development plan documents, and journal articles relevant to the themes of bamboo architecture and sustainability.

Data collection techniques in this research include conducting direct observations of bamboo buildings to examine aspects of form, structure, function, and their relationship with environmental and social contexts. Additionally, conducting semi-structured interviews with architecture practitioners, managers of Green School or Penglipuran Bamboo Forest, and local communities to explore their perspectives regarding the function, meaning, and impact of bamboo architecture implementation on sustainable development. Furthermore, conducting visual documentation such as photographs, site maps, and architectural drawings that record design elements and their integration with the local landscape.

Analysis techniques are carried out through stages of reduction, data presentation, and conclusion drawing/verification, following the interactive analysis model of Miles and Huberman. Data reduction is performed by sorting information from observation and interview results to identify key variables such as ecological, social, and economic functions of bamboo architecture. Next, data presentation is conducted by organizing field findings in the form of narrative descriptions and tables showing relationships among architectural forms, sustainability principles, and their contributions to SDGs. Then, drawing conclusions by interpreting data meanings to explain the multidisciplinary linkages of bamboo architecture with sustainable tourism development in Bali. Subsequently, data validity is achieved through triangulation techniques—including source triangulation (different informants), method triangulation (observation, interviews, documentation), and time triangulation (data collection at multiple occasions). Furthermore, data are

strengthened through member checking with informants and comparison with academic literature related to bamboo architecture practices in Bali.

The expected outcomes through this approach can produce in-depth understanding of how bamboo architecture in Bali becomes a medium of integration among ecological design, local cultural values, creative economy, and environmental education. Thus, the research results provide a conceptual foundation for developing sustainable tourism models based on bamboo architecture that align with the SDGs agenda.

3. RELATED RESEARCH/LITERATUR REVIEW

The literature review of this research focuses on the relationship among bamboo architecture, environmental sustainability, and the achievement of Sustainable Development Goals (SDGs). Previous studies indicate that bamboo is a construction material with great potential to support sustainable development due to its renewable nature, rapid growth, and high strength compared to wood or steel (FAO, 2021; Iswanto, 2017). In the Bali context, bamboo architecture has evolved from local tradition toward contemporary practice applied through projects such as Green School Bali, Green Village, and Bambu Indah Eco Resort (Hardy et al., 2013; IBUKU, 2024).

Socially, bamboo architecture is capable of maintaining the philosophical values of Tri Hita Karana and Tri Mandala in Balinese architectural planning that emphasize harmony among humans, nature, and God (Putra, 2020; Suryawan, 2022). The study by Gössling, Scott, and Hall (2020) highlights the importance of a multidisciplinary approach in the tourism sector, particularly in the post-pandemic context, to create more resilient, regenerative, and environmentally friendly tourism models. On the other hand, UNWTO and UNDP (2018) affirm that sustainable tourism is key to achieving many SDG indicators, especially SDG 8 (decent work), SDG 11 (sustainable cities), and SDG 13 (climate action).

A number of studies also emphasize the need for integration among architectural, social, economic, and cultural aspects so that bamboo architecture functions not only as a physical material but also as an instrument for local community empowerment and environmental preservation (Center for Sustainable Development, Udayana University, 2023). This cross-sectoral approach forms the conceptual foundation of this research on bamboo architecture in Bali as a multidisciplinary pathway toward sustainable tourism and SDGs.

4. RESULTS AND DISCUSSION

This research finds that bamboo architecture in Bali has successfully become an integrative model among local values, modern technology, and sustainability principles. Projects such as Green School Bali utilize more than 50 bamboo structures with open designs that maximize natural lighting and air circulation, thereby saving energy consumption by up to 70%. The same approach is also applied at Green Village Bali, which combines residential functions and ecotourism with an environmentally friendly organic architecture approach.

Figure 1. Green School and Bamboo Village

From a socio-cultural perspective, bamboo architecture plays a role in maintaining the continuity of Tri Hita Karana values as a representation of harmony among humans, nature, and local spirituality. Interviews with the community at Penglipuran Bamboo Forest demonstrate that the use of bamboo not only presents a distinctive architectural identity but also encourages community participation in the preservation of bamboo ecosystems that serve as village tourism assets. Furthermore, the bamboo industry increases employment opportunities for local craftsmen and strengthens the creative economy sector in alignment with SDG 8 (Decent Work and Economic Growth).

From an environmental perspective, observation results show that bamboo structures in Bali have a low carbon footprint and are capable of functioning as natural carbon sinks. This aligns with FAO (2021) data indicating that bamboo can absorb up to 35% more carbon dioxide compared to ordinary trees. This ecological advantage makes bamboo architecture a solution in supporting SDG 13 (Climate Action) through greenhouse gas emission reduction and low-carbon development.

Cross-disciplinary collaboration among architects, engineers, craftsmen, and academics is clearly evident in every project. For instance, IBUKU Design Studio collaborates with modern technology and organic design to enhance the structural strength of bamboo using boron coating techniques. These results demonstrate that cross-sectoral work is key to the success of bamboo innovation in sustainable architecture.

Specifically, this research also affirms the contribution of bamboo architecture to community-based sustainable tourism development. This approach enables tourists not only to enjoy the aesthetic beauty of architecture but also to learn about sustainability, nature conservation, and Balinese cultural values. In other words, bamboo architecture in Bali serves as a medium for ecological and cultural education that supports sustainable tourism strategies based on local community participation.

Integration of Tradition, Innovation, and Sustainability

Bamboo architecture in Bali cannot be separated from the Tri Hita Karana philosophy that emphasizes harmony among humans, nature, and God. The research finds that every bamboo building is designed by considering the Tri Mandala principle that divides space into three zones: utama mandala (sacred), madya mandala (middle), and nista mandala (profane). The use of bamboo in architectural structures reflects functional sustainability, social acceptance, and thermal comfort aligned with Balinese local wisdom.

Research results show that bamboo architecture in Bali is capable of integrating Balinese local wisdom, technological innovation, and sustainability principles. The application of bamboo as the primary material is evident in various architectural projects such as Green School, Green Village, and various eco-resorts. These

buildings demonstrate high energy efficiency, carbon emission reduction, and responsible utilization of natural resources.
Bamboo as a construction material offers superior characteristics: rapid growth, high tensile and compressive strength, and carbon absorption capacity exceeding ordinary timber trees. Modern processing and preservation techniques, such as the use of boron, have increased bamboo's durability, enabling its use for high-standard permanent buildings.

A case study at Green School Bali reveals that the Heart of Green School (HGS) building uses two main bamboo species: Dendrocalamus asper (petung bamboo) for structural columns due to high compressive strength, and Gigantochloa apus (tali bamboo) for beams, floor frames, and roofs due to its balanced flexural, tensile, and compressive strength. The structural system applies bamboo bending techniques and split bamboo lamination binding to reinforce the vertical core structure.

Figure 2. Green School

The Arc project at Green School represents the technical achievement of bamboo architecture with a 19-meter span and 14-meter height built from a series of intersecting bamboo arches with an anticlastic gridshell. This structure required 8 months of research and development with collaboration among IBUKU, German bamboo specialist Jörg Stamm, and structural engineering firm Atelier One. Construction used low-tech yet ingenious techniques without the assistance of heavy equipment or cranes.

Figure 3. Green School

Analysis of the application of sustainable architecture principles at Green School Bali using GREENSHIP Region indicators shows comprehensive implementation across seven categories of sustainable development. Buildings at Green School prioritize:

1. Energy conservation: the campus generates 90% of its energy from renewable sources through a combination of solar panels, Ayung River micro-hydro systems, and pedal power. Biobus uses waste cooking oil from local restaurants and hotels as fuel, addressing waste problems while reducing emissions.
2. Natural lighting and ventilation: open design maximizes natural lighting and air circulation, saving energy consumption by up to 70%.
3. Water and waste management: waste management and composting programs have processed more than 15 tons of recycled materials, with a composting system supporting permaculture gardens and organic rice fields.

Contribution to Sustainable Tourism

Penglipuran Village in Bangli serves as a successful example of integrating bamboo forest conservation with ecotourism. This village has 13 types of bamboo that serve as the main tourist attraction, creating employment and increasing community income. SWOT analysis shows that the main strength is high community support (the highest value in the survey) for bamboo forest preservation, with opportunities from increasing demand for tourism destinations.

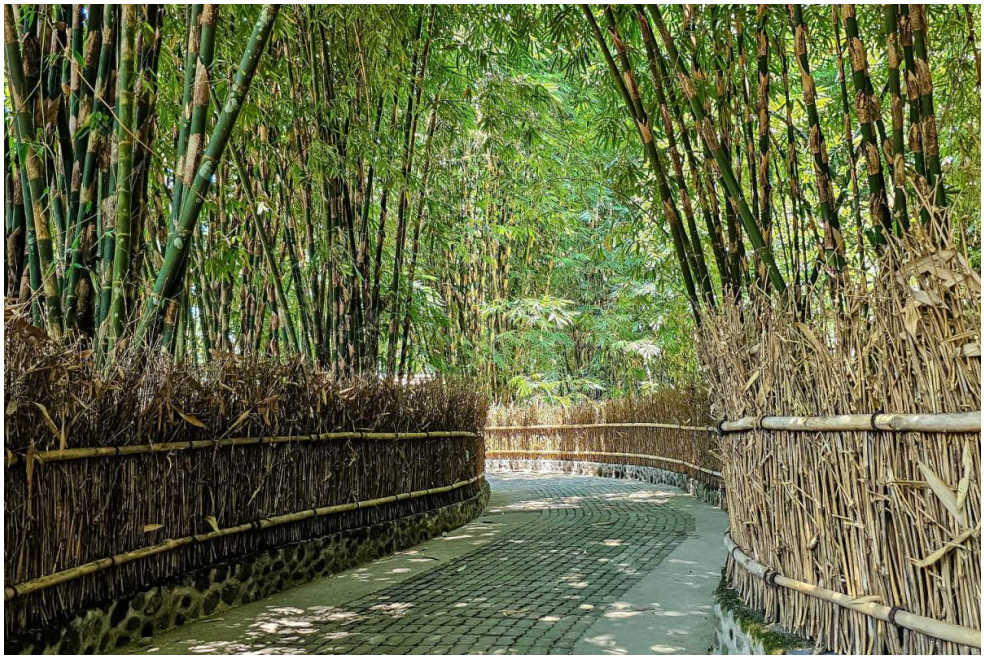

Figure 4. Penglipuran Village

Interview results with managers show that bamboo forest ecotourism development has:

1. Increased community income through entrance ticket sales, bamboo handicraft products, and tourism services
2. Opened new employment opportunities as tour guides, craftsmen, and homestay managers
3. Maintained awig-awig (customary rules) of the village in natural resource management
4. Encouraged the creative economy through bamboo woven product production for local and international markets

Green School Bali demonstrates a transformative educational tourism model. Before COVID-19, more than 300 local students participated in the Kul Kul Connection program that taught English and sustainability, "paying" using recycled materials they brought. This program integrates sustainability education with local community empowerment.

The "Seeds-to-Table" concept, where student food is produced organically on campus grounds, with plates made from banana leaves and straws from papaya stems, serves as a living laboratory for sustainability practices. The Innovation Hub (iHub) enables students to design sustainable products such as surfboard fins from plastic bottles or bicycles from bamboo.

Figure 5. Green School

Multidisciplinary and Socioeconomic Impacts

Results from in-depth interviews and observations with architecture practitioners, managers, and local communities show that the presence of bamboo buildings provides significant social and economic impacts. The bamboo industry in Bali creates new employment opportunities, enhances community skills, and strengthens the creative economy sector in tourism areas. Community empowerment, tradition preservation, and participation in ecotourism management are part of the multidisciplinary success of Balinese bamboo architecture.

Contribution to Sustainable Development Goals (SDGs)

This research confirms that bamboo architecture is highly relevant to achieving several SDG targets, including:

1. SDG 8 (Decent Work and Economic Growth): Opening new employment opportunities and improving the welfare of local bamboo craftsmen.
2. SDG 11 (Sustainable Cities and Communities): Development of environmentally friendly infrastructure based on community and local culture.
3. SDG 12 (Responsible Consumption and Production): Utilization of renewable materials and circular construction design.
4. SDG 13 (Climate Action): Carbon emission reduction and CO_2 absorption through bamboo growth.

Bali has successfully built a sustainable tourism model through integration among bamboo architecture, community involvement, and collaboration across various scientific disciplines. The synergy between local knowledge and modern innovation makes Bali a living laboratory for bamboo architecture implementation that can be adopted for sustainable tourism destination development in other regions.

Multidisciplinary Integration Model

This research identifies that the success of bamboo architecture as a pathway toward sustainable tourism and SDGs requires a multidisciplinary approach that integrates various dimensions:

1. Technical dimension: includes innovation in structural systems, material treatment, and construction standards that ensure safety and durability.
2. Environmental dimension: encompasses life cycle assessment, carbon sequestration, biodiversity conservation, and circular economy principles.
3. Socio-cultural dimension: integrates Balinese local wisdom such as Tri Hita Karana, preservation of traditional skills, and cultural immersion for tourists.
4. Economic dimension: creates a value chain from upstream to downstream that empowers local communities, generates green jobs, and supports the creative economy.
5. Educational dimension: uses bamboo architecture as a living laboratory for sustainability education, as demonstrated by Green School Bali.

This integration model shows that bamboo architecture is not merely a material choice but represents a holistic system that connects technical, environmental, social, economic, and educational aspects within the framework of sustainable tourism and SDG achievement. This multidisciplinary approach enables bamboo architecture to become a catalyst for transformation toward a more regenerative and inclusive development model in Bali

5. CONCLUSION

Bamboo architecture in bali has proven to be an effective multidisciplinary solution in supporting sustainable tourism and achieving sdgs. The application of bamboo architecture integrates local values and technological innovation, strengthens community economy, preserves the environment, and supports balinese culture. This model demonstrates that cross-disciplinary collaboration—architecture, environmental engineering, creative economy, and community empowerment—is the key to successfully developing tourism destinations that are greener, more inclusive, and globally competitive.

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MARKET ENTRY STRATEGIES AND GLOBAL COLLABORATIONS

Padmavathi Kannadhasan
Asst.Professor Senior Grade
Aset College Of Science And Technology, Chennai-600124, India.

ABSTRACT

Foreign alliances and market entry strategies are now essential elements of successful international corporate operations in an economy that is becoming more and more globalized. Choosing the appropriate entrance strategy is crucial for businesses looking to grow internationally in order to obtain a competitive advantage and sustain expansion. This study examines and evaluates the relative efficacy of the main market entry strategies, such as exporting, licensing, franchising, joint ventures, strategic alliances, and wholly owned subsidiaries, across a range of company circumstances. According to the study's findings, strategic choices must align with organizational goals, available resources, risk tolerance, and the target market's political, economic, and cultural context in order to be effective. The study also emphasizes the value of international partnerships as a driving force behind innovation, information exchange, and market adaptability. Businesses can acquire cutting-edge technologies, capitalize on complementary strengths, and get beyond obstacles to market penetration through cross-border partnerships and alliances. The study also looks at the increasing role that global networks and digital platforms play in enabling smooth cross-border and cross-industry collaborations. According to studies, companies that use adaptable, research-based, and culturally aware strategies have a higher chance of long-term success in international marketplaces. According to the paper's conclusion, organizational resilience and long-term global competitiveness depend on the integration of strong market entrance strategies with smart international relationships.

Keywords: Alliances, Strategies, Innovation, Partnerships, Competitiveness

1. INTRODUCTION

International growth has become a crucial goal for businesses looking to boost competitiveness and guarantee long-term sustainability in the quickly changing global economy of today. As companies become more aware of the significance of strategic planning when entering new markets, the idea of market entrance strategies and international partnerships has drawn a lot of attention from academics and professionals. Market entry strategies are a company's blueprint for establishing its presence in a foreign market, choosing its method of business, allocating resources, and controlling risks. Common strategies that offer different degrees of control, investment, and risk exposure include exporting, licensing, franchising, joint ventures, and completely owned subsidiaries. A number of variables, such as market size, cultural fit, the regulatory landscape, and the company's overarching strategic objectives, influence the choice of entrance technique.

International corporate operations are strengthened by global collaborations, which have arisen as a complementing force. These partnerships, alliances, and joint ventures enable businesses to exchange resources, technology, and expertise while lowering expenses and risks. International relationships are becoming more dynamic and innovative due to the acceleration of digital transformation and the integration of global supply chains.

In an increasingly competitive global marketplace, this study intends to investigate the relationship between market entry strategies and international collaborations, emphasizing how synergistic partnerships and well-informed strategic decisions can foster successful internationalization, innovation, and sustainable growth.

2. RESEARCH METHODOLOGY

A descriptive and analytical research design is used in the study on Market Entry Strategies and Global Collaborations to investigate the strategic methods businesses employ to enter foreign markets and to comprehend how global collaborations contribute to increased competitiveness. This approach combines qualitative and quantitative research techniques to offer a thorough grasp of the topic.

2.1. Research Design

To describe and analyze different market entry tactics and types of international partnerships used by businesses across industries, a descriptive study design is utilized. Analytical components are also included in the study to assess the results and efficacy of these tactics.

2.2. Data Collection

Secondary data from academic journals, books, international business reports, trade magazines, and reliable internet databases like Scopus, JSTOR, and the World Bank are the main sources used in this study. To find trends, difficulties, and best practices, case studies of multinational firms and fruitful international collaborations are also examined.

2.3. Data Analysis

The performance consequences of various entrance modes (such as exporting, licensing, franchising, joint ventures, etc.) are examined using a comparative analysis approach. Key topics including innovation, cultural adaptation, partnership governance, and digital cooperation are identified through the use of thematic analysis. When appropriate, statistical summaries from published reports are also evaluated to bolster conclusions.

2.4. Scope and Samplin

To ensure a fair global perspective, the survey includes businesses from both developed and emerging economies. Cases are chosen based on evidence of cross-border cooperation and its applicability to global expansion.

2.5. Limitations of the Methodology

The study may not accurately reflect firm-specific strategy goals or quickly shifting market conditions because it is primarily based on secondary data. To validate results, future studies may use primary data collecting via surveys or interviews.

2.6. Hypothesis Of The Research Study

A set of hypotheses that seek to create connections between firms' strategic decisions, collaborative practices, and international performance outcomes serve as the foundation for the research on market entry strategies and global collaborations. These theories are based on well-known theories including the Resource-Based View (RBV), Dunning's Eclectic (OLI) Paradigm, and the Uppsala Internationalization Model.
Main Hypothesis (H_1):

Effective market entry methods and the success of international cooperation in improving a firm's competitiveness and performance abroad are significantly correlated.
Sub-Hypotheses:
H_1a: Businesses that use the right market entry strategies—such as exporting, franchising, joint ventures, or totally owned subsidiaries—achieve greater levels of financial performance and market penetration in overseas markets.
Hæb: International partnerships and strategic alliances have a favorable impact on a company's ability to innovate, transfer expertise, and progress technology.
H_1c: Operational efficiency and sustainable growth in international markets are greatly improved when a company's market entry strategy and collaborative approach are in line.
.H1D:Higher cultural intelligence and better global partnership management skills lead to fewer disputes and more success in foreign endeavors..
H_1e: The association between market entry methods and international performance outcomes is moderated by the impact of market-specific factors such institutional stability, cultural distance, and economic openness.
H_1f: Businesses that use digital platforms and technical partnerships are more likely to expand internationally more quickly and adaptably than those that only use conventional entry methods.
Null Hypothesis (H_0):
The choice of market entry strategy, international partnerships, and the general performance of businesses in foreign markets do not significantly correlate.
These theories serve as the basis for evaluating the study's theoretical presumptions and examining how strategic choices, teamwork, and global competitiveness interact

3. LITERATURE REVIEW

Several long-standing theoretical frameworks serve as the foundation for research on why and how businesses join international markets. The Uppsala internationalization model places a strong emphasis on incremental learning and growing market commitment as businesses gain experience, transitioning from intermittent exports to more significant commitments like subsidiaries. According to this paradigm, internationalization is a slow process that is fueled by knowledge and less uncertainty.

3.1. According to the Eclectic (OLI) paradigm (Ownership–Location–Internalization),

a firm's ownership-specific advantages, the allure of locations, and the advantages of internalizing transactions rather than contracting them out are the main drivers of multinational activity and entry-mode choice. In order to explain FDI and entry-mode heterogeneity, Dunning's OLI paradigm continues to be a unifying lens.

3.2. Transaction Cost Economics (TCE)

According to Transaction Cost Economics (TCE), corporations choose between market, hybrid, or hierarchical modes in response to governance requirements. These choices are based on the costs and risks associated with cross-border transactions, such as asset specificity, uncertainty, and opportunism. In empirical investigations, TCE and OLI frequently coexist as complementary explanations.

3.3. The Resource Based View(RBV)

Successful market entry and post-entry performance are attributed to internal resources, capabilities, and the capacity to reconfigure resources, according to the Resource-Based View (RBV) and dynamic capabilities perspectives, which shift focus from "where" to "what" the company offers to international markets.

3.4. Common market entry modes and empirical patterns

Entry modes are categorized by empirical and review studies along a spectrum of control and commitment: high-commitment modes (joint ventures, strategic alliances, mergers & acquisitions, wholly owned subsidiaries) against low-commitment means (exporting, contractual arrangements like licensing/franchising). Firm size, international experience, resource endowments, host-country institutions, and industry characteristics all influence decision, according to comparative studies. The ongoing significance of hybrid models (alliances, JVs) for striking a balance between control and local knowledge availability is documented by systematic reviews.

3.5. Global collaborations: alliances, knowledge transfer, and innovation

Global collaborations (strategic alliances, joint ventures, R&D partnerships) are seen by an increasing amount of literature as ways to leverage complementary capabilities, speed up learning, and promote innovation. Recent empirical research emphasizes the importance of inter-firm information transfer and alliance learning for alliance success, which are made possible by digital infrastructures, trust, governance frameworks, and absorptive capacity. IT systems, routines, and boundary-spanners are examples of knowledge-transfer facilitators that enhance alliance results and innovation performance, according to studies published in the last five years.

3.6. Contemporary trends: non-linear internationalization and digitalization

Internationalization is frequently non-linear, according to recent criticisms and revisions to traditional models, particularly for born-global businesses and digitally enabled endeavors. In place of gradual expansion, the Uppsala model has been revised to include network links, opportunity-driven leaps, and simultaneous multi-market entry. Faster market experimentation and network-based entrance strategies are made possible by the reduction of traditional frictions through digital platforms and cross-border networks. This change implies that digital knowledge flows might compress or partially replace experience learning, even if it is still crucial.
Determinants of entry-mode success:
Previous international experience, cultural distance, the institutional quality of host markets, governance choice (control vs. flexibility), absorptive capacity, and the strategic fit between partners are all recurrent determinants of successful entry and collaboration outcomes, according to meta-analyses and systematic reviews. Additionally, studies prioritize post-entry considerations above one-time mode selection, such as local adaption, relationship management, and ongoing competence upgrading.

4. RESULTS AND DISCUSSION

4.1. Implications:

The study of market entry strategies and worldwide collaborations has important theoretical, managerial, and policy ramifications that advance knowledge of the dynamics of international commerce in a quickly globalizing economy.

1. Theoretical Implications

From a theoretical perspective, this study expands and strengthens important frameworks including the Resource-Based View (RBV), Dunning's Eclectic (OLI) Paradigm, and the Uppsala Internationalization Model. It emphasizes how businesses can incorporate different viewpoints to create adaptable and flexible internationalization plans. The results imply that integrating strategic alliances (collaborative networks) with internal resources (ownership advantages) improves

the viability and competitiveness of global endeavors. A more comprehensive knowledge of how market entry and cooperation work together as complementary forces in international business expansion is provided by this integration.

2. Managerial Implications

The report offers useful advice for business professionals on how to choose appropriate market entry strategies and create successful international alliances. Before entering new markets, managers are advised to evaluate cultural, political, and economic aspects and to use cooperative strategies, such joint ventures or strategic alliances, to reduce risks and resource limitations. According to the research, collaborations that promote trust, openness, and reciprocal learning are more innovative and successful over the long run. It also emphasizes how crucial digital platforms and technology collaborations are for removing operational and geographic obstacles.

3. Policy Implications

The results highlight the significance of creating favorable international trade policies, lowering entry barriers, and promoting cross-border cooperation for legislators and trade organizations. By establishing solid regulatory frameworks, providing incentives for collaborations, and supporting international business incubators, governments can encourage foreign investment and knowledge sharing. Overall, the study suggests that attaining sustainable international expansion, innovation, and competitiveness in today's interconnected world requires a synergistic combination of well-thought-out market entry tactics and successful international collaborations.

4.2. Limitations

A fair view of the research findings requires acknowledging a number of limitations, even if the study on Market Entry Strategies and Global Collaborations provides insightful information about international business expansion and partnership development.

1.Dependence on Secondary Data

Secondary sources like journals, papers, and case studies are the main sources used in the study. These resources offer a wealth of background information, but they might not be as thorough and accurate as primary research techniques like surveys or interviews. As a result, the results may not accurately represent current market conditions or firm-specific strategy choices.

2. Generalization of Findings

It is challenging to extrapolate findings across many industries and geographical areas due to the complexity of global markets. The conclusions reached are not universally applicable due to factors including cultural differences, economic conditions, and legislative frameworks that vary greatly between nations.

3.Dynamic Nature of Global Markets

Due to economic swings, geopolitical shifts, and technology advancements, global business landscapes are always changing. The long-term applicability of the study's conclusions may therefore be impacted by market entry tactics and partnership models that are successful now but may soon become out of date.

4. Limited Focus on Emerging Market Firms

The majority of the data and research currently available focus on multinational firms from developed economies. Future research should address the research imbalance caused by the underrepresentation of the experiences and difficulties faced by small and medium-sized businesses (SMEs) and start-ups from emerging markets.

5.**Measurement of Collaborative Effectiveness**

Assessing the actual effectiveness of international partnerships is intrinsically difficult. It is difficult to measure elements like trust, communication, and cultural synergy, which makes it tough to accurately evaluate the results of collaboration.

4.3. Future Research Agenta

As international business environments continue to change due to globalization, digitalization, and geopolitical developments, the topic of Market Entry Strategies

and Global Collaborations offers substantial prospects for additional investigation. Expanding the theoretical and empirical knowledge of how businesses can maximize their internationalization procedures and cooperative networks for long-term growth should be the main goal of future research.

1**. Integration of Digitalization and Technology in Entry Strategies**

Future research should examine how e-commerce platforms, artificial intelligence, and digital transformation are changing conventional market entry strategies. Research might concentrate on how digital collaborations generate new global value chains and how digital tools help businesses, especially start-ups and SMEs, access new markets with lower costs and risks.

2. Cross-Cultural and Institutional Perspectives

The effects of cultural intelligence, institutional variations, and governance frameworks on the success of international partnerships should be investigated further. Studies that compare different industries and geographical areas may shed light on how cultural flexibility improves communication, trust, and information sharing across global partners.

3.Sustainability and Ethical Collaboration Models

Future research should examine how businesses incorporate environmental, social, and governance (ESG) factors into their entry and partnership strategies given the increasing focus on sustainability. The contribution of sustainable partnerships to social responsibility and economic performance may be the subject of future research.

4.Emerging Market and SME-Centric Studies

The literature currently in publication is strongly biased in favor of multinational companies based in developed countries. Future studies should look at the particular difficulties and creative strategies used by SMEs and businesses from emerging nations to penetrate international markets and establish partnerships.

5.Longitudinal and Empirical Research

Long-term, data-driven research that monitor how organizations' entry strategy and collaborative performance change over time are needed. Such studies can show how international strategy and relationships are impacted by external shocks, such as economic crises or technology changes.

6.Hybrid and Adaptive Strategy Frameworks

To explain how businesses balance internal resources with external cooperation in changing global environments, future research might create and test integrated models incorporating theories like the Uppsala Model, the OLI Paradigm, and the Resource-Based View.

In summary, a multidisciplinary strategy combining strategic management, international economics, digital innovation, and cross-cultural studies is necessary to further study in this field. In addition to addressing current knowledge gaps, this kind of research will offer organizations looking for sustainable global competitiveness practical framework.

5. CONCLUSION

The study concludes that successful international expansion depends on integrating strong theoretical foundations, adaptive managerial approaches, and supportive policy environments within an increasingly interconnected global economy. Drawing from the Resource-Based View, the OLI Paradigm, and the Uppsala Internationalization Model, the research shows that firms must combine internal capabilities with external collaborative networks to build flexible and competitive global strategies. Managerially, companies should assess cultural, political, and economic conditions before entering new markets while using partnerships such as joint ventures and strategic alliances to reduce risks, share resources, and accelerate organizational learning. Effective collaboration based on trust, openness, and mutual knowledge exchange enhances innovation and long-term performance, with digital technologies enabling more efficient cross-border coordination. From a policy perspective, the study highlights the need for governments to lower entry barriers, establish clear regulatory frameworks, and promote international

cooperation to encourage investment and knowledge transfer. Although the study provides valuable insights, it faces limitations including reliance on secondary data, challenges in generalizing findings, and the rapidly evolving nature of global markets. Overall, the research emphasizes that combining well structured entry strategies with strong global collaborations is essential for achieving sustainable competitiveness and innovation.

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ENGINEERING SOCIETY THROUGH URBAN ARCHITECTURE: STRATEGIES FOR SUSTAINABLE CITY DEVELOPMENT

Frysa Wiriantari[1)], Ni Putu Yunita Laura Vianthi[2)], and Gde Kesawa Andikarsa [3)]

[1)] *Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, Indonesia*
e-mail: maheswarimolek@gmail.com
[2)] *Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, Indonesia*
e-mail: laura.vianthi@gmail.com

[3)] *Department of Architecture, Faculty of Engineering, Dwijendra University, Bali, Indonesia*
e-mail: kesawaandikarsa@gmail.com

ABSTRACT

The rapid progression of urbanization, coupled with ecological degradation and social fragmentation, calls for a paradigm shift in understanding urban architecture not merely as an aesthetic pursuit but as a mechanism that actively shapes social behavior and collective consciousness. This study investigates how urban design functions as an instrument of social engineering capable of fostering inclusivity, resilience, and sustainability in the urban environment. The objective is to formulate an integrative model that explains how spatial strategies influence civic interaction and environmental awareness in the context of sustainable city development.

Employing a qualitative comparative approach, this research analyzes three case studies from different regions Superkilen Park in Copenhagen, Kampung Akuarium in Jakarta, and The High Line in New York City. Data were obtained from peer-reviewed journals, project documentation, and relevant urban policy reports, then analyzed thematically through three dimensions: spatial form, social mechanism, and sustainability outcome.

The findings reveal that well-conceived urban design transforms architectural spaces into social ecosystems that strengthen empathy, cooperation, and ecological awareness. Participatory design and adaptive reuse emerge as key strategies linking physical form with behavioral transformation and civic resilience. The study introduces an Integrative Model of Urban Architecture as Social Engineering, positioning design as a proactive medium that shapes both culture and sustainability.

In conclusion, architecture transcends its material and technical functions—it becomes a deliberate act of engineering social relationships, fostering collective well-being, and guiding cities toward a sustainable and inclusive future.

Keywords: *urban architecture, sustainable city, participatory design, social engineering, spatial transformation, urban resilience*

1. INTRODUCTION

Urban architecture has emerged as a key driver in shaping both the physical and social dimensions of cities. Beyond its tangible structures, architecture influences the rhythm of everyday life, patterns of movement, and the formation of civic identity. As more than half of the global population now resides in urban areas (UN-Habitat, 2023), the discourse has shifted from how cities expand to how they evolve sustainably and inclusively. Within this context, design becomes a decisive force that not only organizes space but also molds collective values, encouraging societies to act

cohesively in addressing urban challenges. Despite extensive discussion on sustainable urbanism, much of the existing literature remains compartmentalized. Environmental studies emphasize efficiency and green infrastructure (Beatley, 2017; Farr, 2018), while social studies address inclusivity primarily through governance frameworks (Setiawan, 2022). This disconnection creates a notable research gap a lack of integrative understanding of how urban design strategies intentionally influence social behavior to reinforce sustainability goals. The limited exploration of architecture's role as a tool for social engineering leaves unanswered questions about how design can foster cooperation, belonging, and ecological awareness.

The urgency of this inquiry is evident as cities increasingly grapple with inequality, fragmentation, and ecological stress. Technological innovation alone cannot ensure livable environments; what is needed is a renewed focus on how design constructs social ecosystems that promote empathy, trust, and participation (Gehl, 2019; Jenks & Dempsey, 2020). This paper addresses that gap by exploring urban design as a deliberate mechanism of social engineering. Through comparative analysis of cases from Copenhagen, Jakarta, and New York, it identifies spatial principles that integrate inclusivity, participation, and environmental sustainability.

The novelty of this research lies in articulating a comprehensive model that unites social engineering, design theory, and sustainability practice into a coherent framework. Rather than viewing design as a neutral artifact of policy, this approach positions architecture as an active system that generates new social behaviors and cultural resilience. By highlighting the interplay between form, governance, and community engagement, this study situates architecture at the center of sustainable urban transformation.

2. **RESEARCH METODOLOGY**

A qualitative comparative methodology was employed to connect theory and practice across varied urban contexts. This approach enables the identification of mechanisms through which design strategies influence social and environmental outcomes. Three international cases were chosen based on their demonstrable impact on social inclusivity and sustainable transformation:

1. Superkilen Park (Copenhagen, Denmark), a public park embodying multicultural identity through participatory design.
2. Kampung Akuarium (Jakarta, Indonesia), a community-led housing regeneration initiative centered on spatial justice.
3. The High Line (New York City, USA), an adaptive reuse project transforming obsolete infrastructure into an urban ecological corridor.

The study draws on peer-reviewed literature (2018–2025), municipal documents, and project reports from journals such as Cities, Land, and Journal of Urban Design. Data were coded thematically under three analytical dimensions: spatial design, social mechanisms, and sustainability outcomes. The findings were synthesized into an integrative framework illustrating how design interventions mediate between built form and social transformation.

3. **LITERATUR REVIEW**

The relationship between architecture, urban design, and social behavior has become an evolving field of inquiry within contemporary urban studies. Early urban theories by Lefebvre (1991) and Alexander (2002) posited that space is not a neutral container

but a *social product* a structure shaped by human interactions, rituals, and collective memory. This foundational notion shifted architectural discourse from object-based design toward relational systems that organize human experiences. In recent decades, the focus has expanded to include sustainability, participation, and social inclusivity as central components of design thinking.

a. Sustainable Urbanism and Environmental Performance

   The discourse on sustainable urbanism emphasizes design strategies that integrate ecological sensitivity with social well-being. Beatley (2017) introduced the concept of *biophilic cities*, arguing that urban design must restore human nature connections within dense metropolitan environments. Similarly, Farr (2018) advanced the idea of "sustainable nationhood," positioning compact cities as laboratories for innovation, mobility efficiency, and climate resilience. Recent scholarship has built upon these frameworks by highlighting how adaptive design can mitigate environmental risks while enhancing public engagement (Andersson et al., 2022; Fonseca Escudero, 2024).

   However, these studies often treat social aspects as secondary to environmental performance. The gap lies in understanding how spatial configurations and participatory mechanisms can produce enduring behavioral transformations an issue this research addresses by positioning architecture as a driver of *social engineering* within sustainability discourse.

b. Social Participation and Urban Co-Design

   Participatory design has become a defining paradigm in urban regeneration. Scholars such as Carmona et al. (2021) and Lewandowska (2018) argue that inclusive urban design fosters both democratic participation and psychological ownership. Empirical cases from European cities—Copenhagen's *Superkilen Park* or Malmö's *Western Harbour*—illustrate that physical space can serve as a medium for cultural recognition and mutual respect. Participation transforms users from passive occupants into active co-creators of urban form.

   In Southeast Asia, participatory frameworks have been reinterpreted through community-led housing and informal settlement upgrading. Setiawan (2022) describes how participatory urbanism in postcolonial Southeast Asia represents not only a technical design process but also a political statement on spatial justice. Projects such as Kampung Akuarium in Jakarta demonstrate that collective agency can reshape governance systems and produce resilient spatial models rooted in local wisdom. This aligns with recent global research advocating for *bottom-up urbanism*—a method where social inclusion becomes a measurable outcome of spatial intervention (Tan & Kong, 2023).

c. Architecture as Social Infrastructure

   Recent interdisciplinary studies underscore that architecture extends beyond aesthetics or functionality it is a social infrastructure that orchestrates everyday life (Gehl, 2019; Jenks & Dempsey, 2020). Public spaces, in particular, are viewed as *contact zones* where diversity, conflict, and cooperation converge. According to Lewandowska (2018), the success of a public environment depends on how it stimulates collective participation rather than mere physical accessibility. The case of The High Line (Friends of the High Line, 2020) illustrates how design can regenerate urban identity, though critics like Fainstein (2022) caution against socio-economic displacement caused by design-driven gentrification.

   From a theoretical standpoint, Fonseca Escudero (2024) and Andersson et al. (2022) propose *eco-urbanism* as a holistic framework integrating sustainability, cultural heritage, and human ecology. Yet, few studies have explicitly mapped the

causal relationship between design strategy, behavioral change, and sustainable outcome a conceptual gap that this paper seeks to address through its integrative model.

d. Identified Research Gap and Novelty

While numerous studies have documented sustainable architecture, social participation, and urban governance separately, there remains limited synthesis among these domains. The research gap thus lies in the absence of a unified analytical model that articulates how architectural design simultaneously shapes social mechanisms and produces sustainability outcomes.

This study contributes a novel approach by proposing an Integrative Model of Urban Architecture as Social Engineering, bridging theoretical silos through comparative case studies in Europe, Asia, and America. The model emphasizes the *bidirectional relationship* between spatial form and social transformation where design not only reflects but actively constructs patterns of inclusion, empathy, and ecological awareness.

In doing so, this paper advances urban architectural research beyond traditional environmental performance, situating design as a transformative social technology capable of engineering sustainable urban futures.

Table 1. Summary of Literature Review Contributions

Theme	Main Contributions	Key Authors
Sustainable Urbanism	Green infrastructure, compact city, ecological design	Beatley (2017), Farr (2018), Andersson et al. (2022)
Participatory Urban Design	Social inclusion, co-design, spatial justice	Carmona et al. (2021), Setiawan (2022), Lewandowska (2018)
Architecture as Social Infrastructure	Public spaces as catalysts for civic life	Gehl (2019), Jenks & Dempsey (2020), Fainstein (2022)
Integrative Framework (Novelty)	Architecture as behavioral system linking form, society, and sustainability	Fonseca Escudero (2024), Tan & Kong (2023), This Study

4. RESULTS AND DISCUSSION

Urban Architecture as a Medium for Social Transformation

Urban architecture possesses the unique capacity to act as a social and cultural instrument, shaping not only the visual character of cities but also the everyday behaviors and shared meanings within them. The built environment orchestrates how people move, gather, and communicate; thus, design becomes a form of social scripting (Lefebvre, 1991; Gehl, 2019). This understanding repositions the architect from a creator of form to an engineer of interaction and belonging.

The case of Superkilen Park in Copenhagen is a compelling example. Conceived as a public space celebrating multicultural identity, the project integrates over sixty artifacts from different countries benches, signage, and urban furniture each contributed by local immigrant communities (Carmona et al., 2021). Such tangible representations of diversity have transformed the park into a symbolic landscape of coexistence. Recent ethnographic studies reveal that Superkilen enhances both *spatial empathy* and *social comfort*, where marginalized groups feel visible and culturally acknowledged (Johansson & Gressgård, 2023). This suggests that spatial

inclusion through symbolic representation can effectively engineer inter-ethnic understanding.

Conversely, Kampung Akuarium in Jakarta exemplifies the power of participatory design in contexts of displacement and urban inequality. After eviction in 2016, the community, supported by local architects and NGOs, rebuilt its settlement through co-design processes emphasizing tenure security, affordability, and social resilience (Setiawan, 2022). The physical design small-scale courtyards, communal kitchens, and flexible housing units reflects the social fabric of the kampung while addressing environmental vulnerabilities. Here, architecture operates not as a top-down imposition but as a negotiated process of empowerment, proving that inclusive participation can serve as a form of bottom-up social engineering (Hutapea, 2023).

Similarly, The High Line in New York City demonstrates how adaptive reuse can reconstruct collective identity. The transformation of an abandoned elevated railway into a linear park catalyzed new patterns of urban life, creating connections between ecology, art, and mobility (Friends of the High Line, 2020). Yet, its unintended consequences property speculation and gentrification also underscore the double-edged nature of design-led regeneration (Fainstein, 2022). The project illustrates that architecture can reconfigure social behavior, but without inclusive policy frameworks, social equity may erode. In sum, these examples show that urban architecture, when embedded with social intention, becomes a strategic medium for transformation a bridge between physical infrastructure and cultural imagination.

Spatial Strategies for Sustainability and Social Resilience

Sustainable urban development requires spatial frameworks that are adaptable, inclusive, and ecologically sensitive. Architecture functions not merely as shelter but as a spatial infrastructure for resilience, enabling communities to thrive amidst rapid change.

Urban design strategies such as mixed-use density, walkability, green corridors, and adaptive reuse link environmental sustainability with social well-being (Beatley, 2017; Farr, 2018). The Vauban District in Freiburg, Germany, offers an instructive case of design-led sustainability. Developed on former military land, Vauban integrates car-free streets, community energy cooperatives, and mixed-income housing. Studies show that its compact morphology fosters high levels of trust and civic engagement (Rohracher & Späth, 2021). The spatial logic human-scale blocks, shared courtyards, and proximity between homes and amenities embodies design as environmental governance.

In Asia, Singapore's HDB system exemplifies how design can balance vertical density with social interaction. By embedding schools, markets, and green spaces within walking distance of high-rise housing, the city-state achieves both efficiency and livability (Tan & Kong, 2023). This model integrates *micro-scale social design* with macro-level planning demonstrating that physical density need not compromise quality of life if sociality is spatially orchestrated. Furthermore, climate-responsive design is emerging as a critical aspect of sustainability. Green infrastructure and blue corridors such as Copenhagen's cloudburst streets or Seoul's Cheonggyecheon River restoration demonstrate how ecological systems can serve as social spaces (Andersson et al., 2022). These examples highlight that environmental strategies can simultaneously address flooding, heat mitigation, and community well-being. Collectively, these spatial frameworks underscore that sustainable architecture cannot

be reduced to technical performance. It must cultivate social resilience a city's ability to adapt while preserving cultural continuity and shared identity.

Governance, Participation, and Co-Design Integration

The success of social-architectural transformation is contingent upon governance systems that institutionalize participation. Architecture becomes most effective as a form of social engineering when it operates within structures of co-creation and shared decision-making. Participatory governance converts users into co-authors of space, ensuring that design aligns with local realities and social values (Carmona et al., 2021; Fonseca Escudero, 2024). In Scandinavian cities such as Copenhagen and Malmö, participatory processes are not merely symbolic but embedded in policy. Municipal design labs involve citizens from the conceptual stage, influencing urban programs and spatial design codes. This institutional culture creates a feedback loop between design and social use architecture that evolves with its users (Jensen & Madsen, 2023). In contrast, developing regions often face fragmented governance and limited public trust. Yet, grassroots projects like Kampung Akuarium and Medellín's Library Parks demonstrate that community collaboration can overcome bureaucratic barriers (Brand & Dávila, 2011; Setiawan, 2022). These projects highlight the *political dimension of design* how architectural agency expands when communities control both vision and implementation. Moreover, digital participation tools are reshaping contemporary planning practice. Platforms such as *Maptionnaire* and *Participatory GIS* allow residents to visualize scenarios and provide spatial feedback, increasing transparency and inclusivity (Marques & Cunha, 2024). Governance that integrates these methods strengthens social legitimacy and produces environments that citizens actively defend and maintain. Thus, governance and design must converge as twin pillars of sustainable transformation. Without participatory policy, architectural innovation risks remaining an aesthetic gesture detached from social reality.

Novelty, Integrative Model, and Theoretical Contribution

The core novelty of this study lies in articulating an *Integrative Model of Urban Architecture as Social Engineering*, bridging the gap between environmental design, participatory governance, and social behavior change.

Previous research has typically treated these elements as independent variables:

a. Environmental design focused on efficiency (Beatley, 2017).
b. Participatory design emphasized democratic processes (Setiawan, 2022).
c. Social inclusion was discussed mainly in policy frameworks (Lewandowska, 2018).
d. This study unites these strands into a cohesive theoretical structure positioning architecture as a dynamic mediator between space, society, and sustainability.

The model identifies four interconnected dimensions:

a. Urban Design Strategies – the tangible design interventions (e.g., adaptive reuse, mixed-use zoning, green infrastructure).
b. Social Mechanisms – participatory processes, symbolic recognition, and experiential inclusion that shape civic behavior.
c. Behavioral and Cultural Shifts – the emergence of empathy, collaboration, and environmental stewardship within the community.
d. Sustainability Outcomes – measurable results in social equity, ecological resilience, and urban well-being.

These relationships are moderated by governance and contextual factors laws, institutions, cultural norms, and economic pressures that either enable or constrain transformation.

By defining this causal chain, the research extends the theoretical landscape of sustainable urbanism. It reframes architecture as a multidimensional system capable of generating new social patterns rather than merely responding to them. In practical terms, the model provides a diagnostic and prescriptive tool: planners can trace how specific design choices such as inclusive park layouts or mixed-use corridors translate into behavioral change, helping policymakers evaluate design effectiveness beyond aesthetics.

This contribution aligns with contemporary discourse on *design anthropology* and *social-ecological systems thinking*, where built environments are understood as evolving interfaces between culture, governance, and nature (Andersson et al., 2022; Fonseca Escudero, 2024).

The novelty, therefore, is both conceptual and operational: the study transforms the abstract idea of “architecture as social engineering” into a structured framework that can inform policy, education, and design practice globally.

5. CONCLUSION

Urban architecture is both a spatial system and a social instrument. By merging inclusive design principles, participatory governance, and adaptive ecological thinking, cities can evolve into environments that nurture shared prosperity and collective well-being.

The comparative findings emphasize three lessons:

1. Inclusive spatial design enhances social cohesion.
2. Adaptive reuse and compact planning strengthen ecological and cultural resilience.
3. Collaborative governance transforms citizens into co-creators of their urban future.

   Architecture, therefore, extends beyond aesthetics it becomes a deliberate act of engineering society, shaping how people coexist, interact, and sustain their cities. The future of sustainable urbanism lies not merely in building greener cities but in designing communities capable of empathy, collaboration, and endurance.

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AUGMENTED REALITY-BASED MOCKUP MEDIA: AN INNOVATION FOR STRENGTHENING CONCEPTUAL UNDERSTANDING IN ELEMENTARY EDUCATION

I Putu Ardita Yoga Saputra[1)], Dewa Made Dwicky Putra Nugraha[2)], Dewa Ayu Made Manu Okta Priantini[3)]

[1)] Elementary School Teacher Education Study Program, Dwijendra University, Indonesia

e-mail: dektuardita@gmail.com

[2)] Elementary School Teacher Education Study Program, Dwijendra University, Indonesia

e-mail: madedwicky@undwi.ac.id

[3)] Elementary School Teacher Education Study Program, Dwijendra University, Indonesia

e-mail : Dewaayu056@gmail.com

ABSTRACT

This study aims to develop an Augmented Reality-based mockup media to improve students' understanding of concepts such as the human digestive system in grade 5 at SD Negeri 6 Sumerta. This is a development study using the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The research subjects consisted of two media experts, two subject matter experts, and users comprising 31 students and two teachers. The research objects included the validity and practicality of the Augmented Reality-based model media, as well as the understanding of science concepts related to the human digestive system. The data collection instruments used were media and material validation sheets, media practicality questionnaires, and science concept comprehension tests. The research data were analyzed using quantitative descriptive analysis techniques. The results of the study show that the media validity test obtained a score of 0.96 with a very high criterion, then the material validity test obtained a score of 0.84 with a very high criterion, the practicality test results from 2 practitioners obtained an average score of 96.5% with a very practical criterion, then the effectiveness test results from the science concept comprehension test obtained an average score of 87.5 with a very good criterion. The conclusion of this study is that the Augmented Reality-based mockup media developed has met the criteria for implementation in science learning and is effective in improving the comprehension of science concepts on the human digestive system in grade 5 at SD Negeri 6 Sumerta.

Keywords: *Augmented Reality, Mockup Media, Conceptual Understanding, Elementary Education*

1. INTRODUCTION

Natural and Social Sciences is a key subject taught in elementary schools. It helps students learn about the world around them, including nature, the environment, and the society they live in. The purpose of studying IPAS is to build thinking skills, encourage a scientific approach, and increase awareness of social issues. According to BSNP one of the goals of IPAS is to help students understand and use important concepts from this subject in their everyday lives (Kumala, 2016). Therefore, IPAS education is meant to help students gain knowledge and a better understanding of ideas that can be useful in their daily routines.

In studying science, students encounter abstract ideas that can have different meanings and are connected to each other. This emphasizes the need for a proper understanding of these concepts in science education (Kurniawati, 2022). Science materials taught in upper elementary grades, like the solar system, animal reproduction, and the human digestive system, are abstract and hard for students to imagine without physical objects. Many students find these topics difficult and struggle with the subject because the learning resources are not fully utilized. A study

by Damayanti (2024) conducted in Grade V B at SD Negeri 1 Penarukan found several issues, including: 1) students not grasping the lesson content, 2) a lack of interest in science subjects, and 3) students getting bored easily.

Elementary students are in the concrete operational stage of cognitive development, usually between the ages of 7 and 11. During this stage, children learn best by using real objects and experiencing things directly. They find it easier to understand information when it is presented in a clear and physical way, such as through the use of props or actual items. If they are not given real objects, they often struggle with logical tasks (Magdalena et al., 2023). They are also able to sort and organize things based on categories. Teaching abstract ideas through traditional methods like lectures or exercises alone may not be very effective. For example, when explaining the human digestive system only through lectures or exercises, children in this stage might not fully understand it, since they need tangible materials to grasp processes that are not visible. Learning without visual aids or real props makes it difficult for them to imagine how digestion works and what the related organs look like. On the other hand, using contextual learning materials in IPAS is more effective, helping them better understand abstract science topics.

Issues with grasping abstract science topics are also present at SD Negeri 6 Sumerta. During interviews, it was found that the topic on the human digestive system is presented in an abstract and text-based manner, using teaching materials and media that fail to engage students. The use of IT-based tools is uncommon, and students depend on traditional methods and textbook illustrations, which contribute to a lack of interest in class. Observations indicated that Grade V students have limited understanding of the concepts, as evidenced by an average UTS score of 56.1, which is below the required minimum standard. Only 48% of students reached the expected score, significantly lower than the target of 100%. This suggests that students face difficulties in comprehending the concepts, pointing to an overall inadequate level of understanding.

The main reasons for low concept understanding at SD Negeri 6 Sumerta are as follows: first, there is a lack of suitable teaching materials or visual aids, such as textbooks or lectures without additional props to support learning. Second, students show low levels of interest and motivation. Third, teaching methods are often repetitive and do not include discussion, practice, or visual elements. Fourth, students are not actively involved in the learning process. Fifth, the learning environment is not favorable for effective teaching and learning. Sixth, some students may have individual difficulties in understanding due to cognitive limitations. Lastly, assessments are often based on memorization rather than a true understanding of the concepts.

To address these issues, appropriate learning materials are necessary. One effective resource is a model, which is a three-dimensional representation of an object or environment on a smaller scale, offering a realistic portrayal. When used with Augmented Reality (AR), it enhances the visual understanding of complex ideas, thereby increasing motivation and improving comprehension.

A model serves as a tool in education to make abstract ideas easier to understand. As stated by Sadiman (2008:76), a model is a scaled-down version of a real structure, not a simulation, since it does not show how things work. When well-made, a model conveys almost the same meaning as the actual object it represents. These models, also known as miniatures or replicas, have several benefits, such as allowing direct interaction, presenting information in a tangible way, showing complete objects along with their construction and function, and clearly illustrating organizational structures and processes. The model presented here is a non-permanent representation of the human digestive system that can be taken apart and put back together. This feature prevents students from getting bored and encourages meaningful learning through hands-on activities. The integration of augmented reality enhances the learning experience by adding a technological element, enabling students to clearly visualize complex ideas and elevate their understanding to a new level.

Augmented Reality (AR) is a technology that combines the real world with digital elements such as sounds, images, or data, allowing users to experience virtual objects in their physical environment through devices like smartphones or tablets. AR is particularly useful in education, as it helps explain difficult or abstract concepts, such as those related to the human digestive system, in a more engaging and interactive way. This interactive approach makes learning feel more like play, which can boost students' interest and involvement. According to research by Sugianto (2022), the use of AR-based media led to an average improvement in concept understanding of 96.97%. Additionally, Santika (2023) discovered that AR media is practical for teachers, as evidenced by a 94% positive response from 25 Grade VIII students at SMP Islam Negeri 3 Pekanbaru who used AR-based Android applications to learn about the human digestive system.

Therefore, there is a need for research to create AR-based model media that can improve Grade V students' understanding of the human digestive system at SD Negeri 6 Sumerta. The current teaching methods are traditional and lack variety. Using AR-based models provides an engaging and effective way to teach, allowing students to see detailed views of organs such as the stomach, small intestine, and liver. It also lets them interact directly with 3D models, which helps them better understand the structure and function of these organs. AR can demonstrate complex processes like the movement of food and chemical reactions, which are difficult to explain using just images, text, or physical models. This approach makes learning more appealing and interactive, increasing student interest and allowing them to learn anytime using their personal devices.

2. RESEARCH METODOLOGY

This study employs the ADDIE development model, consisting of five phases: Analysis, Design, Development, Implementation, and Evaluation (Tegeh & Kirna, 2013). Participants contributing to the research include Subject Matter Experts, Media Experts, Practitioners, and Students. The Subject Matter Experts and Media Experts are two lecturers each from Dwijendra University, serving as educational specialists to provide data on the validity of the learning media. Practitioners are homeroom teachers of Grade V elementary school classes. The research object is an Augmented Reality (AR)-based model media for Natural and Social Sciences (IPAS) content on the human digestive system, targeted at Grade V elementary students.

The developed product specifications comprise core components: a physical model made from environmentally friendly materials; an AR application compatible with Android or iOS platforms, capable of conditioning the physical model and displaying 3D elements and animations; marker cards as triggers for digital displays; and supporting devices such as smartphones or tablets.

Data sources for this research include: 1) two media expert lecturers; 2) two subject matter expert lecturers; 3) two Grade V elementary school teachers; 4) Grade V elementary students; and 5) literature reviews supporting the development of AR-based model media to enhance concept comprehension. Data collection techniques encompass both test and non-test methods. The test instrument is a concept comprehension test for IPAS, while non-test methods utilize validation sheets and questionnaires. Data analysis techniques include descriptive statistical analysis for student concept comprehension and product practicality, as well as Aiken's V coefficient for product validity assessment.

3. LITERATUR REVIEW

Three-dimensional (3D) models serve as tangible representations of real-world objects such as buildings, ships, or aircraft, constructed using materials like wood, clay, or other media (Harrison, 2010). Within educational settings, these models play an important role as visualization and demonstration tools that allow learners to

engage with complex concepts more concretely. Designed with high precision to mirror real objects, 3D models help create realistic impressions that can facilitate comprehension. Furthermore, the use of such model-based media in learning activities has been found to attract students' attention and improve their engagement, thereby contributing to more effective understanding of the subject matter (Johnson et al., 2018).

Building upon the strengths of conventional 3D models, technological advances have given rise to digital innovations such as Augmented Reality (AR), which combine the real and virtual worlds into a single interactive environment. AR technology enables users to view and manipulate virtual 3D objects superimposed onto real-world settings through devices such as smartphone cameras (Nandyansah & Suprapto, 2019). This immersive integration not only extends the visual and tactile experiences offered by physical models but also enhances learner interaction in real time. As Azuma (1997) explains, AR is characterized by interactivity, real-time responsiveness, and the display of three-dimensional objects, all of which make it a promising tool for improving the quality of learning experiences.

The integration of AR-based 3D models in learning is particularly relevant for enhancing students' conceptual understanding a core objective of educational practice. Conceptual understanding involves the ability to comprehend, internalize, and express knowledge meaningfully, allowing learners to explain concepts in their own words rather than relying solely on rote memorization. According to Anderson and Krathwohl (2010), indicators of conceptual understanding include interpreting, exemplifying, clarifying, inferring, and comparing. Through the interactive and visual affordances of AR-based 3D models, students can engage with abstract ideas in a more concrete and dynamic manner, which in turn supports deeper and more lasting conceptual understanding.

4. RESULTS AND DISCUSSION

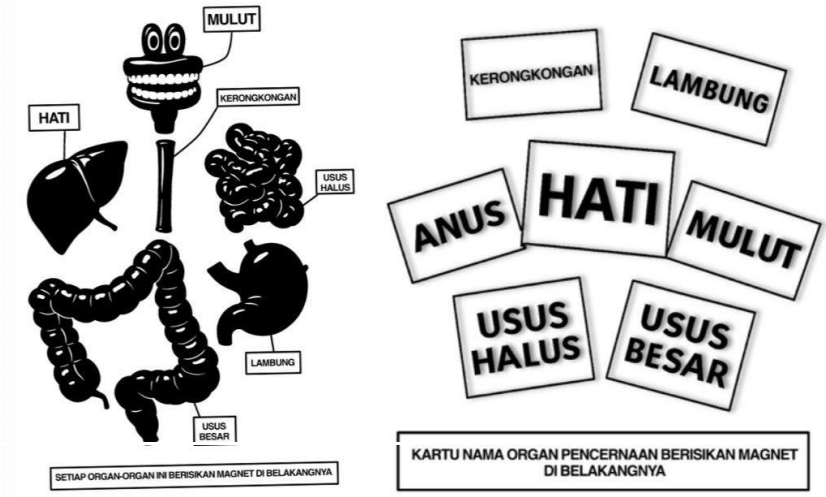
The result of this research is an Augmented Reality-based mockup media, which is a combination of miniature models (mockups) and AR technology that enables interactive visualization of 3D objects. This model was successfully developed using the ADDIE model, which includes 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation.

Based on an analysis of student needs, an Augmented Reality-based media model was designed to improve students' understanding of science concepts, specifically the human digestive system, in order to meet the learning outcome of "Explaining the digestive organs and their functions in humans and how to maintain digestive health". An environmental analysis was conducted to identify the school environment in terms of its readiness to support the development of Augmented Reality-based media models. Facilities refer to equipment used in learning, such as books, stationery, mobile phones, and classrooms as public facilities provided by the school to support the learning process.

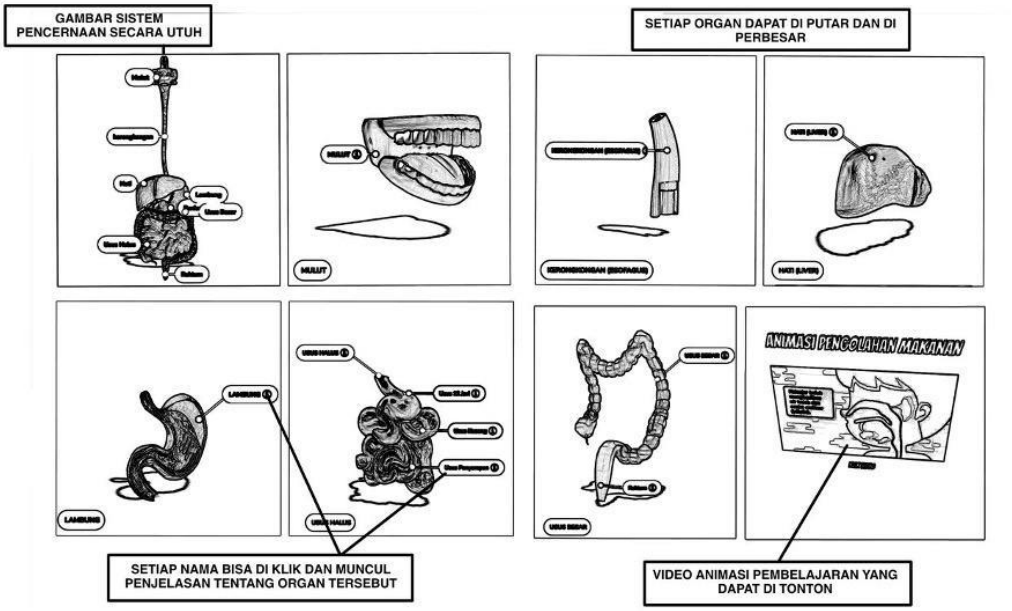
At the **design** stage, mapping of Augmented Reality-based media components was carried out, covering media models, displays within Augmented Reality using the

Assemblr EDU application as software, and a guidebook containing instructions for use. (Disclaimer: the media is guided by Bahasa).

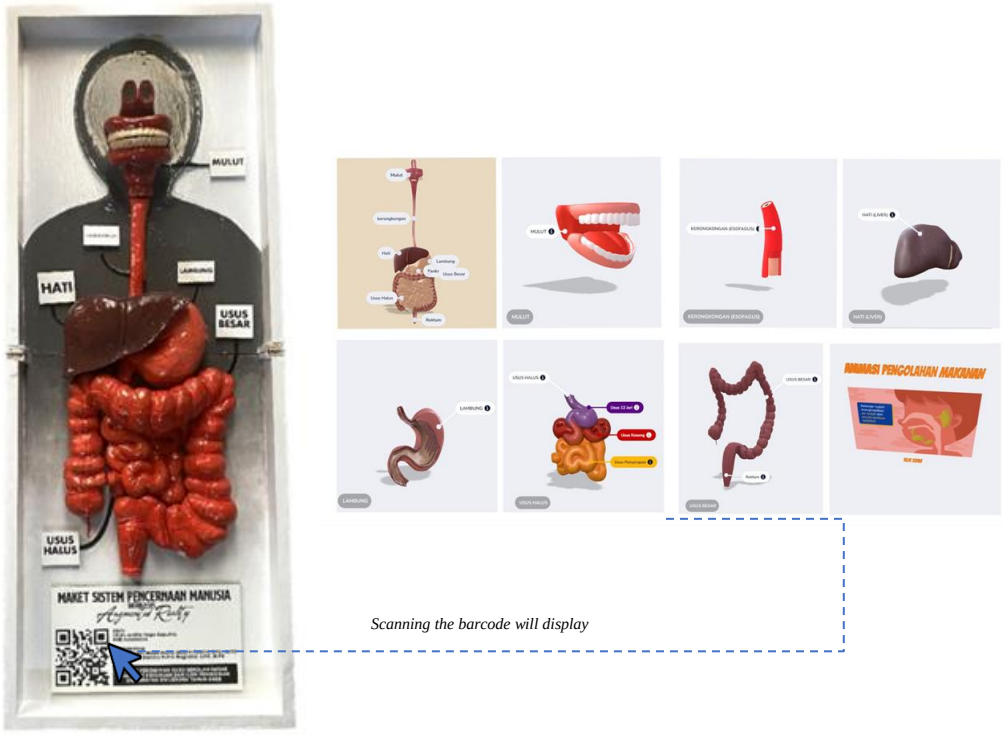
The next stage is the Development. At this stage, the media design is realized to produce media in the form of visual replicas that resemble the actual organs of the human digestive system in color. Several digestive organs can be opened and



closed to see the inside of the organ, such as the mouth, esophagus, stomach, large



intestine, and anus. The stomach contains water, which represents stomach acid. Each organ has a card with the name of the organ in the human digestive system, which can be attached to the prepared magnet.



After the media is completed, the next step is implementation. Before being implemented in learning, the media is first tested for validity. The validity test consists of media and material validity. The validity test is conducted based on the assessment of expert judges with the following results.

Table 1. Media Validity Result

Aspect	Judges		S1	S2	∑s	n(c-1)	v	Stat.
	I	II						
Material	70	70	54	54	108	128	0.84	Very High
Media	50	47	40	37	77	80	0.96	Very High

Table 1 shows that the material validity value is 0.84, and the media validity is 0.96. Both values indicate a “very high” level of validity. Therefore, it is deemed feasible to be tested in classroom learning. The media was applied in Grade 5 science learning on the digestive system. After the teacher and students used the media, data was collected to determine the level of practicality for users (teachers) and the effectiveness of the media in improving students' understanding of the concepts.

The results of testing the application of AR-based 3D mockup media in learning were then evaluated. The practicality of using the media was based on the responses of two practitioners, namely a fifth-grade teacher (98%) and a sixth-grade teacher (95%), with an average percentage of 96.5%. Therefore, from these data, it can be concluded that Augmented Reality-based mockup media is very practical to be applied in learning. Furthermore, the level of media effectiveness measured based on the results of student concept comprehension tests is as follows.

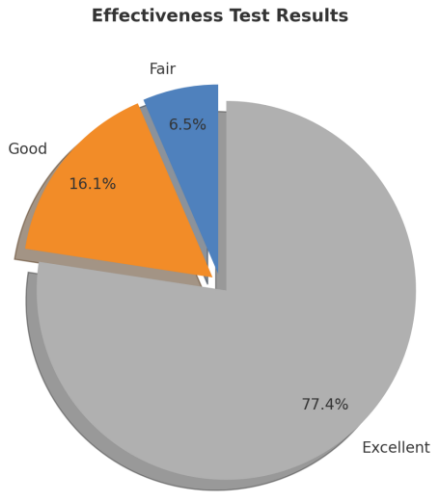


Figure 4. Effectiveness Test Result

$$\text{Mean Score} = \frac{\sum \quad x}{n}$$

$$\text{Mean Score} = \frac{2713.5}{31} = 87.5$$

The results of the effectiveness test indicate that the majority of participants achieved an Excellent level (77.4%), followed by Good (16.1%) and Fair (6.5%). This distribution, supported by an average classical score of 87.5, reflects a high degree of effectiveness in the implemented program. The findings suggest that the intervention successfully met its intended objectives, demonstrating strong participant performance and overall positive outcomes, with only a minimal portion requiring further improvement.

Based on the ADDIE development model, Augmented Reality (AR)-based physical models (makets) have been produced and found highly feasible for deployment to assist the teaching learning process. This outcome corroborates the findings of Melyandina et al. (2023), who report that classroom application of model-based instructional media can operate effectively; model-based media simplify the explanation of subject matter and facilitate students' comprehension of abstract topics. The practicality assessment of the developed AR model yielded a very high feasibility score of 96.5%, indicating that the product meets the practical criteria required for use in science instruction (specifically, the human digestive system material).

To measure the AR model's effectiveness, a field trial was conducted with 31 students in grades V and VI at SD Negeri 6 Sumerta. Students completed a seven-item short-answer test aligned with the instructional indicators for science concept understanding. Results from the concept-understanding test produced a class mean score of 87.5%, which falls into the "very good" category. In terms of item-level performance, 24 of the 31 students correctly answered the items associated with the indicators described above. These assessment outcomes indicate that the AR-based physical model effectively enhances students' conceptual understanding,

which accords with Herlianto et al. (2020), who similarly reported improved learning outcomes when model-based media are used.
The AR-based model offers several pedagogical advantages over conventional media: it is detailed, increases lesson attractiveness, and makes the learning process more engaging and enjoyable for both teachers and students. Consequently, the tool not only improves students' conceptual understanding of the human digestive system but also familiarizes them with AR technology. Based on expert reviews (media experts and subject-matter experts) and field trial results, the AR-based physical model is considered appropriate and recommended for classroom use as an instructional medium in primary-school science.

5. CONCLUSION

The development of Augmented Reality-based media in IPAS learning for fifth grade elementary school students using the ADDIE learning model. The validation results showed that the media and materials received an excellent rating, including media validity of 0.96 with high validity criteria and material validity of 0.84 with very high validity criteria. The practicality of the Augmented Reality-based media model development product received an average score of 96.5% with a very practical rating. The results of the effectiveness test of the Augmented Reality-based media development product obtained an average score of 87.5 with a very good qualification. Based on these results, the Augmented Reality-based media is suitable for use in teaching human digestive system science in fifth grade at SD Negeri 6 Sumerta.

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THE MESURYAK TRADITION AS A MEDIUM FOR STRENGTHENING CHARACTER EDUCATION AND CULTURAL LITERACY BASED ON BALINESE LOCAL WISDOM

I Gusti Ayu Putu Istri Aryasuari[1], Komang Divayanti[2]
[1)]Dwijendra University
e-mail: istriaryasuari15@gmail.com
[2)]Dwijendra University
e-mail: Ikomangdivayanti@gmail.com

Abstract

Tradition Mesuryak or Megarangan is one of the Balinese intangible cultural heritages that still survives today, particularly in Tabanan Regency. This tradition is held every year after the Kuningan holiday celebrations as an expression of gratitude and joy for the community in sending off the spirits of their ancestors who return to the afterlife. This study aims to examine the values of character education and cultural literacy contained in the implementation of this tradition.MesuryakThe research method used is descriptive qualitative with an ethnopedagogical approach, through observation, interviews, and documentation studies of the community of traditional practitioners in Bongan Village, Tabanan Regency. The results of the study indicate that the traditionMesuryakIt contains a number of important character values such as religiosity, mutual cooperation, gratitude, social solidarity, and a love of local culture. Furthermore, this traditional practice also reflects a living form of cultural literacy, where the community understands, internalizes, and passes on cultural values through collective and symbolic actions.Mesuryaknot only as a medium for cultural preservation, but also as a means of character learning for the younger generation. Thus, the preservation of local traditions such asMesuryakcan be used as a model for strengthening character education based on local wisdom as well as developing cultural literacy in schools and communities.

Keywords: *Mesuryak, character education, cultural literacy, local wisdom, ethnopedagogy*

1. INTRODUCTION

Education serves not only to transfer knowledge but also to shape character and national identity. In the context of national education, strengthening character education is a primary focus, as stipulated in Presidential Regulation Number 87 of 2017 concerning the Strengthening of Character Education (PPK). Character education is expected to foster noble values such as religiosity, nationalism, independence, mutual cooperation, and integrity in students (Ministry of Education and Culture, 2017). One effective strategy for instilling these values is through a local culture-based approach, known as ethnopedagogy (Mulyana, 2013).

According to Suyitno (2012), ethnopedagogy is a form of education that utilizes local wisdom as a source of values, knowledge, and ethics in learning. This approach positions culture as a contextual, relevant, and meaningful learning tool for the community. In the Balinese context, religious traditions and rituals serve as sources of moral and social values that can be developed in character education.

One of the local traditions that is rich in educational value is the traditionMesuryak or Megarangan, which developed in Tabanan Regency, Bali. This tradition is carried out on the last day of the Kuningan celebration, as a form of community gratitude to the ancestral spirits who return to the afterlife after receiving offerings during the Galungan and Kuningan celebrations (Suwena, 2018).Mesuryak"To shout with joy" in Balinese means "to cheer with joy." During the ceremony, people gather in front of their homes and throw coins into the air while cheering. This activity is not simply a celebration, but also has symbolic meaning, honoring and releasing ancestral spirits with joy (Pitana, 2019).

Apart from being a cultural heritage, traditionMesuryakwas also designated as an Intangible Cultural Heritage of Indonesia (Intangible Cultural Heritage) by the Ministry of Education and Culture in 2018, emphasizing the importance of preserving local cultural

values. According to Koentjaraningrat (2009), every local tradition reflects a system of values passed down through generations and serves to maintain social and spiritual balance in society. These values can be interpreted as a source of authentic and contextual character learning.

On the other hand, cultural literacy is a crucial aspect of 21st-century education. Cultural literacy encompasses not only the ability to understand cultural heritage but also the ability to internalize and practice these cultural values in everyday life (Trilling & Fadel, 2009). According to the Ministry of Education and Culture (2019), cultural literacy serves to shape a young generation with identity, character, and national insight. Through traditions such asMesuryak, society not only preserves culture, but also transmits moral, ethical and spiritual values to the younger generation in a natural and participatory manner.

Based on this background, this study aims to examine the values of character education and cultural literacy contained in the Mesuryak tradition in Tabanan Regency. This study is expected to contribute to the development of a contextual and sustainable character education model based on local wisdom, while also strengthening public awareness of the importance of preserving traditional culture.

This research usesdescriptive qualitative approachwith perspectiveethnopedagogy, which views cultural traditions as a source of educational values and practices in society (Suyitno, 2012). This approach was chosen because it allows researchers to deeply understand the meaning, values, and social practices contained in traditions.Mesuryakas a medium for learning character and cultural literacy.

The research was conducted inBongan Village, Tabanan District, Tabanan Regency, Bali, which is known as one of the main areas preserving traditionsMesuryak. The research subjects includetraditional figures, religious leaders (stakeholders), teachers, students, and community members who carry out traditions. The informants were selected randomlypurposive samplingtaking into account that they understand the implementation of traditions and the cultural values contained therein.

The research data consists of: Data primer, namely the results of in-depth interviews with community actors in traditions, traditional figures, and teachers. Data seconds, in the form of documents, historical records, related literatureMesuryak, and references on character education and cultural literacy.

Data Collection Techniques : Data collection techniques are carried out in three main ways, namely: Participatory Observation– Researchers are directly involved in observing the process of implementing traditionsMesuryakto understand the symbols, activities, and values contained therein. In-depth interview– Conducted with traditional figures, communities, and teachers to obtain data regarding the meaning, values, and relevance of traditions to character education and cultural literacy. Documentation Study– Includes searching for archives, photos, videos, and cultural documents related to the implementationMesuryakin Tabanan Regency.

Data Analysis Techniques: Data analysis was carried outinteractive And sustainablefollow the modelMiles and Huberman (1994)which includes three stages, namely: Data reduction, by selecting, simplifying, and grouping data based on the themes of character values and cultural literacy. Data presentation, through narrative descriptions of the symbolic meanings and educational values in the traditionMesuryak. Conclusion drawing and verification, to find patterns, meanings, and relevance of traditional values to the formation of character and cultural literacy of the younger generation.

2. DISCUSSION

1. Character Education Values in Tradition Mesuryak

The results of the study show that the tradition MesuryakIt contains a number of character values that align with the goals of national education. These values are reflected not only in the ritual procession, but also in the symbolic meaning and social behavior of the community during the tradition.

a. Religious Values

ImplementationMesuryakIt begins with communal prayers and offerings to ancestors as a form of gratitude for the safety and blessings of life. This demonstrates spiritual awareness and respect for supernatural powers. These religious values align with the main character of strengthening national character education, namely the formation of individuals who believe in and fear God Almighty (Ministry of Education and Culture, 2017).

b. The Values of Mutual Cooperation and Social Solidarity

TraditionMesuryakIt was carried out collectively by all villagers. Preparation and implementation were carried out through strong cooperation among residents, reflecting a spirit of mutual cooperation and social solidarity. People of all ages participated, indicating cross-generational social interaction that strengthened social bonds. This aligns with the perspective ofKoentjaraningrat (2009)that communal traditions function to strengthen social cohesion in traditional societies.

c. The Value of Gratitude and Shared Happiness

Cheers and coin tosses in traditionMesuryakIt symbolizes happiness and gratitude for the gift of life. Children fighting over money symbolize equally distributed fortune and blessings. This value can be linked to the characteristics of optimism and social happiness, which are essential to a community's psychological well-being (Suyatno, 2019).

d. Values of Love for Local Culture

Involvement of the younger generation in implementationMesuryakThis demonstrates efforts to pass on local cultural values. Through direct participation, students and adolescents learn to appreciate, understand, and preserve ancestral traditions. This love of local culture is part of national identity and a crucial component of local wisdom-based character education (Mulyana, 2013).

2. Cultural Literacy in TraditionMesuryak

Besides character values,Mesuryak also become a place for practicecultural literacywho live in society. Cultural literacy in this context includes the ability to understand, interpret, and communicate cultural values contained in traditions (Trilling & Fadel, 2009). Contextual Understanding of Tradition/ People understand thatMesuryakIt's not just a ritual for entertainment, but a religious and social expression with profound symbolic meaning. This process of interpreting meaning is a form of high-level cultural literacy, where individuals can connect cultural symbols with moral and spiritual values.

a. Active Participation in Cultural Preservation

The active participation of the community, especially the younger generation, demonstrates the ongoing process of cultural transmission. Through direct involvement, they learn to think critically about traditions and play a role in preserving them. This aligns with the concept of cultural literacy according toMinistry of Education and Culture (2019), namely the ability to understand and internalize cultural values as part of one's and one's national identity.

b. Communication and Representation of Cultural Values

TraditionMesuryakIt also serves as a medium for cultural communication. Cheers, songs, and interactions between residents reflect a spirit of togetherness and collective expression. This form of nonverbal communication contains moral and social educational values that can be integrated into school learning.

3. Tradition Mesuryakas a Media for Character and Literacy Learning

a. The results of the study show that the traditionMesuryakhas great potential to be usedcharacter learning media and cultural literacy based on local wisdomThrough observation, reflection, and discussion of the values contained in traditions, students can develop a critical understanding and empathy for their own culture.

b. Approach ethnopedagogyThis allows teachers to integrate local values into the curriculum, for example through Indonesian language instruction, arts and culture, or Pancasila education. Thus, character education is not merely theoretical but contextual, tailored to the students' social and cultural environments.

c. This is in line with the viewTilaar (2004)that culture-based education is a strategic effort to build Indonesian people with character, culture, and a sense of identity.Mesuryakbecomes a concrete example of how local culture can be a living and meaningful source of learning.

3. CONCLUSION

Tradition Mesuryak in Tabanan Regency, it is an intangible cultural heritage with noble values relevant to strengthening character education and developing cultural literacy. Research shows that this tradition embodies various character values, such asreligiosity, gratitude, mutual cooperation, social solidarity, and love of local cultureThese values are reflected through symbols, rituals, and the collective participation of the community, making this tradition not only a cultural event but also a means of moral and social learning.

Besides that, Mesuryakalso reflects the practicecultural literacyActive participation. People, including the younger generation, not only understand the meaning of tradition but also internalize and represent it in their daily lives. This process fosters awareness of cultural identity, a sense of belonging to ancestral heritage, and the ability to think critically about traditional values.

Thus,Mesuryakcan be usedcharacter learning media and cultural literacy based on local wisdomThe integration of traditional values in both formal and non-formal educational contexts has the potential to strengthen national identity and create a generation with character, culture, and high social and spiritual sensitivity.

4. SUGGESTION

For Educational Institutions

Schools and colleges are expected to integrate local values such as traditions.Mesuryakin learning activities through an ethnopedagogical approach. Culture-based project activities can be used as a means of strengthening character education and cultural literacy for students.

For the Government and the Department of Culture

Local governments need to continue to support the preservation of traditions Mesuryakthrough cultural education programs and community activities, including documentation, cultural festivals, and socialization of traditional values to the younger generation.

For the Community and the Young Generation

The community is expected to continue to preserve traditionsMesuryakby maintaining the purity of its spiritual and social values. The younger generation should be actively involved in cultural activities to understand and pass on their ancestral heritage creatively and critically.

For Further Researchers

Further research can be conducted with a multidisciplinary approach, such as semiotic analysis, multicultural education, or cultural communication, to broaden understanding of the social and educational functions of tradition.Mesuryakin Balinese society.

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SYMBOLISM OF WATER IN HINDU LITERATURE: FROM SARASWATI TO TIRTA AMERTA

Ida Ayu Komang Arniati[1)], and I Ketut Suda[2)]

[1)] Master's Program in Religious and Cultural Studies Universitas Hindu Indonesia
[1]e-mail : idaayuarniati@unhi.ac.id
[2)] Doctoral Program in Religious and Cultural Studies Universitas Hindu Indonesia
[2]e-mail: suda.unhidps@yahoo.com

ABSTRACT

Water in the Hindu tradition not only serves as a physical element that sustains life, but also as a symbol of purity, knowledge, and spiritual transformation. This research aims to examine the symbolism of water in Hindu sacred texts — the Rigveda, the Bhagavad Gītā, and the Purāṇa — as well as to trace its manifestation in the ritual and cultural practices of the Balinese Hindu community. The study was conducted with a qualitative-descriptive approach through textual analysis and symbolic interpretation, using the theory of religious symbols from Mircea Eliade and Émile Durkheim. The results show that water in the Rigveda is seen as the source of life and cosmic harmony; in the Bhagavad Gītā, water is the embodiment of God's presence in the material world; while in the Purāṇa, the myth of Tirta Amerta affirms water as a symbol of immortality and wisdom. This finding finds its actualization in the tirtha tradition in Bali which serves as a medium of purification and ecological ethics. The symbolism of water in this context shows the integration between theology, culture, and ecological consciousness, and provides the basis for the development of Hindu environmental theology (eco-theology) that is relevant to the challenges of modern times.

Keywords: *water symbolism, tirtha, Saraswati, Tirta Amerta, Balinese Hinduism, environmental theology*

1. INTRODUCTION

1.1 Background

Water (mesh, apah, or toya in Sanskrit) is one of the most fundamental elements in Hindu cosmology and spirituality. In various sacred texts, water is understood not only as a material element that sustains life, but also as a transcendental symbol that represents the sanctity, fertility, and source of all creation. The symbolism of water contains layers of philosophical, theological, and ritualistic meanings that form one of the main foundations in the Hindu worldview.

In the Rigveda, the oldest book in the Hindu tradition, water is referred to as the "eye of life" and the "mother of all that exists". One of the famous hymns, *Apah Suktam* (Rigveda VII.49), praises water as a divine power that purives, soothes, and invigorates. Water is referred to as a medium of spiritual and physical purification:

"Waters, ye are the source of all delight; grant us health, strength, and purity." This symbolism suggests that water has been placed in a sacred position from the beginning—as a direct manifestation of the cosmic forces that sustain and restore the balance of the universe.

In the Bhagavad Gītā, the symbolism of water acquires a deeper philosophical dimension. Kṛṣṇa states that in him there are all the elements of nature, including water that "has a sweet taste" (*raso 'ham apsu kaunteya*, BG 7.8). This phrase signifies that water is a tangible manifestation of the Divine presence in the empirical world. Thus, water becomes a contemplative medium for Hindus to realize the existence of Brahman behind all natural phenomena.

Meanwhile, in the Puranas, especially *the Bhāgavata Purāṇa* and *Devi Bhāgavata Purāṇa*, water is personified in various forms of goddesses, such as Goddess

Saraswati—the goddess of knowledge flowing like a holy river bringing inner enlightenment. In addition, the myth *of the Manthana Ocean* (stirring of the ocean of milk) in *Vishnu Purāṇa* and *Mahābhārata* describes cosmic water as the source of Tirta Amerta—the water of immortality that symbolizes wisdom and eternal life. This narrative shows that water is not just an element of nature, but also a spiritual essence that unites the gods, humans, and the universe in one cosmic cycle.

The symbolism does not stop in the text, but finds its actualization in Hindu culture and ritual practices, especially in Bali. In Balinese tradition, holy water is known as tirtha, which literally means "road to liberation" or "sacred crossing". Tirtha is believed to have the purifying power (śuddhi) that can cleanse the innate and connect man to his spiritual source. Religious ceremonies such as *melukat*, *nyegara-gunung*, and *nunas tirtha* affirm the position of water as a sacred medium that presents a balance between humans, nature, and God (*Tri Hita Karana*).

Holy water in the Balinese context is not only seen as a rite of passage, but also as a cosmological principle that governs social and ecological life. Water sources such as *pancoran*, *beji*, and *campuhan* are considered places where divine energy resides, so their purity is maintained through various forms of ceremonies and taboos. Thus, the meaning of tirtha reflects the synthesis between Vedic theology and the local wisdom of the archipelago, resulting in a holistic and ecological form of spirituality.

Through the study of water symbolism from Saraswati to Tirta Amerta, it appears that water acts as a bridge between myth and practice, between sacred texts and living culture. Water is the symbol of the unification of the dimensions of knowledge (Saraswati), life (Rigveda and Bhagavad Gita), and eternity (Tirta Amerta). Therefore, this research is important to uncover how the sacred conception of water in Hindu literature is translated in the religious life of the Balinese people, while showing the continuity between philosophy, rituals, and spiritual ecology in the Hindu tradition.

1.2 Research Problems

Based on the description of the background, it can be formulated several main problems that are the focus of this study, namely:

1. How is water positioned in Hindu sacred texts, such as *the Rigveda*, *the Bhagavad Gītā*, and *the Purāṇa*, as a symbol of purity, the source of life, and divine manifestation?
2. How did the concept and symbolism of water (jalā, apah) in Hindu literature undergo a transformation in meaning in the context of the culture and rituals of the Balinese Hindu community?
3. How does the meaning of holy water (*tirtha*) in the ritual and daily life of the Balinese people reflect the continuity between theological teachings, ecological values, and spiritual practices?

1.3 Research Objectives

The purpose of this study is to:

1. Describe and analyze the position and symbolic meaning of water in Hindu sacred texts, especially *the Rigveda*, *Bhagavad Gītā*, and *Purāṇa*.
2. Uncovering the forms of reinterpretation and internalization of water symbolism in the traditions and rituals of the Balinese Hindu community.
3. Explain the relationship between the symbolism of water in Hindu literature and the religious and ecological life views of the Balinese people, thus forming a holistic understanding of purity and life.

1.4 Research Benefits

1.4.1 Theoretical benefits

Theoretically, this research is expected to contribute to the development of the study of religious philosophy and Hindu literature, especially in understanding the symbolism of natural elements as a theological medium. This study enriches the

understanding of how Hindu sacred texts construct cosmological and spiritual views through the symbol of water as a metaphor for knowledge (Saraswati), life (Rigveda, Bhagavad Gita), and immortality (Tirta Amerta).

1.4.2 Practical Benefits

Practically, the results of this study can provide insights for:

1. Academics and students in understanding the relationship between sacred texts and religious cultural practices, especially in the Hindu context in Bali.
2. Religious leaders and spiritual practitioners, as a reflective foundation in maintaining the purity of water sources and the implementation of tirtha-based rituals.
3. The general public and environmentalists, to foster ecological and spiritual awareness that maintaining the purity of water is the same as maintaining the sustainability of life.

2. THEORITICAL FRAMEWORK

2.1 Conceptual Framework on Religious Symbolism

In the study of religions, symbols are understood as the primary means of expressing sacred reality. According to Mircea Eliade (1959) in *The Sacred and the Profane*, symbols constitute "*hierophany*" — the manifestation that makes the sacred visible in the profane world. Within this framework, the elements of nature such as water, fire, earth, and air are not merely material phenomena, but rather gateways to a deeper religious experience.

Eliade emphasized that water has a universal symbolic meaning as a symbol of purity, regeneration, and cosmic potential. Through water, all forms of life are born, and through water all stains are purified. As described below.

> "Water symbolizes the whole of potentiality; it is the source of all existence and the vehicle of purification." (*Eliade, 1959:130*)

Meanwhile, Émile Durkheim (1912) in *The Elementary Forms of Religious Life* explained that religious symbols not only represent spiritual reality, but also express the collective consciousness of society. In this context, the meaning of water is not only theological, but also sociological, since it serves to unite communities in common rites and beliefs.

Victor Turner (1969) in *The Ritual Process* added a performative dimension of symbolism: the water in ritual functions as a liminal medium, that is, the transitional space between the profane and the sacred. In moments such as purification (*melukat*) or spiritual initiation, water becomes a transformative tool that marks a change in one's spiritual status.

On the basis of these theories, water symbolism in Hinduism can be understood not only mythologically, but also as a phenomenon of religious and cultural philosophy that integrates cosmology, morality, and spirituality.

3. METHOD

This study uses a qualitative descriptive research design. by examining the results that have been obtained through study literature, both journals, books, research results, and magazines related to the research title (Ratna, 2006). This research was conducted for 1 month in July 2025. The results of the research that have been obtained are analyzed and expressed in the form of narratives.

4. DISCUSSION

4.1 Water in Vedic Cosmology and Theology

In the Rigveda, water (apah) is placed in a very sacred and vital position. The *Apah Suktam* Association (VII.49) praises water as the divine force that sustains the life of all beings:

"Waters, ye are the source of all delight, grant us health, strength, and purity."

Here, water is depicted as a universal principle of life that provides well-being and purity. In another hymn (*Rigveda X.9*), water is referred to as the "mother of all living", describing its cosmogonist function as the materia prima (origin substance) of the universe. This view is in line with *the philosophy of Sāṃkhya* which considers the element of water (*apas tattva*) to be the second element after ether (*ākāśa*), which contains the potential for life. In a spiritual context, water is the symbol of the union between puruṣa (soul) and prakṛti (nature), affirming the cosmic balance that is the basis of dharma. Water also plays an important role in the practice of Vedic rituals, such as *abhiseka* (holy watering) and *snana* (purification bath), which depict the restoration of inner and outer purity. Thus, in the Vedic tradition, water is not only a physical substance, but also a sacred medium for restoring cosmic order (ṛta).

4.2 Water as a Manifestation of God in the Bhagavad Gītā

In *the Bhagavad Gītā*, the symbolism of water acquires the dimension **of Vedānta philosophy**. Śrī Kṛṣṇa states in *Bhagavad Gītā VII.8*:
"*Raso 'ham apsu kaunteya, prabhāsmi śaśi-sūryayoḥ*"
"Aku adalah rasa manis dalam air, cahaya dalam bulan dan matahari."

This verse shows that water is not only a symbol, but a direct manifestation of God's presence (Brahman) in the form of sensory experience. The sweetness of water (*taste*) signifies the existential happiness that arises when man realizes his oneness with nature and God.

In *Bhagavad Gītā XV.13*, Kṛṣṇa also says:
"I entered the earth and sustained all creatures with my power; I became the moon that grows all plants with their juices." This verse reinforces the meaning that water, rain, and moisture are expressions of Divine love that sustain life. Thus, water becomes a symbol of God's unbroken grace and love.
In this context, water serves as a metaphor for a fluid and inclusive spirituality: just as water conforms to its container, so man should conform to the Divine will through devotion and dharma.

4.3 Cosmic Water and Tirta Amerta in the Purāṇa

The Purāṇa texts, water symbolism developed into complex mythological narratives. One of the most famous stories is the Manthana Ocean (the stirring of the milky ocean) in *Vishnu Purāṇa* and *Mahābhārata (Adi Parva).* In this story, the gods (deva) and asuras stir the cosmic ocean to obtain Tirta Amerta — the water of eternity.
This story has a profound philosophical meaning: (a) the ocean symbolizes a collective subconscious full of potential and chaos; (b) Mount Mandara as a stirring represents the spiritual efforts of humans to cultivate themselves; (c) The Tirta Amerta that arises is spiritual enlightenment or eternity, the result of the struggle between the forces of light and darkness.
In addition, Goddess Saraswati is often depicted flowing like a holy river, bringing knowledge (vidyā) and enlightenment. The water of the river Saraswati symbolizes the current of divine wisdom that purifies ignorance. Thus, water becomes a metaphor for knowledge and consciousness — the two main aspects of liberation (mokṣa).

3.4 Water Symbolism in Socio-Religious and Balinese Cultural Perspectives

In the Balinese Hindu context, the concept of holy water (*tirtha*) is a transformation from Vedic and Purāṇa symbolism into a form of local culture and rituals. Etymologically, *tirtha* means "holy crossing" — the place or medium that allows man to cross samsara to mokṣa.
Rituals such as *melukat*, *nunas tirtha*, and *nyegara-gunung* demonstrate an understanding that holy water is a spiritual energy that restores the balance of the tri mandalas: self (atma), environment (bhuana), and God (parhyangan). In a

Durkheimian perspective, tirtha is also a symbol of collective solidarity that maintains the social and ecological cohesion of Balinese society.

Water taken from sacred sources such as *campuhan*, *beji*, and *tirta empul* is believed to have the power of purification of the mind and mind. This is where Turner's theory of liminal symbols finds its relevance: water tirtha marks the transition from a profane state to a holiness, both in religious ceremonies and in everyday life.

The symbolism of water in the Hindu tradition—both in sacred texts and in Balinese culture—embodies the unity between cosmology, theology, and ritual praxis. It not only explains how water is understood, but also how man experiences the sacredness through water.

Tirtha as Ecotheology: Maintaining the Purity of Water and Nature

The meaning of holy water in Bali is not only limited to religious rituals, but also forms ecological ethics. In the Balinese Hindu view, the source of water is the manifestation of *Lord Vishnu* and the place where spiritual energy resides. Therefore, keeping rivers, lakes, and springs clean is not only an ecological obligation, but also a dharmika responsibility.

This concept is in line with the principle of Tri Hita Karana, namely the harmony between humans and God (*parhyangan*), humans and others (*pawongan*), and humans with nature (*palemahan*). Thus, water serves as a meeting point between spirituality and environmental sustainability.

This understanding shows the dimension of Balinese Hindu ecotheology, where water is seen as a manifestation of God's love that must be maintained in purity. Rituals such as *tumpek uduh*, *tumpek wariga*, and *mapag toya* reflect ecological awareness born from water theology.

As described in Hindu sacred texts such as *the Rigveda*, *the Bhagavad Gītā*, and *the Purāṇa*, water is a symbol that unites the cosmological, theological, and spiritual aspects of life. In the context of Balinese Hindu society, this symbolism is not only understood conceptually, but is practiced through various forms of rituals and value systems.

Balinese society places water as the core of purity (śuddha tattva) and spiritual resource (śakti). Water not only serves as a rite material, but also a representation of Ida Sang Hyang Widhi Wasa in her manifestation as Lord Vishnu — the sustainer of life and the source of all fertility. Therefore, every sacred activity in Bali always begins and ends with the use of *tirtha*, signifying the importance of water as a mediator between humans and God.

In Mircea Eliade's view, water is "*the matrix of all potentialities*," where everything originates and is repurified. This understanding is clearly reflected in the Balinese ritual which treats water not as just an object, but as a spiritual entity that has divine power (*taksu*).

5. CONCLUSION

5.1 Conclusion

Based on the reading of the text and theory, it can be concluded that:

1. Water in Hindu literature is a multidimensional symbol—cosmological, theological, epistemological, and ethical.
   Eliade's theory of symbols explains the sacred function of water as a hierophany; Durkheim explains its social function; Turner explains its ritual-transformational function.
2. In the Balinese Hindu context, this symbolism transforms into ecological and spiritual praxis through the concept of tirtha, which affirms the continuity between myth and life, text and action, knowledge and purification.

5.2 Practical Advice

Local governments and Hindu religious institutions in Bali need to strengthen **tirtha-based ecotheological education**, so that the spiritual awareness of the people can be integrated with the water resource conservation movement.

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LEGAL CERTAINTY FOR THE IMPLEMENTATION OF ELECTION PARTICIPANT SOCIALIZATION BEFORE THE 2024 ELECTION CAMPAIGN PERIOD

Ni Nengah Agustin Citrawati[1)], Agus Surya Manika[2)], Dewa Ayu Agung Manik Oktariani [3)]

[1)]Dwijendra University
email: agustinutin99@gmail.com
[1)]Dwijendra University
email: surya.maneeka@gmail.com
[1)]Dwijendra University
email: dewaayumanik01@gmail.com

ABSTRACT

Legal certainty in an election can create justice for all parties, especially election participants, this can be realized with effective arrangements in resolving all election problems contained in an election law. In this study, the researcher wrote with the title Legal Certainty of the Implementation of the Socialization of Election Participants Before the Election Campaign Period in 2024. How is the legal certainty of the implementation of the socialization of political parties participating in the election before the election n campaign period in 2024, 2. How is the process of political parties participating in the election in conducting socialization before the election campaign period in 2024?. The author discusses using several theories including State Law Theory, Legal Certainty Theory, Democracy Theory and Justice Theory. Based on the results of the author's research, legal certainty in the implementation of socialization of political parties participating in the election before the election campaign stage in 2024, there needs to be a straightforward and directed explanation that explains a meaning in the norm in the application of socialization activities. the process of implementing socialization activities carried out by political parties participating in the election before the start of the campaign stage, which raises problems in its implementation because the norms it regulates are experiencing normative vagueness and do not strictly regulate sanctions against violations committed.

Keywords*: Legal certainty, Socialization, Election*

1. INTRODUCTION

General Election (Pemilu) is a means of people's sovereignty to elect the President and Vice President, Members of the People's Representative Council, Members of the Regional Representative Council, and to elect members of the Regional People's Representative Council, which is carried out directly, generally, freely, secretly, honestly and fairly in the Unitary State of the Republic of Indonesia based on Pancasila and the 1945 Constitution of the Republic of Indonesia. The existence of the Election occupies a strategic position for a number of reasons, namely, the Election is the most important mechanism for the continuation of representative democracy, the Election is an indicator of a democratic state, and has broad implications for the life of a country (Sigit Pamungkas, 2011).Elections are about choosing carefully, thoroughly and thoroughly according to the conscience of a representative who can carry out the mandate and carry out the will of his voters (Sodikin, 2014, p.2)
Law Number 7 of 2017 concerning General Elections, in the third paragraph of the general explanation, emphasizes the importance of the principles of direct, general, free, secret, honest, and fair (Luber dan Jurdil). It is stated that Luber and Jurdil elections are an absolute requirement for realizing qualified, trustworthy representatives who can

optimally carry out the functions of the legislative institution. The implementation of good and quality elections will, in turn, increase the degree of healthy competition, participation, and stronger and more accountable representation.

Article 3 of Law Number 7 of 2017 concerning General Elections stipulates that in organizing elections, election organizers must implement elections based on the principles as referred to in Article 2 and their implementation must fulfill 11 (eleven) principles, namely: 1) independent, 2) honest, 3) fair, 4) legal certainty, 5) orderly, 6) open, 7) proportional, 8) professional, 9) accountable, 10) effective, and 11) efficient. The existence of these principles is part of the system of values, ethics, and behavioral guidelines that must be adhered to by every election organizer to realize the independence, integrity, and credibility of election organizers.

Further explanation of these eleven principles is provided in Election Organizer Honorary Council (DKPP) Regulation Number 2 of 2017 concerning the Code of Ethics and Guidelines for Election Organizer Conduct. The DKPP Regulation refers to the Election Organizer Code of Ethics.

One of the principles of holding elections is legal certainty. This principle is closely related to one of the objectives of a law. There are three objectives of law, namely: certainty, justice, and benefit, which are a series of interconnected ones. Legal certainty is a manifestation of the imperative obligation of election organizers to implement the provisions contained in the legislation. In the Regulation of the Election Organizer Honorary Council (DKPP) Number 2 of 2017 concerning the Code of Ethics and Guidelines for Election Organizers' Conduct, Article 6 paragraph 3 letter a states that legal certainty means that in the implementation of elections, Election Organizers carry out their duties, functions, and authorities in accordance with the provisions of laws and regulations. 2024 is a very important year for the Indonesian nation. For the sixth time during the reform era, elections are held as a means to realize people's sovereignty in a democratic state government.

The stages of the 2024 Simultaneous Elections begin 20 months before the voting (February 14, 2024), namely on June 14, 2022. Regulation of the General Election Commission (PKPU) Number 3 of 2022 concerning the Stages and Schedule for the Implementation of the 2024 General Elections, Article 3 regulates the stages of the implementation of the Elections including:

1. Program and budget planning and preparation of regulations for implementing elections;
2. Updating voter data and compiling voter lists;
3. Registration and verification of election participants;
4. Determination of election participants;
5. Determination of the number of seats and determination of electoral districts;
6. Nomination of president and vice president and members of the DPR, DPD, provincial DPRD, and district/city DPRD;
7. Election campaign period;
8. Quiet period;
9. Voting and counting of votes;
10. Determination of election results; and
11. The swearing-in of the president and vice president and members of the DPR, DPD, provincial DPRD and district/city DPRD.

The determination of political parties participating in the election along with their ballot numbers will be determined on December 14, 2022, for the implementation of the election which will be held on February 14, 2024 with a preparation period that has started from June 14, 2022. Meanwhile, the campaign period beginsThree days after the determination of the presidential and vice-presidential candidates, permanent DPD candidates, and the list of permanent candidates for members of the Indonesian House of Representatives (DPR RI), Provincial DPRD, and Regency/City DPRD, ending three days before the cooling-off period. The campaign period is set for 75 (seventy-five) days, from November 28, 2023, to February 10, 2024.

According to Law Number 7 of 2017 concerning General Elections, a campaign is defined as an activity carried out by election participants or other parties appointed by election participants to convince voters by offering their vision, mission, programs, and/or

self-image. Before the campaign begins, political parties participating in the election are prohibited from conducting campaign activities.

There is a twelve-month period from the date a political party is designated as an election participant until the campaign period. During this period, political parties participating in the election are not permitted to conduct campaigns, but they are permitted to conduct internal political socialization and education. Political socialization is an obligation that political parties must carry out at all times. The public needs to understand the political parties that will be competing in the 2024 election in depth. Socialization is an introductory effort delivered by political parties participating in the election so that they become known, understood, and internalized by the public. Simply put, "socialization" is a key word because it is related to general and broad information.

General Election Commission Regulation Number 15 of 2023 concerning General Election Campaigns in Article 79, contains:

(1) Political parties participating in the election can conduct political socialization and education within the political parties participating in the election before the election campaign period.
(2) Political socialization and education as referred to in paragraph (1) is carried out using the following methods:
    a. Installation of flags of political parties participating in the election and their ballot numbers; and
    b. Limited meetings, by notifying in writing to the KPU, Provincial KPU, and Regency/City KPU according to their levels and Bawaslu, Provincial Bawaslu, and Regency/City Bawaslu according to their levels no later than 1 (one) day before the activity is carried out.
(3) In the implementation of political socialization and education activities as referred to in paragraph (1), Political Parties participating in the Election are prohibited from including elements of invitation.
(4) In terms of political socialization and education as referred to in paragraph (1), Political Parties participating in the Election are prohibited from revealing the self-image, identity, special features or characteristics of Political Parties participating in the Election using the following methods:
    a. Distribution of Election Campaign materials to the public;
    b. Installation of Election Campaign props in public places; or
    c. Social media that contains the image and serial number of a Political Party Participating in the Election outside the Election Campaign period as referred to in Article 27 paragraph (1).

The regulation of socialization through Article 79 of General Election Commission Regulation Number 15 of 2023 concerning General Election Campaigns still contains a vague interpretation of the norm. There is no significant explanation or/and a clear and focused explanation explaining the meaning of the norm in the implementation of socialization and political education within political parties. The phrase "prohibited from containing elements of invitation" implies sanctions, but there is no further explanation regarding sanctions for this prohibition. Furthermore, Article 4 prohibits methods that are not permitted, but does not specify the form or method of socialization that may be used by election participants.

Regulations regarding the installation of promotional materials such as billboards and banners by election participants are unclear, creating vague norms that lead to legal uncertainty. Normatively, legal certainty occurs when regulations are created and enacted clearly and logically. Clear means that they do not give rise to ambiguity (multiple interpretations) and logically, they do not create conflict or ambiguity within the normative system.

Based on the above, the author has written a legal paper entitled: LEGAL CERTAINTY OF THE IMPLEMENTATION OF ELECTION PARTICIPANT SOCIALIZATION BEFORE THE 2024 ELECTION CAMPAIGN PERIOD (based on Article 79 of the General Election Commission Regulation Number 15 of 2023 concerning the General Election Campaign).

Based on the background above, 2 (two) research problems can be formulated as follows:

1. What is the legal certainty regarding the implementation of socialization of political parties participating in the 2024 Election before the campaign period for the 2024 Election?
2. How will political parties participating in the election conduct outreach before the 2024 election campaign period?

2. RESEARCH METODOLOGY

In legal science, there are two types of legal research: normative legal research and empirical legal research. This thesis utilizes normative legal research. Normative legal research is part of positive law, consisting of legal regulations and norms established by the state or authorized parties. Legal research is conducted to find solutions to emerging legal issues, namely by providing prescriptions regarding what should be the case regarding the issues raised.Efendi, 2014, p.2).

Research methods are the main means in the development of science. (Zainuddin Ali, 2011, p.17).In practice, normative law serves to regulate societal behavior in realizing established social goals. This is highly relevant to the issues raised in this research, namely the legal certainty of implementing socialization for political parties participating in the 2024 election prior to the campaign phase of the 2024 election (based on Article 79 of General Elections Commission Regulation Number 15 of 2023).

3. RELATED RESEARCH/LITERATUR REVIEW

Research by Muhammad Nur Ramadhan, from General Election Supervisory Agency of the Republic of Indonesia, analyze the implementation of alleged treatment of election crimes in the implementation of election 2019. There are several weaknesses in the handling of alleged election crimes through the Integrated Law Enforcement Center (Sentra GAKKUMDU), first related to differences in understanding among the elements in Sentra Gakkumdu and both patterns of relations between Sentra Gakkumdu, become One of the obstacles indicators in election criminal law enforcement.

4. RESULTS AND DISCUSSION

4.1 Legal Certainty for the Implementation of Socialization of Political Parties Participating in the Election Before the 2024 Election Campaign Period

Elections are an important means of demanding accountability from public officials. Through elections, it is hoped that the ongoing political process will produce a legitimate government, democratically elected and truly representing the interests of the public as voters. Democratic elections that are particular in nature are merely authoritarian political democracy that eliminates the essence of democracy. 2. The Principle of Equality. Democratic elections must be able to guarantee equality between each election contestant in competing. One important element that will hinder this principle of equality is the power and strength of resources held by election contestants. 3. The Principle of Freedom. In democratic elections, voters must be free to determine their political stance without pressure, intimidation, and the lure of certain gifts that will influence their choices. 4. The Principle of Secrecy. Whatever politics taken by voters, must not be known by any party, not even the election committee. Confidentiality as a principle is closely related to a person's freedom of choice. 5. The Principle of Transparency.

Analyzing with the theory of the rule of law, the legal basis of the rule of law in Indonesia is contained in Article 1 Paragraph (3) of the 1945 Constitution of the Republic of Indonesia which states that Indonesia is a rule of law. A rule of law is a state that upholds the supremacy of law as the main foundation in the administration of state and government. In essence, a rule of law also adheres to the meaning that every decision

and action of the government must be based on law and will alone.
This is emphasized in Article 2 paragraph (1) of the 1945 Constitution of the Republic of Indonesia which states that "Law is regulated by the 1945 Constitution of the Republic of Indonesia as the government. Law is one of the important elements in national life as stated by Sri Soemantri Martosoewignyo, that a country categorized as a state of law must have the following elements: (Martosoewignyo, 2012, p.29).The most important element in a state based on the rule of law is the attachment of state organs to statutes and laws, therefore statutory regulations or in a broader context, laws, must be formulated clearly, not open to multiple interpretations, and able to create legal certainty. Likewise, according to Hans Kelsen, who in his view said that the concept of the rule of law (state based on the rule of law) which means law enforcement, then: (1) the law is enforced for the sake of legal certainty; (2) the law is used as the main source for judges in deciding cases; (3) the law is not based on wisdom in its implementation; and (4) the law must be dogmatic. (Riyanto, 2012, p.377).
Analyzing through the theory of legal certainty is interpreted normatively when the condition is that a regulation is made and promulgated in writing and regulates something logically and definitely, then it can be seen that legal certainty is one part of the purpose of law, so that one of the purposes of law is as an effort to realize certain and fair laws. Furthermore, the achievement of legal certainty for everyone is seen when the consequences can be predicted when carrying out a legal action.Thinking about the background of the presence of progressive law, especially in law enforcement, shows that the facts are not entirely a sense of community justice. A basic character of progressive law is where the law is for humans and not against them (humans are for the law). (Indradewi, 2013).
Legislation with the types and hierarchy stipulated in Article 7 can be seen as a manifestation of the scope of state authority in the context of a "legal state" because the organs that issue legislation in the hierarchy are all within the framework of the trias politica. Legislation with the types and hierarchy stipulated in Article 7 is a regulation that in itself has normative meaning (regels). Legislation within the hierarchy must be made with quite strict formal requirements, which require, for example, the existence of an Academic Paper, as well as certain procedures that require participation. Meanwhile, policy regulations do not have strict procedural requirements.
Legislation is a written regulation that contains generally binding legal norms and is formed or stipulated by state institutions or authorized officials through procedures stipulated in the Legislation. Hernawati & Suroso, also provide an explanation that what is called legal certainty is a guarantee that the legal norms can be implemented properly. Therefore, legal certainty aims at efforts to regulate legal norms in legislation formed by parties, state bodies that have authority and authority, so that the norms, legal rules have a legal basis that can reflect legal certainty. so that these rules have a legal aspect that can guarantee the reflection of legal certainty, then the law can function as regulations that must be obeyed (Suroso, 2020)Legal certainty is an inseparable part of law, especially for written law. Law without certainty will lose its meaning because it can no longer be used as a guideline for behavior for everyone (Ubi jus incertum, ibi jus nullum: where there is no legal certainty, there is no law). (Mertokusumo, 2010).
The Election Organizer, namely the General Election Commission, in carrying out the implementation of the Election must be carried out in accordance with statutory regulations, for socialization activities carried out by political parties, before being included in KPU regulations, this has been regulated first in the Law and then lowered into KPU Regulations, in KPU regulations it should be regulated more clearly regarding socialization activities carried out by political parties participating in the Election.
Legal certainty is something that can only be answered normatively based on the applicable laws and regulations, not sociologically, but normative legal certainty is when a regulation is made and enacted with certainty because it regulates clearly and logically in the sense that it does not give rise to doubt (multi-interpretation) and is logical in the sense of being a system of norms with other norms so that it does not clash or give rise to norm conflicts arising from uncertainty.

4.2 The Process of Political Parties Participating in the Election in Conducting Socialization Before the 2024 Election Campaign Period

Democratic and constitutional elections require and require the independence of election organizers, as referred to in Article 22 E paragraph (5) of the 1945 Constitution of the Republic of Indonesia, namely "General elections are held by a general election commission which is national, permanent and independent", then the definition of election organizers as per the legal considerations of the Constitutional Court decision No. 11/PUU-VIII/2010 concerning the Judicial Review of Law Number 22 of 2007 concerning Election Organizers confirms the following: The clause "a general election commission" in the 1945 Constitution of the Republic of Indonesia does not refer to an institution, but refers to the function of holding general elections which are national, permanent and independent.

The function of organizing general elections is not only carried out by the General Election Commission, but also includes the general election supervisory body in this case, Bawaslu, which is a unified function of organizing general elections that is national, permanent, and independent. The initiative to change Law Number 22 of 2007 concerning General Election Organizers as amended by Law Number 15 of 2011 concerning Election Organizers by the DPR is inseparable from public participation related to the implementation of elections.

Bawaslu is the abbreviation for Election Supervisory Agency. Bawaslu is a state institution whose primary duty and function is to oversee all stages of elections and general elections throughout the territory of the Unitary State of the Republic of Indonesia.In the history of elections in Indonesia, the term "election supervision" only emerged in the 1980s. The first elections were held in Indonesia in 1955, but the term "election supervision" was not yet known. During this era, trust was built among all participants and citizens regarding the election process, which was intended to establish a parliamentary body, then known as the Constituent Assembly.The election supervisory body is hierarchical. The Provincial Election Supervisory Agency (Bawaslu) and the Regency/City Election Supervisory Agency (Bawaslu) share the same hierarchical nature in regional government units with special or exceptional status, as regulated by law. Bawaslu, Provincial Election Supervisory Agency (Bawaslu), and Regency/City Election Supervisory Agency (Bawaslu) are permanent. The Subdistrict Election Supervisory Agency (Panwaslu), Village/Subdistrict Election Supervisory Agency (Panwaslu), Overseas Election Supervisory Agency (Panwaslu), and Polling Station (TPS) supervisory bodies are ad hoc.

In its duties related to efforts to take action against election violations, Bawaslu receives, examines, and reviews allegations of election violations; investigates allegations of election violations; determines allegations of election administration violations, alleged violations of the Election Organizer code of ethics, and/or alleged election crimes; and decides on election administration violations. Meanwhile, Bawaslu takes action against election process disputes through the following tasks: receiving requests for resolution of election process disputes; formally and materially verifying requests for resolution of election process disputes; mediating between disputing parties; conducting an adjudication process for election process disputes and deciding on the resolution of election process disputes.

The General Election Supervisory Body or Election supervisory body was deliberately formed to oversee the stages of the election implementation, receive complaints, handle cases of administrative election violations and criminal election violations based on levels in accordance with statutory regulations. With the main authority being to oversee the implementation of election stages, receive complaints, and handle cases of administrative violations, criminal election violations and code of ethics. There are 4 handling of election violations handled by Bawaslu, namely handling administrative violations, criminal violations, violations of the code of ethics and other violations.

During the socialization period, there were several activities carried out by political parties participating in the election, which actually could not be carried out, namely holding concerts featuring famous artists and then inviting the public to attend by holding door prize draws and distributing clothes with nuances of pictures and serial numbers, which should have been carried out during the campaign stage. There were activities carried out by political parties participating in the election in its implementation by installing props such as billboards or banners in public places containing an invitation to vote for one of the candidates which should have been carried out during the campaign stage.

Supervision is inseparable from fraud that occurs during the stages of the election implementation in various activities carried out by political parties participating in the election. For socialization activities carried out by political parties participating in the election, related to the delivery of socialization through the installation of props such as billboards and banners on the streets or in public places, if the installation is not in accordance with the provisions, it can only be handled through the Regional Government, namely the Civil Service Police Unit (Satpol PP), for example, such as Denpasar city regional regulation number 1 concerning public order, article 11 letter h, namely every person and / or legal entity is prohibited from: Attaching leaflets, posters, pamphlets, flags or printed cloth, banners, billboards, and the like to trees, traffic signs, street lights, green lanes, recreational parks, and other facilities, except with the permission of the Mayor or appointed official (Denpasar City Regional Government Regulation Number 1 Concerning Public Order Article 11 Letter h).

Only through general provisions, namely regional regulations, can enforcement be carried out on the installation of campaign materials in public places, because the rules regarding the installation of inappropriate campaign materials and sanctions for prohibitions imposed by political parties participating in the election during the socialization period are still not clearly regulated. Bawaslu, as the election supervisor during the election implementation stage, cannot take firm action, because the rules containing violations committed by political parties participating in the election during the socialization period have not been regulated.

Satpol PP cannot immediately take down billboards and banners installed by political parties participating in the election, because if billboards and banners have been installed and have been licensed or paid for, there will be problems in taking down the billboards.Regulations governing sanctions for violations committed during the implementation of socialization, which can be handled by election supervisors, either through KPU or Bawaslu regulations, do not yet exist to date.

The provisions of sanctions in a statutory regulation are related to the content and nature of the legal rules. Legal rules (legal norms) can be divided into: 1. legal rules containing commands (gebod); 2. legal rules containing prohibitions (verbocf); 3. legal rules containing permissions (mogen). (Soekanto, 2010, p.34).Pospisil emphasized the need to include sanctions in legislation more explicitly. According to Pospisil, there are four legal attributes, namely: 1. the existence of authority; 2. the existence of an objective to enforce the law universally; 3. the existence of rights and obligations (obligatio); 4. the existence of sanctions. (151-157)

The implementation of elections as a concrete manifestation of the legal abstraction known as popular sovereignty allows the people to demonstrate their will (political will), namely, most concretely, choosing a leader. There is a channel for the people to express their desire to choose who they want to lead them. The people who choose may choose themselves. No one knows the desires of every person entitled to vote in the voting booth. Thus, elections as a concrete manifestation of legal abstraction have many channels. These channels include the direct election of the President and Vice President as a pair. Elections are also a means for the people to choose their representatives. The representatives elected through these elections will carry out the function of oversight. These elected representatives will channel the political aspirations of the people who elected them. These elected representatives then have the power to make laws. Laws and regulations, or public policies that have acquired legal form and whose content has been transformed into legal content or substance, are created by the people's representatives elected through elections and then become the foundation for all parties in the Unitary State of the Republic of Indonesia in carrying out their respective functions. This means that elections, as a tool, have enabled the formation of a foundation for working.

Analyzing with the theory of democracy, where democracy is a concept that means a government where the highest power (or sovereignty) is in the hands of the people or it is often said that democracy is government by the people or government by the majority. Etymologically, democracy means government of the people or the people in power. Democracy is defined as government by the people or "government by the people" or government based on agreement and political equality (as government with consent and political equality). The form of democracy based on Rousseau's thoughts based on

liberalism and individualism has influenced and colored democracy in the Western world. This understanding is known as Rousseau's "volkssouvereiniteit", which focuses on individual freedom. This is understandable, because this understanding of western democracy is the result of opposition driven by the spirit of individualism against the absolute system of government and which culminated in the French Revolution in 1789.Hatta, 2014,20).

Analyzing with the Theory of Justice is essentially a relative concept, everyone is not the same, justice according to one is not necessarily fair for another, when someone asserts that he is doing justice, it must of course be relevant to public order where a scale of justice is recognized. In Indonesia, justice is described in Pancasila as the foundation of the state, namely social justice for all Indonesian people. In the five principles are contained values that are the goals of living together. Pancasila in the perspective of ideological conflict. Legal development must be a top priority to reduce the occurrence of violations and crimes, especially foreigners residing in Indonesian territory. (Manika, 2023).

These values of justice must be a foundation that must be realized in living together as a nation to realize the goals of the state, namely realizing the welfare of all its citizens and all its territories, educating all its citizens. Likewise, these values of justice are the basis for relations between nations in the world and the principles of wanting to create order in living together in relations between nations in the world based on the principle of freedom for every nation, eternal peace, and justice in living together (social justice). The problem of justice is a complex problem that can be found in every society. Law has two main tasks, namely achieving legal certainty and achieving justice for all people. Among the many thoughts and concepts of justice, one concept of justice that is quite relevant is as conceptualized by Roscoe Pound, which is later known as sociological justice; justice based on customs, culture, behavioral patterns and relationships between people in society. (Santoso, 2014, p.97). Legal justice for society is not merely formal-procedural justice, justice based on rigid normative rules that are far from morality and human values. The opposite of formal-procedural justice is substantive justice, namely justice whose measurement is not quantitative as appears in formal justice, but qualitative justice which is based on public morality and human values and is able to provide satisfaction and happiness for society. (Ibid, p.98).

As laws and regulations enforce compliance, sanctions are included in these regulations. In carrying out its duties, Bawaslu has two responsibilities: prevention and enforcement of violations. Therefore, Bawaslu prioritizes prevention-based election supervision to address various potential violations.

Supervision is carried out by prioritizing preventive measures by issuing letters of appeal, conducting outreach to political parties at all levels, including providing an understanding of the rules of socialization from both the KPU Regulations and Bawaslu Regulations and Appeals so that political parties and prospective members of the DPR and DPRD understand the rules of socialization so as to minimize the potential for alleged election violations.

Election supervisors, who are part of the election organizers, have issued early warnings to political parties participating in the election, from the central level down to the village/sub-district level, to ensure compliance with applicable regulations through written communication and in-person communication. This early warning aims to minimize problems during the installation of billboards and banners, as well as during outreach.

5. CONCLUTION

1. Legal certainty in the implementation of socialization of political parties participating in the Election before the 2024 election campaign period, in Article 79 of the General Election Commission Regulation Number 15 of 2023 concerning the General Election Campaign, requires a clear and directed explanation that explains the meaning of the norms in the implementation of socialization activities. The regulation of the installation of socialization props such as billboards and banners by Political Parties Participating in the Election is not yet clear, this creates a vague norm (vague norm) which results

in legal uncertainty.

2. The process of implementing socialization activities carried out by political parties participating in the election before the start of the campaign stage, namely causing problems in its implementation because the norms regulated are unclear and do not clearly regulate sanctions for violations committed.

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Denpasar City Regional Government Regulation Number 1 Concerning Public Order Article 11 Letter h

CHALLENGE OF CROSS-CULTURAL CORPORATE COMMUNICATION IN ENGLISH WITHIN GLOBAL WORKPLACE

MAJOR (NCC) SUPREMAKAR MONDITHOKA[1)]

[1)] Associate Professor of English Retd,Government Degree College Malkajgiri,

Osmania University, Hyderabad, India

ABSTRACT

In the current globalized marketplace, English has emerged as the main communication medium in businesses in the workplace around the world. Although English has served as a common ground, cross-cultural differences in communication styles, attitudes, and perceptions tend to pose challenges that hamper organizational productivity, teamwork and employee morale. This paper will look at some of the major pitfalls of cross-cultural corporate communication in English when it comes to multinational organizations such as misinterpretation of meaning, and various communication norms, hierarchical perception and non-verbal cues. By means of an integrative interpretation of the available literature and through case-related reflections, the research reveals linguistic and cultural obstacles to efficient interaction. A qualitative approach based on secondary data was used and entailed a synthesis of academic publications and organizational reports. The results suggest that being skilled in English is not enough; cultural intelligence and intercultural preparation, inclusive communication strategies are no less important to eliminate miscommunication. Of great importance is a focus on practical solutions, including adaptive leadership, intercultural workshops, and digital communication tool application. The paper will conclude that in the future global workplace, intercultural competence, in addition to English proficiency is needed in order to maintain productiveness and harmony. There are practical constraints form the use of secondary data and the lack of primary field information that can limit the contextual extrapolation. Future perspectives would require investigations based on empirical analysis and multinational case studies and the creation of AI-based communication support systems to maximize clarity in cross-cultural corporate environments.

Keywords*: Cross-cultural communication; English as a lingua franca; global workplace; corporate communication; intercultural competence; communication barriers.*

1. INTRODUCTION

The growth in the globalization of world economies has brought about a new phenomenon in organizational structures which is reflected in the fact that organizations have adopted the use of individuals with diverse cultural and linguistic backgrounds. The use of English as the global lingua franca seemingly adopted by multinational corporations (MNCs) is taking on the position of default language of communication. It enables employees to communicate across their borders, eases negotiations and helps global supply chains to run smoothly [1]. Situations like that of corporate communication that involve using English may not, however, pass without difficulties, especially where there exist other dominating cultural aspects. Communication in the global working environments is not just about grammar and vocabulary it is highly based on social conventions, cultural principles and situational expectancies that vary a great deal between areas.

The conflict between the communication styles in cultures is one of the key issues. To illustrate, Westernize, low-context business persons may prefer to use straight-forward verbal communication, whereas Asians, high-context individuals

use an indirect approach involving innuendo and connotation. When both parties are using English to communicate, the common language can obscure cultural differences and eventually result in misunderstandings, false feelings of disrespect or even the deterioration of working relationships. Equally, the place of hierarchy and power distance also influences the manner in which the employees use English. High power-distance ideals can adversely influence a workplace culture, with employees unwilling to challenge authority or openly disagree with announced opinions whereas, in low power-distance cultures, total open debate will be supported. It is these differences when not addressed that may cause misunderstandings when they hit on team working and organizational performances.

The rationale underlying the present-day importance of this subject matter can be explained by the increased awareness of the situation that global business success nowadays is decided not only by the technical knowledge and market planning but also by the skill to communicate across cultures. The repercussions of miscommunication in the workplace are very real as can be seen by delay in execution of projects, demotivated team morale and failed international alliances. With organizations making huge investment towards international expansion, the expenses of poor communications become all too evident. Thus cross-cultural communication in English has problems that should be grasped by both the scholarly and the functional concerns [10].

In addition, the workplace has been digitized thus introducing new aspects. Communication usually goes through digital instruments like emails, video conferencing and instant messaging, which makes it harder to interpret as well. An example is that accents, tone and non-verbal cues can be lost in online meetings and written messages may be perceived as ambiguous or rude. In spite of the fact that English may be called the unifying medium, the digital situation in most cases exacerbates the discrepancy rather than helps overcome it. Therefore, organizations have the challenge of overcoming both the linguistic and technological challenges.

The aim of the study is to find and examine the primary problems of cross-cultural corporate communication in English in the environment of the global workplace to consequently present the strategies that can be followed by the organization to enhance the effectiveness of communication [2]. To be more specific, the study aims at addressing three dimensions, including (i) linguistic proficiency and its effects on communication equity, (ii) cultural variations and their influence on communication behavior and (iii) the outcomes of organizational interventions, i.e., intercultural training, adaptive leadership and, digital communication instruments. By discussing these aspects, this paper will offer a contribution to the further discussion on whether there are opportunities to enable the multinational corporations to create more inclusive and productive culturally sensitive communication environments.

More importantly, this study positions English not as a neutral form of communication but as a socially and culturally grounded form of communication that engages with a variety of values and traditions. Although English enables people to cooperate there is an element to English usage that tends to be dictated by the local interpretations, hybrids of languages as well as the lack of fair accessibility to the fluent use of English. Therefore, promoting English proficiency is not enough and organizations cannot take this approach. However, the intercultural competence has to be stressed as an equally important part of the workplace communication. This two-pronged theory of language and culture is what highlights the cross-cultural communication issue in business in the present context of globalization [15].

The introduction lays groundwork to further look deeper into issues and alternative measures to the problems that pertain to cross-cultural communication in English. Its driving force is: the inherence of miscommunication in derailing organizational objectives, effective communication in fostering co-operation, innovation and staff satisfaction. These goals are in line with the general sense that global organizations should adapt to cultural diversity with the help of language policy, as well as with the help of the strategic interventions that lead to an understanding and inclusivity and, eventually, to success.

1.1 Novelty and Contribution

This proposed study has the novelty in its integrative approach to cross-cultural communication because it does not posit English as a common language, but rather represents a verb that cross communicates with organizational hierarchies, technological mediation, and cultural values. Unlike most of the available studies that concentrate more on language proficiency or cultural differences on their own, the present endeavour places the challenge in the context of language, culture, and workplace technologies. By conceptualizing English as a unifying means and a possible source of barrier, the research sheds light upon a subtle interpretation of communication processes within international firms [4].

The research has a second distinctive feature concerning the use of practical, organization-related approaches. The increased number of academic studies has not resulted in manifested works with definite applications within corporate situations, as most are theoretical. The present paper contributes to filling that gap by offering practical advice including intercultural training, adaptive leadership training, and the deployment of multilingual digital tools. Although it agrees with the necessity of linguistic fluency, the operations of an organization should also promote cultural intelligence and inclusiveness, both of which form the foundation of overcoming cross-cultural barriers.

The paper also proposes the notion that the solutions to such problems might be in the form of technology-aided communication in the future, e.g. tailored translation software, real-time cultural contextual decoding, and changeable communication environments. By introducing the idea of such innovations integration, this paper goes beyond the traditional method of language training and puts the communication challenges into the frame of the digital transformation [5].

The output of this paper can hence be summarized into three main fronts:

- Offers a comprehensive paradigm that links English language mastery, cultural variation and technology facilitation in inter-corporate interpersonal communications.
- Pointing to the organizational impact of miscommunication, as well as to suggest effective organizational action that is linguistically more competent and culturally-minded at the same time.
- Looking at potential innovations in the future, including AI-supported communication technology, which could help add to human intercultural expertise and promote a more inclusive workplace.

Finally, the paper is important in terms of theory and practice that it provides a more realistic understanding of the issues to be addressed in cross-cultural corporate communication in English and outlines future directions to help organizations to develop resilience, inclusivity, and future sustainability in the work environment.

2. RELATED WORKS

In 2021 N. Aflisia et.al., N. A. EQ et.al., and A. Suhartini et.al., [3] introduced the research on cross-cultural communication within a corporate setting has had an increasing significance due to the globalization and its influence on the organization structure. A lot of the studies focus on the importance of the English language as the communication medium used by international businesses. The English language is usually acquired as the corporate language; however, even the experience in language proficiency does not guarantee an effective communication process. Instead, issues tend to occur due to differences in culture communications, hierarchies, and implication of non-verbal and verbal expressions. The English language is a means of entering a gap between linguistic flaws, but, at the same time, often cultural intricacies will define whether the communication can be viewed as respecting, understandable, and successful.

According to the existing research, one of the main challenges consists of the different levels of English proficiency among the multinational employees. International students who have good fluency can dominate in the discussion and those with poor fluency can feel left behind or they may fear to participate. This bias also does not only influence the sharing of knowledge, but also lessens inclusivity in the team. The concept of linguistic inequality therefore, is commonly associated with organizational relationships as employees are not only known based on their technical skills but also based on their communicative ability in English.

In 2021 D. G. Broo et.al., O. Kaynak et.al., and S. M. Sait et.al., [9] proposed the cultural differences have also been known to be one of the major causes of communication breakdown. High-context communication is likely to entail indirect, unspoken rules and signals whereas the low-context culture refers to clear and direct communication. When one filters such opposite styles through English, the common language does not remove the differences between them, but tend to bring them out. Employees used to indirect communication cultures can be misinterpreted as hiding or vague and employees in the direct communication cultures can be misinterpreted as harsh and tactless. These differences influence the negotiations, team decision making and even the interpersonal relations at the organizational level.

Investigation into and rank and power distance has been shown to be another key dimension. In highly hierarchical oriented cultures, subordinates and employees are less likely to directly disagree with their superiors and especially when English is used to communicate [14]. By contrast, in societies where frankness is prized, the refusal to agree can be an indication of interest as opposed to insult. Having different backgrounds means when employees work using English as the common language, there will be more chances of misunderstanding. What passes as showing graciousness in one society might be misconstrued as being incompetent in another society thus causing strains that may break down the cooperation.

Research also points out the significance of non-verbal communication in cross cultural contexts. Gestural communication, eye contact, silence, tone etc. also differs across cultural boundaries and notes between cultures are frequently processed by English. In one case, an example could be that silence is a sign of respect and in another case, it could be a sign of distance. By the same token, body languages of signaling agreement in one society can be displaying refusal in another. When British employees use English as their primary source of communication, these unspoken cues are frequently deciphered improperly and this makes it all the more challenging to know one another around.

In 2023 Z. Ilma et.al., I. Wilujeng et.al., A. Widowati et.al., M. Nurtanto et.al., and N. Kholifah et.al., [14] suggested the increase in digital communication technologies has also come to the limelight in recent studies. Corporate correspondence is put on email, instant messaging and video chat more and more. These tools are efficient but they create new challenges. Written messages are also tone-less and are therefore subject to miscommunication. Video conferencing has the potential to exacerbate accents and speech clarity differences as well and synchronized communications in different time zones can slow down communication speeds and instill a sense of disinterest. The use of technology denotes a new level of complexity to intercultural communication despite sharing the same language.

When it comes to organizational output, studies repeatedly show that communication difficulties are correlated with decreased output and employee satisfaction, as well as an increase in strain in the working environment. The issue of miscommunication has been identified as a basis of project delays, failed negotiations and even loss of finances. On the other hand, organizations that invest in intercultural training and communication services feel their employees have improved morale, efficiency and innovativeness. The concept of communication is consequently gaining more importance as a cross-functional concern of organizations rather than an interpersonal matter.

Other equally recent sources also point to the increased appreciation of intercultural competence as a skill that is needed in the global workplace. Knowledge of languages, although significant, is not quite enough. Intercultural competence

means employees should: learn and accommodate different communication styles, accept differences in culture and be flexible in a collaborative setting. Firms that have formalized intercultural communication training programs have also been reported to have fewer misunderstandings, as well as an enhanced team cohesion. These results demonstrate that the companies should consider communication as not only linguistic problem but also as one of the cultural issues [6].

Another aspect that has recently come into discussion is how hybrid communication practices contribute to it, i.e. how the employees use a mixture of their native language and English, or local adaptation of the English language. Although this hybridization can help interactions to be less artificial they can also act as a hindrance to those who are not conversant with the localized English forms. This evolution of such hybrid forms, tells a lot about the dynamism experienced in global communication, but at the same time is a matter of debate in terms of inclusivity and standardization.

On the whole, the body of related studies demonstrates that the issues of cross-cultural communication in English are complex and they belong to different areas, namely, linguistic, cultural, hierarchical, and technological. The evidence of the literature is uniform that English is a functional platform of interaction but is not able to neutralize the kind of deep seated cultural differences. These differences are not instead expressed within subtle and significant forms that influence the meaning-making, expression and collaboration of employees in international teams. What all the studies have agreed upon is that an organization should no longer have the one-dimensional approach to English as a one-off quick-fix; it should rather build an all-encompassing approach to English that encompasses language training, cultural awareness and digital communication competence.

3. PROPOSED METHODOLOGY

In a bid to systematically explore challenges of cross-cultural corporate communication in English in the global workspace, this research employs a qualitative and exploratory research design. This is primarily aimed not only to find out the common obstacles that are identified in the multicultural organizations but also to derive a structured model which can help the organizations do the needful in order to have a successful communication [11]. The methodology involves the pooling of secondary literature sources through comprehensive review, thematic coding of the identified and isolated barriers and development of a framework using the analysis synthesis. By integrating these components, the study will make sure that the results will be both theoretical and practical.

The initial part of the methodology will be literature mapping. The relevant sources will be identified through peer-reviewed journals in communication studies, organizational behavior, human resource management and applied linguistics and reports by multinational corporations. At this stage, the groundwork is laid down to determine some of the common themes, including linguistic competencies, cultural patterns of interaction, hierarchical relations, and techniques of technological mediation. Organizational case studies are also reviewed and they add a real-life dimension to how communication issues affect performance and teamwork. Due to the involvement of several sources, this step reduces the risk of bias within the identified challenges, as they are not restricted to a specific sector or geographical cultural area [8].

The second step of the methodology focuses on thematic coding/classification. The information acquired in the literature search is logically divided into dimensions: linguistic difficulty, cross-cultural variance, hierarchical relationships, and technological revelation. All the dimensions are further divided into sub themes. As an example, under the linguistic category, there are sub-themes such as the English fluency gaps, hybrid communication practices and workplace anxiety relating to language. Among the cultural differences, there are such sub-themes as direct versus indirect communication, the high-context versus low-context preferences,

and attitudes toward disagreement. The coding process equips a systematic level of looking at complexity of English cross-cultural communication issues.

The third stage is that of framework development by the coded data, the research develops a conceptual model depicting the relationship of the linguistic, cultural, hierarchical, and technological factor. This model shows us the interrelationship that exists between these dimensions and how they lead to barriers in communication. culturally related deference to authority could overlap with linguistic insecurity, and further imbue employees with an unwillingness to self-expression. On the same note, non-verbal misinterpretations can potentially be magnified during virtual meetings when the mediating technologies are used. The framework will be developed in such a way that these interdependencies are recorded to provide a comprehensive picture as opposed to separate observations [7].

In order to develop an illustration of the methodology, a flow chart was created (see Figure 1) which illustrates chronological steps: Literature Mapping, Thematic Coding, Framework Development and Analytical Synthesis. The flowchart gives a clear picture of how the study takes off in collecting data to interpretation of data.

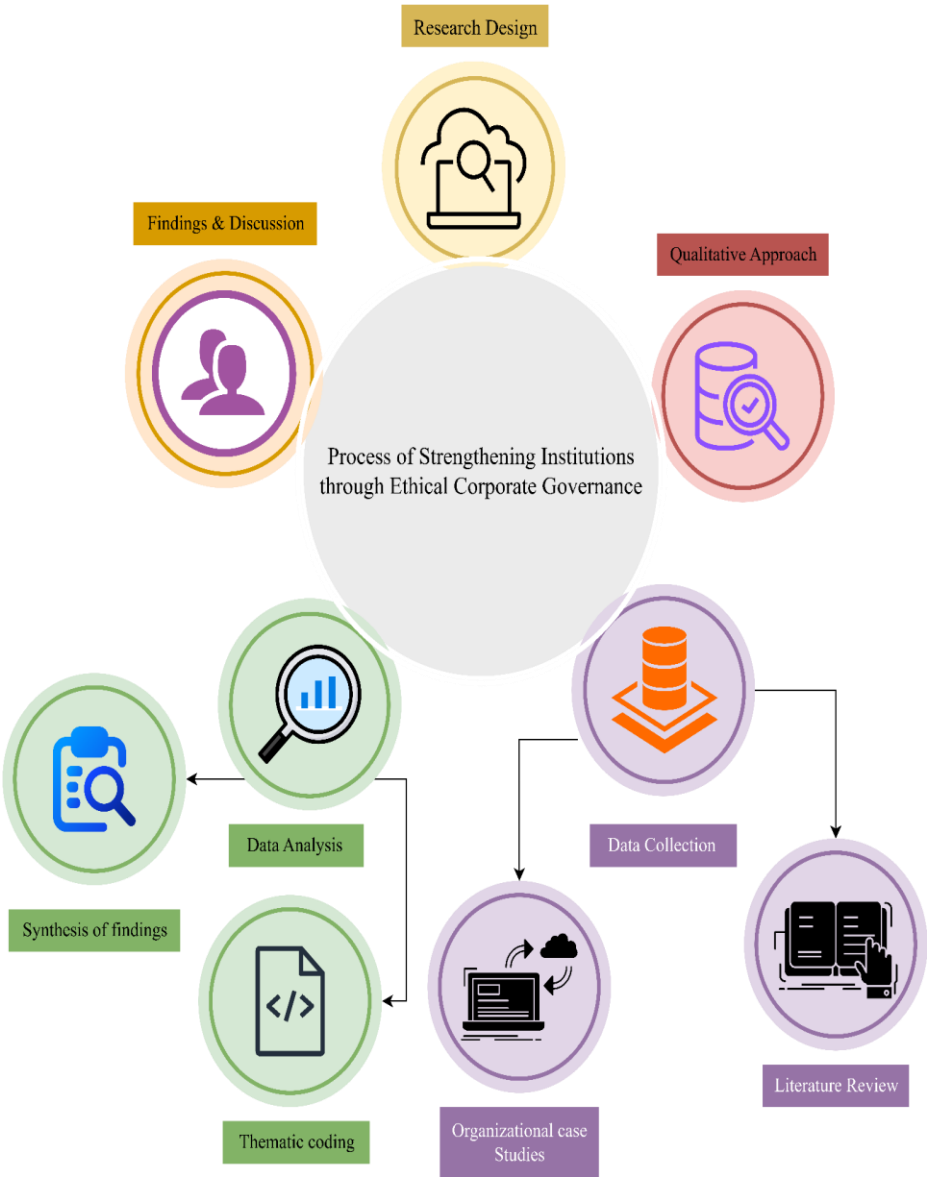

FIGURE 1: CROSS-CULTURAL ENGLISH COMMUNICATION IN GLOBAL WORKPLACES

4. RESULT & DISCUSSIONS

The results of the present research evince that the aspect of cross-cultural business communication in English in the global work environment is a complex problem, which is influenced by linguistic, cultural, hierarchical, and technological factors. A noteworthy fact presented by the analysis is that the level of linguistic proficiency is a direct determinant of participation equity in MNCs. Those who speak fluent English would tend to take over conversations leaving less eloquent employees alone in their knowledge, although they have a lot to contribute. This tendency was especially strong in the organizations where no other support communication mechanisms exists. The graph in Figure 2 indicates the high division in the level of communication participation among the fluent and non-fluent employees showing great disparities. It, therefore, demonstrates the importance of systematic training and inclusion.

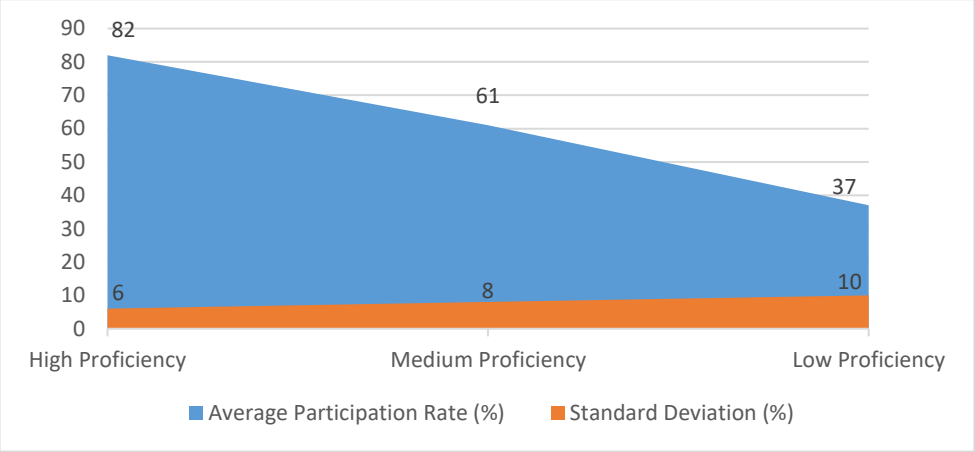

FIGURE 2: COMMUNICATION PARTICIPATION RATES BY ENGLISH PROFICIENCY

Besides the linguistics factors the cultural styles have a significant impact with regard to how the employees perceive and share the ideas. High-context communicators or those that demand direct communication would find it hard to work with low-context communicators who only demand the adaptation of explicit meanings. Such a discrepancy creates a misunderstanding because one party will see the other as a dicker and the other as being too straight forward. The results indicate that these cultural differences lead to low levels of trust and poor inter-human relationship. According to the information shown in Table 1, the extent of communication barriers caused by cultural differences depends heavily on the workplace environment, and therefore, universal solutions are turning out to be flawed.

TABLE 1: COMPARISON OF CULTURAL COMMUNICATION BARRIERS ACROSS WORKPLACE CONTEXTS

Context	Barrier Type	Impact on Communication
Low-Context Teams	Perceived Indirectness	Misunderstanding of intentions
High-Context Teams	Perceived Bluntness	Strained relationships
Mixed Teams	Style Conflict	Reduced collaboration effectiveness

Another interesting result would be the outcome of hierarchy and power distance. High power-distance cultures prove to produce employees who do not openly question authority and this may lead to underrepresentation of various views. Conversely, workers born in the low power-distance cultures would be more likely to object as opposed to creating tensions when it comes to undertaking meetings in

English. These two characters hold great ramifications on team performance as can be seen on Figure 3, which draws a comparison on the amount of ideas being contributed by teams of employees with different cultural backgrounds. This figure shows that high power-distance workers bring less into the English-mediated meeting in terms of new ideas demonstrating that cultural norms play an important role in behaviors that lead to communication.

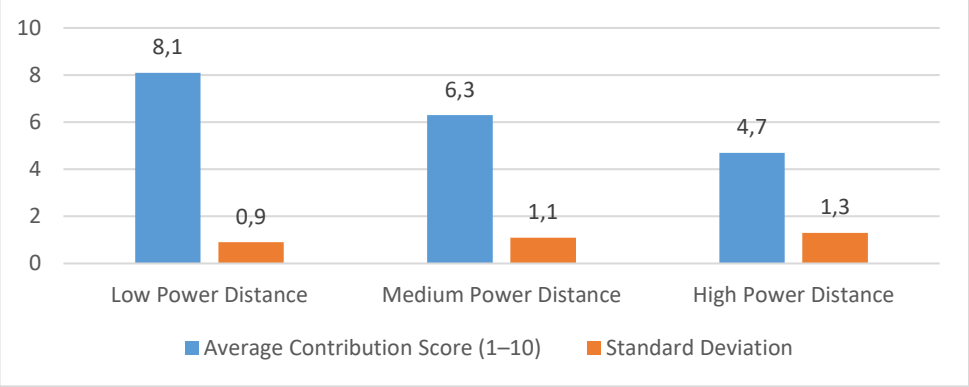

FIGURE 3: IDEA CONTRIBUTION LEVELS BY POWER DISTANCE ORIENTATION

The results also illustrate how non-verbal communication is also an essential yet undermined element in workplace environments where the English language is used. Facial expressive gestures and silence all differ in meaning depending on the culture that one is in, which creates confusion during the face-to-face and in virtual encounters. An example can be given that in one culture, silence can be seen to imply agreement whereby in another culture it will imply disapproval. This inconsistency minimizes the success of using English as a language of unity. The analysis also shows that digital mediums increase these difficulties, especially when one uses a virtual meeting, where it is challenging to interpret non-verbal cues, tone equal, and accents. In order to grasp this aspect to be considered, Table 2 presents the comparison of communication issues in real and virtual workplace environments, which reflects the transformations communication changes undergo due to technological mediation.

TABLE 2: COMPARISON OF COMMUNICATION CHALLENGES IN PHYSICAL VS VIRTUAL WORKPLACES

Workplace Type	Dominant Challenges	Communication Impact
Physical Meetings	Non-verbal misinterpretation	Misjudgment of intentions
Virtual Meetings	Accent and tone difficulties	Reduced clarity and engagement
Hybrid Meetings	Mixed interactional barriers	Unequal participation and confusion

The analysis also establishes that miscommunication is contributed to by the fact that the organization does not invest in intercultural training. Companies that organized training programs stated they achieved comparatively better collaboration results and inclusivity, in contrast to the companies that solely accounted the level of English fluency to determine the level of communication preparedness. Also, it is shown that there are hybrid types of English, containing certain elements of native languages, that makes the process of communication even more complicated due to unbalanced understanding of the message in multinational teams. The trend indicates that English in the global workplaces is not a neutral square but a practice that has been culturally embedded in various ways due to the impacts of different aspects [12].

The results emphasize the need to assume an integrative course of action that centers both linguistic training and intercultural competence acquisition. Organizations that have adopted such measures recorded an upward trend on the trust level, teamwork, and overall productivity. Figure 4 demonstrates the effect of intercultural training on the efficiency of the communication process, and it proves that there was a noticeable enhancement in the performance indicators in the team where systematic training was provided.

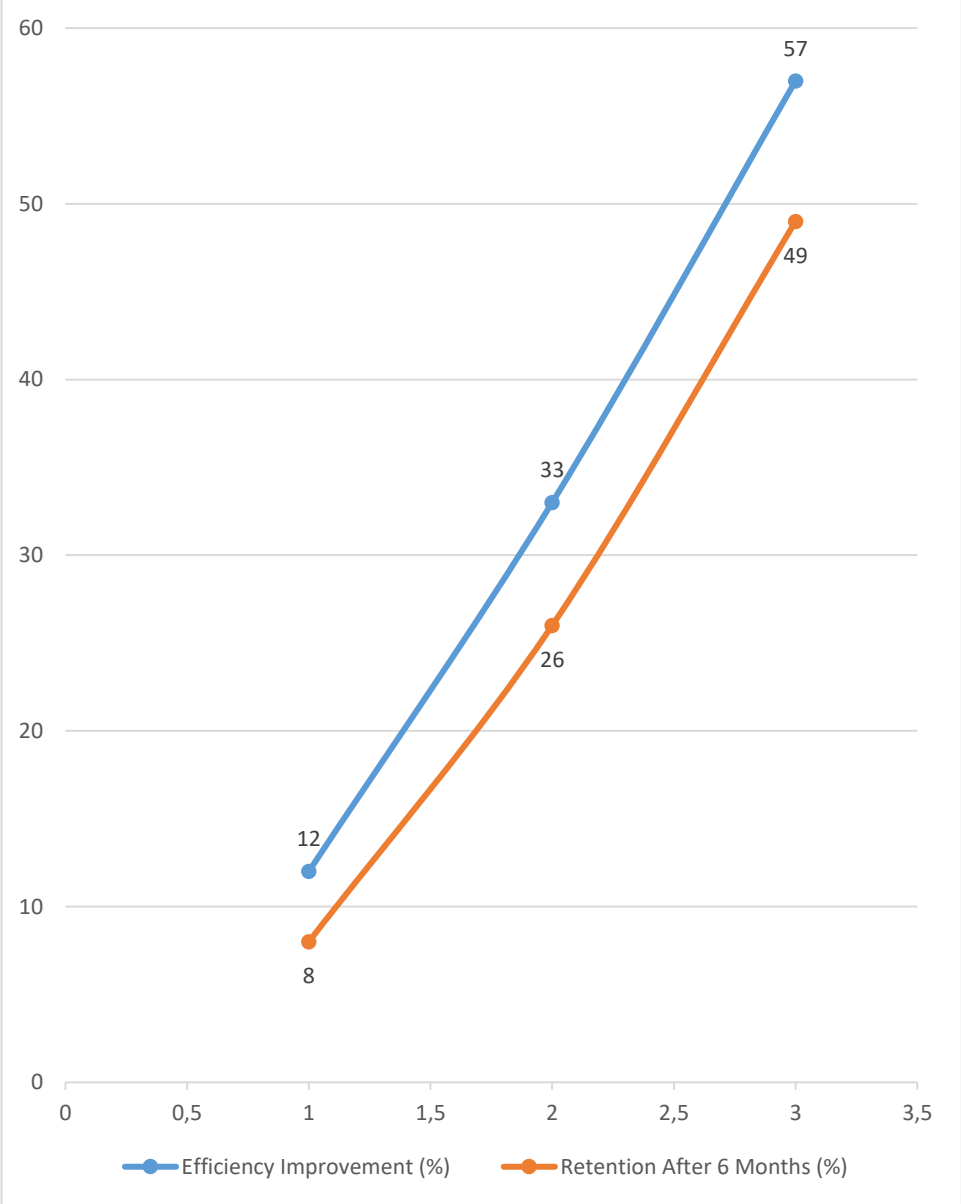

FIGURE 4: IMPACT OF INTERCULTURAL TRAINING ON COMMUNICATION EFFICIENCY

Combined, the findings of the present study help to underline the fact that the dilemmas of cross-cultural communication cannot be mitigated by just dwelling on the English language proficiency. What organizations have to do is to invest in the intercultural competence, adaptive leadership practices, and friends that will support the multidimensionality of communication at the workplace. This way, multinational corporations will be able to convert an obstacle like communication barriers into inclusion and innovation.

5. CONCLUSION

The research findings show that although English is the global corporate lingua franca, it cannot be effective enough when used alone, in the multicultural working environments [13]. Transnational differences in communication preferences, perception of hierarchy, and non-verbal signals are issues that have continued to pose problems that when not dealt with may result in inefficiencies and lack of cooperation. Organizations are thus required to incorporate intercultural competence training, adaptive leadership, inclusion of inclusive digital communication tools to establish balanced communicative environment.

Practical constraints of the research include secondary research, and reliance on chosen editions of existing books and articles instead of a primary field research as a major factor that limits the provision of context-specific analysis. Also, the research results might not reflect all sector-specific peculiarities of communication. The future directions need to center on empirical work by way of multinational case studies, interviews with employees, and cross-industry comparisons. Such integration with AI-based tools as real-time interpretation services, cultural context compatibility engines, and the like, is also a potential avenue of improvements in clarity between international communication partners. Using the intercultural intelligence in combination with language proficiency, companies can create more cohesive more inclusive workplaces in the global era.

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TRI HITA KARANA IN THE NYASTRA TRADITION:
WELCOMING SARASWATI HOLY DAY

Ida Bagus Made Wisnu Parta[1)], Desak Putu Eka Pratiwi [2)], and Made Rusmiati[3)]

[1)] *Dwijendra University*
wisnu.goes@gmail.com
[2)] *Mahasaraswati University*
desakekapratiwi@gmail.com
[3)] *Dwijendra University*
maderusmiatiii28@gmail.com

ABSTRACT

Bali has many diverse traditions, including traditional ceremonies, festivals, religious rituals, arts, and many more. The traditions in Bali are inseparable from the teachings of Tri Hita Karana. So that the tradition continues to exist and thrives creating harmonious vibrations in Balinese society. One of the traditions in Bali to commemorate the holy day of Saraswati, namely Nyastra means pursuing literature which tends to have an implicit meaning of "believing in literature". A person who performs nyastra performs brata (fasting) activities. The purpose of this study is to describe the implementation of the teachings of Tri Hita Karana on the holy day of Saraswati in preserving the tradition of Nyastra. The research method used is a literature study and semiotic theory. The results of this study are to interpret the teachings of Tri Hita Karana on the holy day of Saraswati in preserving the tradition of Nyastra. The implementation of the forms of Nyastra tradition to prepare for the holy day of Saraswati, namely cleaning lontar, reading and interpreting lontar texts, and writing lontar. The relationship between the Nyastra tradition as a form of symbiosis with the celebration of Saraswati Day can be interrelated to create harmony in worshiping knowledge.

Keywords*: Tri Hita Karana; Saraswati; Nyastra Tradition.*

1. INTRODUCTION

Bali has many diverse traditions, including traditional ceremonies, festivals, religious rituals, and arts. The traditions in Bali are inseparable from the teachings of Tri Hita Karana. Tri Hita Karana is a Hindu philosophy and cosmological concept, especially in Bali, which means “three causes of welfare or happiness.” This philosophy teaches three essential harmonious relationships for life: Parahyangan (the relationship between humans and God), Pawongan (the relationship between humans and their fellow humans), and Palemahan (the relationship between humans and the natural environment) (Parta, 2019).

The Balinese people still firmly adhere to the philosophical concept of Tri Hita Karana, ensuring that these traditions continue to exist and flourish. Some popular examples of traditions in Bali include: Ngaben, Galungan, Melasti, Nyepi, Omed-Omedan, Perang Pandan, and Nyastra ceremonies. Tradition is defined as a custom that has been practiced for a long time and continuously, and has become part of the life of a community in a country, culture, time, and religion (Sudirana, 2019). The Nyastra tradition is one of the traditions that is still practiced today to support Saraswati Day. The relationship between the Nyastra tradition and the holy day of Saraswati creates a harmonious vibration in Balinese society.

The most well-known Nyastra tradition refers to the activity of writing letters and literature in Bali, especially in the form of nyurat lontar (writing on palm leaves), which focuses on the preservation of the Balinese language, script, and literature. This activity is not just reading, but also interpreting and giving meaning to the text, which is often done by community groups (sekaa) as part of local wisdom. Based on the preservation of the Balinese language, script, and literature centered on the lontar form. Thus, the preservation of lontar is also part of nyastra, by cleaning and caring for the lontar.

2. RESEARCH METODOLOGY

Illustration This study uses the library research method with semiotics theory. Library research is a research approach conducted through searching, collecting, and analyzing various written sources relevant to the topic of study. The library research method or approach can be defined as a series of activities related to the methods of collecting library data, reading and recording, and processing research materials (Zed, 2003). These sources include books, scientific articles, journals, previous research results, and other documents that support the analysis. This approach was chosen because the issues studied are conceptual and cultural in nature, making them more suitable for analysis through literature and text review.

This research is classified as descriptive qualitative research. This is based on its main objective of describing phenomena and issues. The phenomenon described in this study is the Nyastra tradition in the world of semiotics. In semiotics (the science of signs), language is considered a “sign” that has signifying and signified components (Zoest, 1996: 2). To analyze signs, one must know exactly which aspects are material and which are mental. These two aspects are constitutive aspects of a sign; without one of these elements, there would be no sign and we would not be able to talk about it, or even imagine it. In the world of language, semiotics is considered a sign consisting of two inseparable elements, namely the signifier and the signified. The signifier is the material aspect of language, while the signified is the meaning (concept) that exists in the mind.

Using qualitative methods, the research will produce descriptive data in the form of letters so that no calculations are made. The literature study method is used to analyze certain traditions using a semiotic approach. This means that researchers will examine various literary sources (literature studies), such as books, articles, and other data to identify and interpret the meaning of the signs (semiotics) that exist in the tradition being studied. The literature study method explains that Nyastra traditions are not only carried out in activities related to Balinese language, script, and literature. However, preservation focuses only on the lontar form.

3. LITERATUR REVIEW

The Research related to Tri Hita Karana in the nyastra tradition welcomes the holy day of Saraswati, namely research in the form of proceedings entitled Harmonization of Tri Hita Karana in Geguritan Luh Lutung (Parta, 2019). This research contains Geguritan Luh Lutung, which is rich in life values, such as religious life (Hinduism) that gives rise to a philosophy of life in the form of Tri Hita Karana. Tri Hita Karana means the three causes of happiness. Tri Hita Karana consists of three elements, namely (1) the relationship between humans and God, (2) the relationship between humans and humans, and (3) the relationship between humans and nature. This concept is the philosophy of life of the Balinese people to maintain the balance of the universe and all its contents in order to create a prosperous and harmonious life. The problem in this study is how Tri Hita Karana is harmonized in Geguritan Luh Lutung. The purpose of this study is to analyze the harmonization of Tri Hita Karana in Geguritan Luh Lutung. The concept of Tri Hita Karana will be discussed in this study using semiotic analysis. Geguritan Luh

Lutung, with its Balinese cultural background and the spirit and soul of Hindu values as a product of Balinese society, needs to be considered in revealing its meaning. The results of this study are the forms of Tri Hita Karana harmonization, including the conception of humans and God in Geguritan Luh Lutung.

The text of the Luh Lutung poem states that humans are very noble creatures compared to other creatures of God, such as animals and plants. In addition, jinn, demons, and the like do not dare to harm humans. From a Hindu perspective, God has various names, such as: Ida Sang Hyang Widhi Wasa, Sang Hyang Tuduh, Sang Hyang Wenang, Sang Hyang Embang, Sang Hyang Agama, and so on. Even though He has many names, the essence is only one. God has many names because He has many attributes and functions. Brahma, Vishnu, and Shiva each have their own duties. Brahma is the creator (utpeti), Vishnu is the preserver (sthiti), and Shiva is the destroyer (pralina). Despite His various names, it is still believed that God is one, as stated in the sacred Vedic scriptures: Ekam Eva Adwityam Brahman, “there is only one, there is no other.” Tri Hita Karana is a Hindu philosophy and cosmological concept, especially in Bali, which means “three causes of welfare or happiness.” This philosophy teaches three essential harmonious relationships for life: Parahyangan (the relationship between humans and God), Pawongan (the relationship between humans and their fellow humans), and Palemahan (the relationship between humans and the natural environment).

Thus, the advantage of this study over previous studies lies in the teachings of Tri Hita Karana found in the Nyastra tradition. This tradition can be beneficial for Sasraswati Day because it aims to glorify the goddess Saraswati. The meaning of the Nyastra tradition is useful for glorifying knowledge as the embodiment of the goddess Saraswati.

4. RESULTS AND DISCUSSION

Tri Hita Karana in The Nyastra Tradition For Saraswati Day

Tri Hita Karana comes from the words “Tri” which means three, ‘Hita’ which means happiness, and “Karana” which means cause. Thus, Tri Hita Karana means the three causes of happiness. Tri Hita Karana consists of three elements, namely (1) the relationship between humans and God, (2) the relationship between humans and other humans, and (3) the relationship between humans and nature. This concept is the philosophy of life for the Balinese people to maintain the balance of the universe and all its contents in order to create a prosperous and harmonious life (Parta, 2017). By establishing these three relationships in a balanced manner, people can achieve happiness, prosperity, peace, and harmony in life, both in the physical and spiritual worlds.

The Meaning of Parahyangan in the Nyastra Tradition of Commemorating Saraswati Day

It describes the harmonious relationship between humans and God or Ida Sang Hyang Widhi Wasa. This can be realized through prayer, offerings (Yadnya), meditation, and religious ceremonies. In the Nyastra tradition, this can be seen when writing lontar with a pangrupak (small knife). The act of writing lontar requires the writer to sit quietly and focus on what is being written. This writing posture signifies brata or semedi for Nyastra, which means to study literature that tends to have the implied meaning of “believing in literature”. However, not everyone who studies literature is called nyastra. A person who practices nyastra performs brata (fasting). In this case, only someone who studies religious literary works (Ramayana, Mahabharata, Sarassamuscaya, etc.) with Hindu nuances (Sanskrit, Old Javanese, and Balinese) is called nyastra (Sugi Lanus, 2018). Outside of

Hindu-influenced religious literature, it seems very difficult for Balinese people to refer to someone as a nyastra.

The nyastra tradition interprets Sasraswati Day as a day to glorify and honor knowledge and wisdom, which is symbolized by the goddess Saraswati. Etymologically, the word Saraswati comes from the words ‘saras’ and ‘wati’. The word “saras,” which also comes from the Sanskrit root word “srs,” means “spring,” continuous, or something that flows continuously. Meanwhile, the word ‘wati’ means “one who has.” “Saraswati” is something that has or possesses the quality of flowing continuously, like the water of life and knowledge. Nyastra activities include prayers at temples, schools, and homes, offering banten (offerings) to books and lontar, and reading ancient lontar at night. This tradition also involves refraining from studying or reading the day after, as a symbol of self-purification called Banyu Pinaruh. “Banyu Pinaruh” comes from the word “Banyu Pangawruh,” which also means “holy water of knowledge” (which serves to purify and give vitality to life). One source of Saraswati literature is contained in the Saraswati Stawa mantra found in the Rig Veda. Stuti & Stava 839.1, namely:

Ong Sarasvati namas tubhyam Varade kama-rupini Siddharambham karisyami Siddhir bhavatu me sada.	I bow before Goddess Saraswati, Who bestows blessings in all forms, And success in all endeavors, May success continue to accompany me.
Pranamya sarva-devams ca Paramatmanam eva ca Rupa-siddhi-prayukta ya Sarasvatim namamy aham.	After bowing my head before all the Gods, And to the highest atman, I worship Goddess Saraswati, Who is beautiful, lovely, and wise.
Padma-pattra-visalaksi Padma-kesara-varnini Nityam padmalaya devi Sa mam patu Sarasvati.	Her eyes are wide open like lotus leaves, Her color is like the glow of a red lotus, The goddess who resides on a lotus, I beg for your protection.
Brahma-putri maha-devi Brahmanya Brahma-nandini Sarasvati samjnayani Prayanaya Sarasvati.	Daughter of Brahma, a great Goddess, Who harmonizes and delights the God Brahma, Goddess Saraswati, full of wisdom, Goddess Saraswati is the path of life.
Kavyam vyakaranam tarkam Veda-sastra-puranakam Kalpa-sidhini tantrani Tvat-prasadat samarabhet.	With Your majesty, You ease the path of learning, Through the Vedas, Sastras, and Puranas, As well as customs and Tantras, You are perfect knowledge.

The above sloka quote describes Dewi Saraswati as the manifestation of knowledge embodied in the Vedas, Sastra, Purana, and Tantra. The benefits of the Nyastra tradition for Tri Hita Karana, especially Parahyangan, are the harmonious relationships formed within the tradition that can preserve the sacred knowledge embodied in the lontar. By writing lontar, authors must practice brata and focus so that their creations are useful to society. The depiction of the goddess Saraswati is so beautiful that everyone is attracted to her, just as everyone wants to learn about knowledge. The depiction of the goddess Saraswati with various symbols is analyzed with the following meanings.

1. Veena/Kecapi/Damaru (Musical Instrument), as a symbol of: Art, music, culture, and sacred sounds (AUM). Meaning of Veena (Musical Instrument): Symbolizes harmony between the mind, intellect, and nature, as well as mastery of the arts that can entertain when the mind is chaotic.
2. Kitab/Lontar/Kropak (Veda), as a symbol of knowledge, literature, and wisdom. Meaning of the Book or Palm Leaf Manuscript (Veda): A repository of sacred teachings as a source of spiritual and material knowledge, to be passed on to future generations.
3. Genitri (Akshamala/Rosary), as a symbol: Control of the mind and eternal knowledge. Meaning of Genitri (Akshamala/Rosary): Eternal, unlimited knowledge, and a reminder for self-control during meditation or in the pursuit of enlightenment.
4. Lotus Flower, as a symbol of: The sanctity and purity of knowledge. Meaning of the Lotus Flower: A flower that grows from mud but still blooms beautifully, symbolizing the purity and beauty of knowledge that is beyond reproach, even in the midst of a dirty worldly environment.
5. Swan (Hamsa), as a symbol: Symbolizes wisdom and the ability to separate the good from the bad, such as the ability to separate milk from muddy water.
6. Peacock, as a symbol: Symbolizes authority, beauty, and elegance that arise from the mastery of knowledge.

The Meaning of Pawongan in The Nyastra Tradition of Commemorating Saraswati Day

It describes harmonious and good relationships between fellow human beings. This concept emphasizes the importance of maintaining harmony, mutual respect, forgiving mistakes, and working together in society. Good cooperation can be seen in the Nyastra tradition in supporting Saraswati Day. This form of cooperation in the Nyastra tradition is to care for and preserve palm leaves containing sacred literature. The semantic development of the word sastra no longer has connotations with sacred books or religious texts. Nowadays, the word literature has a broader meaning, namely a form of recording in language that will be conveyed to others. Basically, literary works are very beneficial for life, because they can give readers awareness of the truths of life, even though they are described in the form of fiction. If there were no Nyastra tradition, the lontar manuscripts, especially in Bali, would gradually become extinct and disappear.

These lontar manuscripts will remain preserved in line with the Balinese community's belief that they should not be “Tenget/Pingit” (untouchable) with their lontar manuscripts. This means that these lontar manuscripts can continue to be cared for, cleaned, and read. When studying lontar, do not be “Aja Wera” or “Aja Were,” which means do not be noisy, do not get drunk, do not be crazy. Aja Wera means that things considered sacred should not be discussed (Bahasa Bali nenten dados baosang), are too mature/old to be studied (bes wayah pelelajahane), and are taboo to learn. Moreover, the community joins in with joking remarks, saying, “Oh, you will become a priest.” Such remarks, which weaken the spirit, are the reason why young people do not like to read sacred texts. In Bali, someone who wants to study religious knowledge and read sacred religious texts must first undergo the Pawintenan Saraswati ceremony, which means that when they begin to study, they will be guided by the holy light of Sang Hyang Aji Saraswati. With His guidance, a person will have a clear, pure, and calm mind when studying.

Thus, the meaning of the Nyastra tradition in the Tri Hita Karana teachings, especially pawongan, is to preserve the lontar so that it can be read and passed on to the next generation. In addition, the Nyastra tradition can eliminate the stigma that lontar are sacred and mysterious because not all lontar contain sacred knowledge. However, there are lontar that only contain records of debts and land deeds. Therefore, lontar should be diligently cared for and read so that they are well preserved.

The Meaning of Palemahan in The Nyastra Tradition of Commemorating Saraswati Day

It describes the harmonious relationship between humans and their natural environment. Humans must preserve nature by not destroying it, keeping it clean, and caring for plants and animals, because humans are highly dependent on the natural environment. The Nyastra tradition is closely related to maintaining good relations with the environment and plants, especially the lontar palm tree, also known as the siwalan, ental, or tal tree. The Balinese people take great care of the siwalan tree. In addition to its leaves being useful for making lontar, its fruit is also useful for preventing dehydration because it is rich in water, aids digestion and relieves constipation, maintains kidney function because it helps with hydration, and controls blood sugar because of its fiber content. By caring for these siwalan trees, siwalan leaves, the main ingredient of lontar, continue to exist today. Lontar, as a writing medium for sacred literature, can remain preserved. The Nyastra tradition plays a very important role in welcoming the holy day of Saraswati.

Saturday (Saniscara) is the last day of Saptawara. Similarly, wuku Watugunung is the last wuku of the 30 wuku. On the last day, the last wuku, of the wuku cycle, Hindus are reminded to be silent for a moment, introspect, perform brata, while praising Ida Sang Hyang Widhi Wasa so that they will be blessed with knowledge as a foundation or basis for starting a more beautiful, more organized, more disciplined life in the new year, so that they can successfully achieve their true life goals. Saraswati is a symbol of awareness and enlightenment. Saraswati is symbolized as residing in sacred scriptures. Therefore, sacred scriptures are considered temples (candi pustaka, candi bahasa, candi sastra, or candi aksara) that are sacred places for Saraswati, where she resides (Oka Puspa, 2021).

In Hinduism, Saraswati herself is a symbol of noble knowledge, where sacred knowledge is the path for humanity to reach moksha (nirvana). In the kakawin Pūja Saraśwati, worship is emphasized both physically and spiritually. Physically, worship is carried out by offering flowers, which are a symbol of Ida Sang Hyang Widhi Wasa/God Almighty. As stated in Wirama Sarddhula cakepan 1b number 1 below:

Ong Sĕmbahku nihan ta tinghalana dé Sanghyang Pramésṭīnarī,
Wahyādyatmika pūja ningwang nguniwéh pūjottamékin sada,
Wahyā pūja sĕkar samit kṣada muwah tā puṣpa linggā caru,
Mwang tang dyatmika pūja bahiněněb yogādi wosmṣti.
Translation:
O Lord, witness my worship of Sang Hyang Pramestinari.
I worship you physically and spiritually, and I worship you with virtue.
Physically, I worship you with flowers and scatter them on the lingga
(your statue/pratima).
Spiritually, I worship you by practicing yoga (Adnyana, 2022).

In relation to this verse, it is explained that the rawi worships Sang Hyang Aji Saraśwati by using flowers and scattering them on the Pratima or pralambang of Sang Hyang Aji Saraśwati. Flowers have two important functions in Hinduism, namely as a symbol of God (Lord Shiva) and as a means of worship. As a symbol of God, flowers are placed on the tips of both palms, which are cupped when worshipping. After worshipping, the flowers are usually tucked behind the head (hair) or placed behind the ears. As a means of worship, flowers are used to fill ceremonies or offerings that will be presented to God or the sacred spirits of ancestors. For Hindus, flowers are used to show the purity of the heart to worship Sang Hyang Widhi Wasa and His holy light, the ancestors, and the Rishis. In Bhagavad Gita IX.26, it is explained as follows.
Patraṁ puṣpaṁ phalaṁ toyaṁ

Yo me bhaktyā prayacchati,
Tad ahaṁ bhakty-upahṛtam
Aśnāmi prayatātmanah.
Translation:
Anyone who prostrates themselves in devotion to Me, offering a leaf,
a flower, a piece of fruit, a sip of water,
I accept as devotion,
an offering from a pure heart. (Pudja, 1999: 239).

Meanwhile, in the Weda Pangasthana, God is also symbolized as a flower. The verse reads as follows:
Om puspa lingga maha devyam, maha pataka nasanam,
Somastanam sthito dewam lalata Brahma sarwapi.
Translation:
Oh, God in the form of a flower, most holy and unblemished, the great purifier of sins,
Hyang Widhi stands in the place of soma and on the foreheads of the priests (brahmins).

Flowers have also been important to Hindu society since ancient times. There is much evidence in lontar, kakawin, and other scriptures that mentions the importance of flowers. The evidence includes: flowers as a symbol of God's blessing. The main basis for offering sacrifices is sincerity or purity of heart accompanied by love, even if the offering is simple, such as a single flower. If it is based on accompanying love, then such an offering will be accepted by Hyang Widhi. Conversely, numerous and expensive offerings that are not based on sincerity will be futile, because there will be no good rewards for those who offer with ulterior motives.

Thus, the meaning of the Nyastra tradition in the teachings of Tri Hita Karana, especially palemahan, is to care for the siwalan tree, which is used as raw material for making lontar. If there are no more siwalan trees, the lontar will certainly become extinct. In addition, in the process of blackening the writing on the lontar, natural materials such as candlenut charcoal are used. Therefore, the Nyastra tradition is closely related to the teachings of Tri Hita Karana in order to celebrate the holy day of Saraswati.

5. CONCLUSION

The conclusion of this study is that: (1) Respect/Appreciation for Knowledge: Today is a moment to be grateful and respect knowledge, which is a sacred gift from God. (2) Freedom from Ignorance: Knowledge (Vidya) is used to free oneself from ignorance (avidya) and achieve true truth and enlightenment. (3) The Search for Wisdom: The nyastra tradition also aims to make individuals wiser and able to distinguish between good and bad, like a goose that can filter dirt from water. (4) Balancing Spiritual and Secular Knowledge: There is an exhortation to balance worldly (secular) knowledge with spiritual knowledge through sincere contemplation and devotion.

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ACADEMIC, FINANCIAL, AND OTHER FACTORS AFFECTING PERFORMANCE IN THE AGRICULTURAL AND BIOSYSTEMS ENGINEERING BOARD EXAMINATION (2018, 2019, AND 2021) OF BULACAN AGRICULTURAL STATE COLLEGE

Meriam F. Sulit[1)], Isabel Samantha C. Belonio [2)], Daniel Alexis H. Belonio[3)], Joselito D. Tucit[4)], and Cresan Joy V. Villaroman[5)]

[1)] Bulacan Agricultural State College
mfsulit.international.affairs@basc.edu.ph
[2)] Bulacan Agricultural State College
samcruz2193@gmail.com
[3)] Bulacan Agricultural State College
aengrdan@gmail.com
[4)] Bulacan Agricultural State College
joselitotucit@gmail.com
[5)] Bulacan Agricultural State College
cresanjoyvv@gmail.com

ABSTRACT

State Colleges and Universities (SCUs) in the Philippines, licensure examination performance is a legally mandated, fundamental measure of institutional success and program effectiveness. This critical metric is strictly enforced by regulatory bodies, such as the Commission on Higher Education (CHED), as a key requirement for both program accreditation and official compliance standards. Therefore, investigating the key factors affecting board exam performance is essential for effectively understanding, measuring, and implementing targeted interventions to sustain or improve the institution's status. Analysis of Bulacan Agricultural State College – Agricultural and Biosystems Engineering (BASC - ABE) Program takers (2018, 2019, 2021) showed a first-attempt passing rate of 67.70%. The correlation results provide clear strategic direction for improving this performance: academic performance is key, as taker's GWA showed a moderate correlation with passing, establishing achievement during college as a reliable predictor of board exam success; however, working status presents a barrier, showing a negative moderate correlation that indicates the demands of employment significantly interfere with study time and readiness. Furthermore, enrolment in a review center had only a very low correlation, suggesting that the quality and personalized effort in preparation matter significantly more than the simple act of enrolment. Finally, taking the examination during the pandemic showed a high correlation, highlighting the overwhelming influence of external factors on cohort performance. In terms of challenges, respondents overwhelmingly reported emotional distress, including nervousness, pressure, and mental blockage. To address this, the respondents strongly recommend the institution conduct refresher programs or mock examinations and, critically, prepare graduates not just theoretically but also mentally and emotionally for the licensure examination. Further suggestions include implementing more hands-on, output-based learning in the curriculum and upgrading laboratory equipment to create a more conducive learning environment.

Keywords: *Licensure examination, board exam success factors, Agricultural and Biosystems Engineering program*

INTRODUCTION

The College of Engineering and Technology's Department of Agricultural and Biosystems Engineering (DABE) is fundamentally guided by the BASC mission to provide excellent instruction and produce highly competent graduates. This commitment follows a history of success, highlighted by consecutive 100% passing rates in 2004 and 2005 and a Top 1 rank in 2006, which secured the ABE program's status among top national performers. Although the program maintained performance above the national average through 2018 (72.73%) and 2019 (52.38%), a troubling decline culminated in the 2021 board examination result of 36.36%, falling 0.06% below the national passing rate. This unprecedented low performance threatens the department's accreditation standards and necessitates immediate action, particularly since licensure performance is a key indicator of educational quality (Hermosisima, 2003) and graduate readiness. The DABE is thus compelled to re-evaluate the factors influencing this trend and align instructional strategies with board competencies (Amanonce & Maramag, 2020). Therefore, this study aims to identify the academic, economic, and social factors affecting examinee performance across the 2018, 2019, and 2021 licensure examinations, providing an essential evidence-based platform for devising strategic interventions and a work plan to enhance the program's performance.

METHODOLOGY

Research Design or Type of Study

A descriptive study was conducted employing thematic analysis of qualitative data. The study focused on the examinees of the Bachelor of Science in Agricultural and Biosystems Engineering (BSABEN) program at the BASC CET.

Sources and Materials

Data were gathered from the Professional Regulatory Commission (PRC) results, the CET DABE's list of BSABEN graduates and Student Scholastic Records, the BASC Admission Test (BASCAT) results, and structured questionnaires

Data Collection Techniques, and Sampling Procedure

The study utilized purposive sampling, including BASC-ABE licensure examination takers and retakers from the 2018, 2019, and 2021 batches. The total sample size was 31 examinees. Data were collected via a Google Form survey and verified through subsequent one-on-one interviews (via phone call or scheduled appointment).

Statistical Analysis

Descriptive and qualitative data were analyze using deductive thematic analysis and Pearson correlation. Data were organized and processed using excel sheets and Statistical Package for the Social Sciences (SPSS).

RESULTS AND DISCUSSION

Socio Demographic Profile

A total of 31 examination takers responded to the survey questionnaire, representing the examinees of the ABE Licensure Examination from the 2018, 2019, and 2021 batches. As shown in Table 1, the sample comprised of 58.10% males and 41.90% females.

Table 1- Sex Profile of Respondents

Sex	Number of Respondents	Percentage (%)

Male	18	58.10
Female	13	41.90
TOTAL	**31**	**100.00**

Regarding marital status, in Table 2, majority were single (29). Among them, 20 passed the licensure examination while 9 failed. Of the 2 married takers, one failed on the first attempt, and the other did not take the examination immediately after graduation.

Table 2- Civil Status of Respondents

Civil Status	Number of Respondents	Percentage (%)
Single	29	93.50
Married	2	6.50
TOTAL	**31**	**100.00**

The majority of the respondents, as shown in Table 3, belong to a total number of households of 4 to 6 members (67.70%), followed by 1 to 3 members (16.1%), while the remaining belong to 7 to 11 members (6.50% and 9.70%).

Table 3- Household Size of Respondents

Size of Household	Number of Respondents	Percentage (%)
One to three members	5	16.10
Four to six members	21	67.70
Seven to nine members	2	6.50
Ten to twelve members	3	9.70
TOTAL	**31**	**100.00**

Meanwhile, Table 4 shows that the largest group of takers (38.70% each) was categorized under low-income earners and low-middle to middle-middle class income earners, respectively. This result shows that the majority of the examination takers fell under the low to middle-middle income categories, as based on FOI (2023) classification.

Table 4- Gross Family Income of the Respondents

Gross Family Income (Php/mo)	Number of Respondents	Percentage (%)
Php10,000 – 30,000	12	38.70
Php30,001 – 60,000	12	38.70%
Php60,001 – 90,000	6	19.40%
Php90,001 and above	1	3.20%
TOTAL	**31**	**100.00%**

Academic, Economic, Mental and Others Factors

Among the respondents, as shown in table 5, 67.70% had passed the licensure examination while 32.30% had failed on the first of the examination.

Table 5 – Licensure Examination Result

Licensure Exam Result	Number of Respondents	Percentage (%)
Passed	21	67.70
Failed	10	32.30
TOTAL	**31**	**100.00**

Based on their general weighted average (GWA), on Table 6, 41.90%, 38.70%, 12.90% and 3.20% of the respondents had GWA from 1.91 to 2.20, 2.21 to 2.50, 1.70 to 1.90 and above 2.51, respectively.

Table 6 – ABE Graduates General Weighted Average (GWA)

General Weighted Average	Number of Respondents	Percentage (%)
1.70-1.90	4	12.90
1.91-2.20	13	41.90
2.21-2.50	12	38.70
2.51 and below	1	3.20
TOTAL	**31**	**100.00**

Table 7 presents the Pearson correlation between the takers' GWA and passing the licensure examination, showing a perfect positive correlation that is significant (5% level). This indicates that having good grades positively affects the likelihood of passing the exam with the Pearson correlation coefficient (r=0.443) shown in Table 8 confirms a moderate correlation and aligns with related studies, such as Dagdag (2018), and Nicolas et al. (2020), who found a moderate to strong correlation between academic factors and passing the examination.

Table 7 – Correlations of Passing the Licensure Examination and GWA

	GWA	Licensure Examination Performance
GWA Pearson Correlation	1	.443*
Sig. (2-tailed)		.014
Licensure Examination Performance Pearson Correlation	.443*	1
Sig. (2-tailed)	.014	
N	31	31

Correlation is significant at the 0.05 level (2-talied)

Only 33.30% of the successful examinees had enrolled in a review class or center. Furthermore, the study showed that 64.50% of all examinees took the licensure examination immediately after graduation, with the remaining 35.50% taking a delay of a year or two. Notably, among the ten respondents who failed their first attempt, six had attended a review center, yet none of them enrolled in a review for their second attempt. Statistical analysis revealed a Pearson correlation coefficient (r = 0.033) which categorized as a very low correlation, suggesting that enrolment in a review center, by itself, is not a strong factor in increasing the chances of passing the examination.

Table 8 – Pearson Scale of Correlation Coefficient

Scale	Value
0 < r ≤ 0.19	Very Low Correlation
0.2 ≤ r ≤ 0.39	Low Correlation
0.4 ≤ r ≤ 0.59	Moderate Correlation
0.6 ≤ r ≤ 0.79	High Correlation
0.8 ≤ r ≤ 1.0	Very High Correlation

Table 9 – Correlations of Passing the Licensure Examination and Enrolling to Review Center

	Licensure Examination performance	Enrolling to review center
Licensure Examination performance Pearson Correlation	1	.033
Sig. (2-tailed)		.859
Enrolling to review center Pearson Correlation	.033	1
Sig. (2-tailed)	.859	
N	31	31

Regarding the financial factor, 29.03% of the examinees were working during their review period. Of these, seven respondents held full-time jobs related to their profession, while two were employed in non-related positions. Conversely, the results of the study indicated that the majority of respondents who did not work and instead focused solely on the review and licensure examination had successfully passed the exam.

Table 10 – Takers Employment Status During Respondent's Review and Licensure Examination

Employment Status	Number of Respondents	Percentage (%)
Working	9	29.03
Not Working	22	70.97
TOTAL	**31**	**100.00**

The Pearson correlation coefficient r of -0.539 indicates a negative moderate correlation, as shown in Table 11. This result proves an inverse relationship, meaning that the working factor moderately affected the passing percentage: those who were working had a moderate chance of either passing or failing the examination. Conversely, this suggests that those who were not working had higher chances of passing the licensure examination. This finding is similar to the study conducted by Dagdag (2018) on performance indicators for the agriculturist licensure examination.

Table 11 – Correlations of Licensure Examination Performance and Working Status during the Review

	Licensure Examination Performance	Working Status during Review
Licensure Examination Performance Pearson Correlation	1	-0.539**
Sig. (2-tailed)		.002
Working during the review Pearson Correlation	-0.539**	1
Sig. (2-tailed)	.002	
N	31	31

****Correlation is significant at the 0.01 level (2-talied)**

Results in Table 12, also revealed that 71.00% were supported financially by their family, while 22.60% supported themselves and 6.50% were supported by other people having majority of the examination takers though coming from low to middle-middle income earners has been supported by their family.

Table 12 – Financial Support System for the Licensure Examination

Financial Support	Number of Respondents	Percentage (%)
Self-Supporting	7	22.60
Family	22	71.00
Others	2	6.50
TOTAL	**31**	**100.00**

Other factors that may had affected their performance in the licensure examination considered was the pandemic condition in Table 13. Among the 31 respondents, four had experienced health problems related to COVID and were home-quarantined. When validated if they had been able to review during the period, they answered positively but had difficulty focusing on the review.

Table 13 – Exposure to COVID 19 during Review

COVID 19 Exposure	Number of Respondents	Percentage (%)
2021	13	41.94
2019	11	35.48

2018	7	22.58
TOTAL	**31**	**100.00**

Pearson correlation coefficient r of 1 had a perfect negative correlation as shown in Table 14 having high correlation. This means that those who had taken the examination during the pandemic period had lesser chances of passing than those who had taken the board examination during the pre-pandemic period.

Table 14 – Correlations of Licensure Examination Performance and Examination during the Pandemic

	Licensure Examination Performance	Examination during pandemic
Licensure Examination Performance Pearson Correlation	1	-0.727**
Sig. (2-tailed)		.000
Examination during pandemic Pearson Correlation	-0.727**	1
Sig. (2-tailed)	.000	
N	31	31

****Correlation is significant at the 0.01 level (2-talied)**

Problems or Challenges, Suggestions and Recommendations

Table 15 summarizes the respondents' problems and challenges during their review and examination. Emotionally, the most frequent issue was feeling nervous and pressured (19), though 15 reported feeling relaxed; others suffered from stress and anxiety (9). Mentally, 11 respondents reported difficulties like mental blockage and memory retention issues, while 10 felt prepared; a smaller group (6 total) felt unprepared or worried about cancellation. Concerning health, social, and financial aspects, the majority of respondents (24-26 per category) reported no significant problems. However, a minority reported health issues such as over-fatigue (5), social issues like family problems/pressure (3), and financial issues where four had limited support and another four struggled with sustenance (e.g., food, reviewers).

Table 15 – Problems or Challenges Encountered During Review

	Problems and Challenges Encountered			
Emotional	Nervous and pressured	Tired and Distracted	Stress and with anxiety	Relax, Confident and Excited
	19	2	9	15
Mental	Unprepared and unready	Mental blockage, confusions, cannot remember lessons, and memory retention problems	Good, Ready and Prepared	Anxiety and worried due to cancellation of exam
	4	11	10	2

Health	Over fatigue, tiredness, exhausted, lack of sleep	Healthy and no problems encountered	Headache, fever, chickenfox
	5	24	2
Social	Review environment not conducive	No problems encountered and with supportive family	With family problems, pressure from family and no one to talk to
	2	26	3
Financial	Financially not stable, limited support	No problems encountered, financially supported	Food, accommodation, transportation, reviewers, internet and textbooks
	4	25	4

As shown in Table 16, the majority of respondents suggested improving ABE graduate performance by conducting local and in-house review programs (9) and helping graduates prepare mentally and emotionally (7), with further recommendations including exposing students to licensure examination-type tests, conducting refresher programs/mock examinations, emphasizing basic education before major subjects, adding more practical field activities, allowing more review time, and incorporating the Philippine Agricultural Engineering Standards (PAES) into their curricula.

Table 16 – Suggestions and Recommendations of the Respondents to Improve the Licensure Examination Performance of BASC ABE Graduates.

Suggestions and recommendations	No. Respondents	Rank
Conduct Local in-house review and provide good review material	9	1
Prepare graduates mentally and emotionally for licensure exam	7	2
Expose students to licensure examination type of tests	2	3
Conduct refresher programs / mock examination	2	4
Focus on basic education before major subjects	2	5
Add more practical field activities	2	6
Add more time for review	1	7
Focus on PAES	1	8

Table 17 presents the respondents' suggestions for improving the curriculum and instructional methods. The top recommendations were to implement hands-on and output-based learning (5 respondents) and to incorporate more board exam-relevant academic topics (4 respondents). Other key suggestions included the continuous

improvement of teaching processes for greater clarity, the integration of PAES (Philippine Agricultural Engineering Standards) into subject matter, the use of licensure examination-type questions in student assessments, and the increased use of illustrations to aid comprehension. Additional recommendations focused on institutional strategies, such as the need to identify student weaknesses, the potential for adding dedicated board review subjects, and discussing subject history to enhance student appreciation.

Table 17 – Suggestions of the Respondents to Improve the Licensure Examination Performance of BASC ABE Graduates in Terms of Instructions and Curriculum

Suggestions and recommendations	No. Respondents	Rank
Implement hands-on and output-based learning	5	1
Add more academic topics regarding board exam	4	2
Continuous improvement of the process of teaching, making it clearer and understandable for students	2	3
Incorporate PAES	2	4
Incorporate problem solving licensure exam-type questions in students examination	2	5
Use more illustrations in concept presentation	2	6
Identify weaknesses of students	1	7
Add subject solely for board review	1	8
Discuss history if subject for more appreciation	1	9

In terms of laboratory equipment and facility there were only two suggestions, the provision of more equipment to promote hand-on and output-based learning among students during their study (14) and to add more advance or system for laboratory equipment and facility with air condition (8), as shown in table 18.

Table 18 – Suggestions of the Respondents to Improve the Licensure Examination Performance of BASC ABE Graduates in Terms of Laboratory Equipment and Facility

Suggestions and recommendations	No. Respondents	Rank
Provision of more equipment to promote hands-on/output-based learning	14	1
More advance technology or system with airconditioning	8	2

The examination takers suggested, as shown in table 19, to add more ABE related books in the library (13 respondents). Followed by availability of reviewers, having conducive library environment like accessibility, free internet, friendly environment, and with air-condition; addition and provision of e-books, e-learning materials, and e-library; to have extended duration of borrowing books and to have subscription to journal and published articles.

Table 19 – Suggestions of the Respondents to Increase the Licensure Examination Performance of BASC ABE Graduates in Terms of Library Facility

Suggestions and recommendations	No. Respondents	Rank
More ABE related books	13	1
Availability of Reviewers	2	2
More conducive library environment like accessibility, free internet, friendly environment, and with air-conditioning	2	3
E-books, e-learning materials, and e-library	2	4
Extended duration of borrowing books	1	5
Subscription to journal and published articles	1	6

CONCLUSION AND RECOMMENDATIONS

Conclusion

In conclusion, the study established the typical respondent profile as slightly male-dominated (58.10%), from families of four to six members (67.70%), with most family incomes categorized as poor or middle-middle-earner (38.70%). Of the 31 examinees, 67.70% passed succeeding on their first attempt, though only 33.30% of passers had enrolled in a review center. Most takers (64.50%) sat for the exam immediately after graduation. Key insights from the correlation analysis revealed a moderate positive correlation between passing and GWA, a very low correlation with review center enrollment, a negative moderate correlation with working during the review, and a high correlation with taking the exam during the pandemic. The primary challenges reported were emotional stress (nervousness/pressure) and mental difficulties (blockage, confusion, memory retention), though most reported no significant problems concerning their health, social life, or finances. Respondents' top suggestions for performance improvement included conducting refresher programs/mock examinations and preparing graduates mentally and emotionally. For instruction and curriculum, they prioritized hands-on/output-based learning and adding board exam-relevant topics, supported by the recommendation for more equipment and advanced facilities.

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LAW ENFORCEMENT AGAINST VIOLATIONS OF THE SALE OF TELECOMMUNICATION STARTER CARDS BY USING OTHER PEOPLE'S IDENTITIES

I Made Wahyu Chandra Satriana [1)], Ni Made Liana Dewi [2)], I Wayan Agus Wisnawa [3)]

[1)] Faculty of Law, Dwijendra University
Email: wahana.chandra@gmail.com

ABSTRACT

With the development of information and technology, problems are discovered, one of which concerns the misuse of NIK and KK to register and sell starter cards while active on social media with the aim of making a profit. In response to this, the National Police of the Republic of Indonesia, namely Subdit V Cyber, Ditreskrimsus Polda Bali, has the authority to carry out law enforcement of these violations, However, in its implementation, investigators still found obstacles. Based on this, the author formulates the problem, that is: How is the law enforced against violations of starter card sales by using someone else's identity by Sub-Directorate V Cyber, Ditreskrimsus Polda Bali and What are the obstacles faced in enforcing the law in cases of violations of the sale of starter cards by using another person's identity by Sub-Directorate V Cyber, Directorate of Criminal Investigation of the Bali Police. The theory used is law enforcement theory, authority theory, effectiveness theory, justice theory and legal system theory. This research uses an empirical method that describes das sollen and das sein. Source of legal materials: primary and secondary data. Collection techniques using direct observation techniques, document studies and interviews The conclusion of this research is law enforcement against violations of starter card sales by using other people's identities with two actions including repressive and preventive actions. Then the obstacle faced by Subdit V Cyber Ditreskrimsus Polda Bali in enforcing the law in cases of violations of selling starter cards by using someone else's identity is the difficulty of finding the main perpetrators of this case, namely sellers of NIK and KK and sellers of registered starter cards who use fake accounts. on social media
.

Keywords: *Law Enforcement, Sales Violations, Starter Cards.*

1. INTRODUCTION

Life in the era of globalization like today is increasingly developing, communication flows are increasingly needed. Increasingly advanced technology also supports the development of the telecommunications world in Indonesia starting from telephone, SMS and the internet. The rapid growth and spread of the population today has a very significant impact on all aspects of human life, one of which is the demand to communicate smoothly in conveying information.

Along with the pace of information and technology development, one of the problems is the misuse of the Population Identification Number (hereinafter referred to as NIK) and Family Card Number (hereinafter referred to as KK) to register starter packs. A starter card or called *a SIM* card (*Subcriber Identification Module*) is an internal integrated circuit physical electronic device that securely identifies and authenticates between the user and the wireless operator. Every mobile phone will be connected to the telecommunication network through the availability of *a SIM card* (*Subscriber Identity Module*) installed in it, therefore the mobile phone must have a *SIM card* in order to function, (Rezkia, 2020:35).

The misuse of the identity of others has been regulated in Law Number 27 of 2022 concerning Personal Data Protection. As stipulated in Article 4 Paragraph

(1) that there are two types of personal data, namely specific personal data and general personal data. Then it is also related to Article 32 Paragraph (2) *of the Junto* Article 48 Paragraph (2) of Law Number 19 of 2016 concerning ITE and Article 95A of Law Number 24 of 2013 concerning Population Administration and Article 67 Paragraph (1) of Law Number 27 of 2022 concerning Personal Data Protection. Then it is also regulated in Permekominfo Number 20 of 2016 concerning the Protection of Personal Data in Electronic Systems and Permenkominfo Number 5 of 2021 concerning the Implementation of Telecommunications. The crime of misusing population data by registering starter cards that illegally use other people's NIK and KK was discovered for the first time by investigators from Sub-Directorate V of the Cyber Directorate of the Directorate of Special Criminal Investigation (Directorate of Special Criminal Investigation) of the Bali Police in February 2022. Based on the case handled by Sub-Directorate V Cyber Directorate of the Bali Police in 2022, it has indeed reached the P21 stage, but the settlement has only touched the perpetrator from the second party where the perpetrator of the first party selling NIK and KK data has not been found, which is due to an obstacle, namely the *Facebook* account used is a fake account, (Interview with Police Brigadier I Komang Gede Oka Purnawan, 2023).

In 2021 there were no cases found, which was because the results of *profiling* could not be followed up and then in 2022 there was one case that could be handled by a member of Sub-Directorate V Cyber Directorate of the Bali Police Directorate, which started from a cyber patrol and was found on one of the *Facebook* accounts that sold starter packs that had been registered using other people's NIK and KK data on the *Facebook* market place, so that in the end the case was handled and reached the P21 stage and secured 2 perpetrators. Based on the case handled by Sub-Directorate V Cyber Directorate of the Bali Police in 2022, it has indeed reached the P21 stage, but the settlement has only touched the perpetrator from the second party where the perpetrator of the first party selling NIK and KK data has not been found, which is due to an obstacle, namely the *Facebook* account used is a fake account, (Interview with Police Brigadier I Komang Gede Oka Purnawan, 2023). Then in 2023 there will be no cases because the results of the profiling cannot be followed up by investigators.

Based on this description, the author is then interested in researching the role of the National Police, especially in the Bali Police, which is outlined in a thesis research entitled: Law Enforcement Against Violations of Starter Card Sales by Using Other People's Identities by Sub-Directorate V Cyber of the Bali Police Directorate. Based on the background of the problems described above, several problem formulations can be drawn, namely: How is the law enforcement against violations of the sale of starter packs by using the identities of others by Sub-Directorate V of the Cyber Directorate of the Bali Police? and What are the obstacles faced in enforcing the law against cases of violations of the sale of starter packs by using the identities of other people by Sub-Directorate V of the Cyber Directorate of the Bali Police?

2. METHOD

The type of research used in this study is empirical legal research, which is research that analyzes the work of law in society (*law in action*). This research is descriptive research that describes something in a certain area and at a certain time. Usually in this study, the researcher has obtained or has an overview in the form of preliminary data on the problem to be researched in the form of provisions, legal norms, written works published both in literature and journals and doctrines. Data and data sources consist of primary data and secondary data, including: the primary data is sourced from field research obtained directly from the first source in the field, both from informants and respondents obtained in the field, namely Sub-Directorate V Cyber Directorate of the Bali Police and secondary data, namely data sources in

the form of laws and regulations and literature related to problems. In this case, the secondary data consists of: primary legal materials and secondary legal materials. Data collection techniques: direct observation techniques, document study techniques and interview techniques. The processing and analysis of this research data by systematizing existing legal materials and systematizing in this case means making a classification of primary and secondary legal data to facilitate analysis.

3. RESULTS AND DISCUSSION

3.1. Law Enforcement Against Violations of Selling Starter Packs by Using Other People's Identities by Sub-Directorate V of Cyber Directorate of Criminal Investigation of the Bali Police

Law Enforcement by the National Police is the stage of criminal law enforcement (the stage of applying criminal law), namely law enforcement officials are tasked with enforcing and implementing criminal laws that have been made by lawmakers. Anticipation of these crimes includes the effective functioning of criminal law instruments through *law enforcement*. Through legal instruments, unlawful behavior is tackled preventively and repressively, (Satriana, 2015: 1) Then in this case, legal enforcement is an effort used by the government to achieve justice, welfare and order in people's lives, (Indradewi, 2019 : 6). As law enforcement officers in carrying out their duties, the National Police of the Republic of Indonesia is required to instill a sense of trust in the community, because upholding the authority of the law, in essence means instilling the value of trust in society. In addition to the value of trust in the community, the National Police is also required to have professionalism in enforcing the law. Professionalism means quality, quality and actions that are characteristic of a professional profession, (Purnama, 2018: 61). In law enforcement, there are factors that affect law enforcement, including the following:

a. The legal factor itself
b. Law enforcement factors, namely the parties who form and implement the law
c. Factors of facilities or facilities that support law enforcement
d. Community factors, namely the environment in which the law applies or applies
e. Cultural factors, namely as the result of works, creations and tastes that are based on human karsa in life relationships, (Soekanto, 2004: 8).

Good law enforcement has referred to the principles of democracy, legitimacy, accountability, protection of human rights, freedom, transparency, power-sharing and public control. Law enforcement is defined in 3 concepts, as follows: (Sunarso, 2012 : 88)

a. The concept of law enforcement is total (*total enforcement concept*), this concept demands that all values behind legal norms be upheld without exception.
b. The concept of *full enforcement* is a concept that recognizes that the total concept must be limited by procedural law and in order to protect individual interests.
c. The concept of *actual law enforcement concept*, this concept emerged after believing that there is discretion in law enforcement due to limitations related to infrastructure, quality of human resources, quality of legislation and lack of community role.

In this case, Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigation enforces criminal laws related to the crime of violating the sale of starter cards by using the identity of other people in the form of investigations and investigations of criminal acts. The National Police in their duties as investigators and investigators are an important part of the criminal justice system, (Safrina, et al., 2017 : 17).

1. Based on the results of an interview with Police Brigadier I Komang Gede Oka Purnawan as the Officer of Unit 1 Sub-Directorate V Cyber of the Bali Police Directorate said that law enforcement against violations of the sale of starter packs by using the identities of other people at this time, especially in Sub-Directorate V Cyber of the Bali Police Directorate continues to carry out *profilling*. or investigations either conventionally or by way of investigations on the internet into the existence of individuals who commit violations of the use of other people's data to register and buy and sell cards and including individuals who buy and sell other people's data, especially with the enactment of Law Number 27 of 2022 concerning Personal Data Protection which regulates more deeply about these violations. Against the perpetrators who have been successfully exposed, especially in Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigations, strict legal measures are carried out, then a press release is carried out for every disclosure with the aim of appealing to the public that the police are serious in handling related to these violations, (Interview results with Police Brigadier I Komang Gede Oka Purnawan, 2024)
2. Based on an interview with Aiptu Suherman Prayudi as the Officer of Unit 1 Sub-Directorate V Cyber of the Bali Regional Police Directorate of Criminal Investigation, he said that law enforcement against the crime of violating the sale of starter cards by using the identities of other people in the Jurisdiction of the Bali Regional Police will take strict action against the perpetrators in accordance with the applicable law and in a measurable manner. Then the National Police also invites the public to participate in the prevention of the crime of selling starter packs by using other people's identities through *a press release* carried out by the Sub-Directorate V Cyber of the Bali Police Directorate, (Results of an interview with Aiptu Suherman Prayudi, 2024)
3. Based on an interview with Ipda I, Ketut Siwa Darmadi as PS Panit 1 Unit 2 Sub-Directorate V Cyber Directorate of Criminal Investigations said that law enforcement is carried out in two ways, the first is repressive, namely taking decisive action according to what is stated in the applicable law. Then the second is preventively, namely providing socialization and appeals through social media such as *Instagram* in the form of short videos and posters through the account of the Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigations, (Interview Results with Ipda I Ketut Siwa Darmadi, 2024)

3.2. Obstacles Faced in Enforcing the Law on the Case of Violation of Selling Starter Cards by Using the Identity of Others by Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigation

Cybercrime has been rampant since 2003, crimes such as hacking*,* skimming*,* cracing*,* malware *(*viruses*/*worms*/*trojans*/*bots*),* cybersuatting*, phishing* (internet *banking fraud*), pornography, online gambling, *Carding* or (*credit card fraud), transnational crimes* such as drug trafficking, terrorism, mafia, *gyman trafficking*, *money laundering*, *underground economy*, (Rumlus & Hartadi, 2020 : 412). The use of communication and information technology in addition to triggering *cybercrime* also has great potential for data-related crimes that require the management of personal data, (Situmeang, 2021 : 39). In an effort to fulfill life and

improve the standard of economic life, sometimes the efforts made have an impact or intersect with the law and tend towards unlawful acts, (Satriana, 2015 : 2). Law enforcement in Indonesia is currently experiencing difficulties in dealing with *cyber crime*. This is motivated by the fact that there are still few law enforcement officials who understand the ins and outs of information technology, limited facilities and infrastructure, and a lack of public legal awareness in efforts to overcome *cyber crimes.* The limitations of special *cyber crime* tools owned by the police in the districts to sub-districts to support the facilities and infrastructure of investigators in uncovering the crime of electronic transaction fraud. The limitation of modern tools in the region causes a long time in uncovering crimes of fraud, electronic transactions, and the tools needed also require large costs, (Satriana, 2015 : 114).

Regarding effectiveness, Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigations which carries out the task of handling cases of violations of the sale of starter packs by using the identities of other people, we need to know together how the obstacles faced by the police in carrying out law enforcement in the midst of the advancement of the world of information and communication technology as it is today are as follows.

1. Based on the results of an interview with Police Brigadier I Komang Gede Oka Purnawan as the Officer of Unit 1 Sub-Directorate V Cyber Directorate of the Bali Police said that the obstacles faced in enforcing the law against cases of violations of the sale of starter packs by using other people's identities is to look at the current conditions in the field, it can be categorized as many violations that occur against the use of personal data used to register starter packs both in the form of selling cards that have been registered as well as in the form of selling raw data (NIK and KK) which is used as material for registration, but is often constrained in its disclosure because on average violators transact online with *fake* accounts and anonymous data. In addition, in terms of inadequate investigator resources with the increasing level of cybercrime, it affects the number of cases that have been successfully uncovered and handled, (Interview, 2024).
2. Based on an interview with Aiptu Suherman Prayudi as the Officer of Unit 1 of the Cyber Sub-Directorate V of the Bali Police Directorate of Criminal Investigations, he said that the obstacles faced in enforcing the law against the case of violations of the sale of starter packs by using other people's identities are related to the ability of investigators, technology and IT equipment that are still inadequate, so that the police, especially the Sub-Directorate V Cyber, need more technology experts and more sophisticated equipment to supporting the task of carrying out law enforcement to its roots, (Interview, 2024).
3. Based on an interview with Ipda I Ketut Siwa Darmadi as PS Panit 1 Unit 2 Sub-Directorate V Cyber Directorate of Criminal Investigations of the Bali Police said that the obstacle faced in enforcing the law against the case of violations of the sale of starter packs by using other people's identities was that no one reported related to it, then when members of Sub-Directorate V Cyber of the Bali Police Directorate of Criminal Investigations conducted cyber patrols and *profiling* So the obstacle is that it is very difficult to know the whereabouts of the card seller, which is because in the marketing and sales process he hides his identity on social media, in this case also because the National Police's Cyber tools are inadequate to accurately identify the perpetrator and the position of the perpetrator, (Interview, 2024).

4. CONCLUSION

a. Law enforcement against violations of the sale of starter packs by using the identities of other people by Sub-Directorate V Cyber of the Bali Police Directorate is based on the theory of law enforcement that Sub-Directorate V Cyber of the Bali Police Directorate is as an apparatus that carries out law enforcement against violations of the sale of starter packs which is

based on Law Number 27 of 2022 concerning Personal Data Protection and based on the theory of authority that the National Police, namely Sub-Directorate V Cyber The Directorate of Criminal Investigation of the Bali Police has the authority by attribution to carry out law enforcement against criminal acts by carrying out two actions, which include preventive actions and repressive actions. The real form of preventive measures carried out is to conduct routine cyber patrols, conduct investigations by conducting *continuous profiling* and providing appeals in the form of posters and short videos on social media to prevent this from happening, while repressive actions follow up until the perpetrators are found and then processed by the law in a strict and measured manner in accordance with the applicable law.

b. The obstacle faced in enforcing the law against the case of violation of the sale of starter packs by using other people's identities by Sub-Directorate V Cyber Directorate of Criminal Investigations of the Bali Police is the difficulty of finding the main perpetrators who incidentally are the root of the problem of this case, namely NIK and KK sellers who use fake accounts in the market place which because the tools and human resources are inadequate so that it can be said that law enforcement is not optimal. Then to follow up on the sale of starter packs that have been registered on social media, they also experience the same obstacle, namely the difficulty of tracking this seller which is because the location and payment method have been arranged in such a way that it is difficult for investigators to reveal it.

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IMPROVING ADVERTISING TEXT WRITING ABILITIES WITH THE PROJECT BASED LEARNING METHOD ON STUDENTS OF CLASS VIII C OF DWIJENDRA MIDDLE SCHOOL, DENPASAR ACADEMIC YEAR 2024/2025

Ida Ayu Novita Yogan Dewi[1], Islachul Amalia[2]
[1)]Dwijendra University
dayuyogandewi@gmail.com
[2)]Dwijendra University
islachulamalia@gmail.com

ABSTRACT

The development of writing skills, including writing advertising texts, needs serious attention from the most basic level of education, because writing skills are not formed automatically. The low skills of students in writing advertising texts are caused by the lack of interest in reading so that their knowledge and vocabulary are limited and cause students to be less able to express their thoughts through writing. Departing from these problems, researchers try to offer other learning methods to improve students' abilities in writing advertising texts. One of the learning methods that can stimulate student creativity is the Project Based Learning (PjBL) learning method. PjBL is an innovative method in student-centered learning because the teacher only acts as a motivator and facilitator. The purpose of this study is to determine whether the Project Based Learning (PjBL) learning method can improve the skills of writing advertising texts of class VIII C students of Dwijendra Middle School. Writing is a language skill used to communicate indirectly, not face-to-face, with others (Tarigan, 2013). Advertising text is an important foundation in understanding how persuasive messages can be created and delivered to audiences effectively. The data collection methods used in this study were tests and observations. The type of test used was a student learning outcome test. This study was a Classroom Action Research (CAR). The approach used was a quantitative approach. The research design consisted of planning, observation, implementation, and reflection, which were carried out through two cycles. The data analysis technique used in this study was descriptive statistical analysis, and informal and formal techniques were used to present the results of the data analysis. The results of this study indicate that the average value of the skills of writing advertising texts using the Project Based Learning (PjBL) method of class VIII C students of Dwijendra Middle School, in the pre-cycle was 66.4 and cycle I was 71.8 and in cycle II it became 75.9. The number of students who completed the pre-cycle was 6 people with a percentage of 21%, cycle I was 11 people with a percentage of 39% and those who had not completed were 17 with a percentage of 61% while in cycle II students who completed were 24 students with a percentage of 86% and those who had not completed were 4 with a percentage of 14%. By looking at the average value obtained, it is hoped that learning about writing advertising texts can be improved again so that it can provide maximum results.

Keywords: *Writing Skills, Ad Text, Method Project Based Learning(PjBL).*

INTRODUCTION

The goal of Indonesian language learning at the junior high school level is to guide students in using language as a learning medium, expressing ideas clearly

and fluently, and communicating effectively. Indonesian language learning includes a topic that can help students express their learning: writing advertising texts.

Advertising material is very important to teach in addition to reminding, it will also function as assessment material during entrepreneurial activities in grade IX. Students will receive material about entrepreneurship and in it there is an advertisement which will be a final semester practical exam through an interview with an Indonesian teacher in grade VIII. According to the results of the interview with the Indonesian language teacher of Class VIII C of Dwijendra Middle School, Denpasar on September 26, 2022, it was found that for the abilities of class VIII C students of Dwijendra Middle School, Denpasar in the 2024/2025 academic year, it was found that a total of 22 students out of 28 students in class VIII C had ability scores below the Minimum Completion Criteria (KKM) score, namely 78 set by the school. Based on the results of observations, researchers know that in school learning activities, one of the factors that causes students' grades to decline can be seen from the methods that teachers apply to teaching in the classroom.

Based on observations of learning activities in class VIII C, an Indonesian language teacher used a question-and-answer method to teach the material. The author considers this method inappropriate because it not only requires increasing knowledge but also fosters student activity and creativity.

Based on this phenomenon, the Indonesian language teacher for class VIII together with the researcher will use an innovative learning method to be applied during learning activities for the material on writing advertising texts, namely the methodProject Based Learningis a learning that uses projects or activities as a learning tool to achieve competency in attitudes, knowledge, and skills. Based on the results of observations of learning activities carried out in class VIII C. An Indonesian language teacher uses a question and answer method in teaching a material. The author considers this to be inappropriate because it is not only necessary to increase knowledge but also the activeness and creativity of students also need to be increased.

Based on this phenomenon, the Indonesian language teacher for class VIII together with the researcher will use an innovative learning method to be applied during learning activities for the material on writing advertising texts, namely the methodProject Based Learningis learning that uses projects or activities as a learning tool to achieve competency in attitudes, knowledge and skills.

Learning methods project based learning is an innovative learning that is centered on students(student centered) and positioning teachers as motivators and facilitators, where students are given the opportunity to work autonomously to construct their learning (Trianto, 2014:42). The existence of advertising materials using the methodProject Based Learning, it is hoped that it can make students delve into the problems that exist in the material on writing advertising texts, make students determine a solution to the problem, namely completing the KKM above 78, the evaluation process is carried out continuously, students will be evaluated qualitatively and quantitatively. For the methodproject based learninghas a big influence in writing advertising text so that students can build broad thoughts in the material for writing advertising text, also trains students to think creatively. With the new method, researchers become more confident in conducting the research.

This research is also interesting in terms of its process, particularly observing students exchanging information with the aim of improving their knowledge and skills through project implementation or learning activities. Therefore, the researcher is interested in conducting Classroom Action Research with the title "Improving Advertising Text Writing Skills by Usingmetode Project

Based Learningin class VIII C of Dwijendra Middle School, Denpasar, 2024/2025 Academic Year. Based on observations made at Dwijendra Middle School, Denpasar, researchers saw a lack of concern from students in Indonesian language learning activities, students showed a lack of interest in following the learning process. Here are some of the problems encountered: 1. Students are more engrossed in their own learning process 2. More interested in chatting with their deskmates than listening to the teacher who is explaining 3. Students are less active in asking questions to the subject teacher and there is less response from students when the teacher is asking questions to students. Seeing this problem, researchers assume that students' lack of interest in participating in Indonesian language learning is due to students feeling bored during the learning process. This is inseparable from the role of the teacher who manages the class and the way the Indonesian language learning is packaged and delivered. Therefore, learning carried out in the classroom is expected to motivate students. Student motivation can be achieved, among other things, by using methods and media that can support and increase student interest in learning. This model can be considered successful if students are directly emotionally and intellectually engaged in the learning process, enabling them to effectively acquire information through various learning activities. In this learning process, where mutual support exists between teachers and students, the desired goals are achieved. However, achieving these goals is not always easy without conflict. Learning activities will be successful if students are enthusiastic about continuing to learn, full of curiosity, and have a desire to continually expand their knowledge. The learning process is the key to achieving better educational goals. The success of the learning process is influenced by several components, including teachers, students, teaching modules, methods, evaluation objectives, the learning environment, and others. However, the most important component in the learning process is the effort of students and teachers.

DISCUSSION

The location of this research was carried out at SMP Dwijendra Denpasar Jln.Kamboja no.17 Denpasar in class VIII C students in semester I of the 2024/2025 academic year. This research uses a Classroom Action Research (CAR) design, in the form of the influence of the Project Based Learning (PjBL) learning method on student learning achievement in Indonesian subjects. This research aims to improve student achievement and learning outcomes in Indonesian language learning in class VIII C SMP Dwijendra Denpasar. Classroom Action Research techniques are carried out collaboratively between subject teachers and researchers. The implementation of the action is carried out directly by researchers and assisted by Indonesian language teachers. This research is designed through stages, namely carried out with an initial orientation by conducting interviews with the PPKn subject teacher of SMP Dwijendra Denpasar, namely Mrs. Ni Nyoman Arisanthi, S.Pd. From the results of the interview, it appears that Indonesian language learning in class VIII C experiences problems in improving student achievement and learning outcomes.

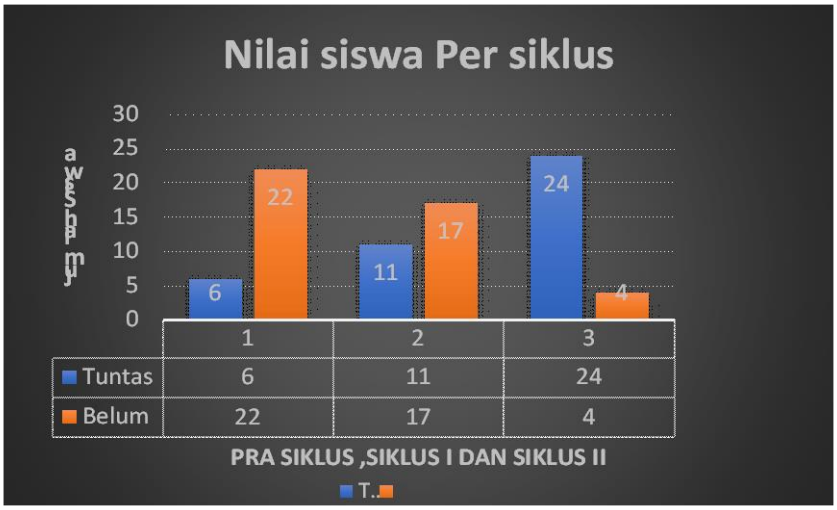
Table 1 List of student grades per cycle

No	Nama	Pra Siklus	Siklus I	Siklus II
1	Alice Ariesta Utami	67	78	84
2	Anak Agung Bagus W	64	70	76
3	Gede Putra Ardi W	70	70	79
4	I Dewa Gede Agung	62	70	80
5	I Dewa Komang P	65	70	79

6	I Gede Ngurah Laksana	70	77	79
7	I Gusti Agung Ayu Ratih	60	78	79
8	I Kade Sukertayasa	60	62	75
9	I Ketut Arta Chandra	60	85	86
10	Ida Ayu Intan Suar Dewi	60	89	89
11	Ida Ayu Putu Laksmi	79	85	85
12	Komang Nabila Ratu Z	60	75	79
13	Komang Shinta Triyanti	79	89	89
14	Ni Kadek Meikaori G	60	89	89
15	Ni Kadek Novi Agustina	65	77	79
16	Ni Komang Dharmayanti	79	75	79
17	Ni Komang Nopita Sari	69	75	79
18	Ni Luh Made Suantari	68	70	79
19	Ni Made Evi Widyasari	60	74	79
20	Ni Made Ginaztya S	60	78	79
21	Ni Putu Diana Dewi	60	74	78
22	Ni putu Icha Yunita M	79	90	90
23	Ni Putu Jeni Purnama L	63	79	79
24	Ni Putu Jia Divani M	79	89	89
25	Ni Putu Vanessa Ika P	60	85	85
26	Ni Wayan Diandra P	62	79	79
27	Ni Putu Naswa Eka Ayu	62	85	85
28	Putu Surya Wibawa	79	74	76
	Jumlah	1861	2191	2283
	Rata -rata	66,464286	78,25	81,53571
	Tuntas	6	11	24
	Belum	22	17	4

Table 1 shows list of student grades per cycle of the 30 students who participated in the learning activities of cycle II “Narrative Text Writing Skills Test”, 24 students were declared complete with a maximum score of 91, while 3 students were still declared complete, meaning a minimum score of 75. The average class score from Cycle I to Cycle II also increased. Of the 28 students who participated in the learning activities of the advertising text writing skills test in cycle II, 24 students were declared complete with the highest score of 90 while 3 students were still declared incomplete, namely with the lowest score of 75. The average class score from cycle I to cycle II also increased by 33, namely from 78.2 to 81.5.

The results of these calculations can be seen in the bar chart and pie chart comparing narrative text writing skills using the following method.



Source: Results of processing data from the 2024 research test results.

Based on Figure above, it can be seen that the results of student completion in cycle I were 6 (21.42%) students and 22 (78.57%) students had not completed, with the average results of students in the pre-cycle being 66.46 and the highest pre-cycle score being 79 and the lowest score being 60 and the average in cycle I being 78.25 with the highest score being 90 and the lowest being 62, while in cycle II the number of students who completed increased by 24 (85.7%) students and 4 (14.2%) students had not completed, with the average results in cycle II being 78.25 with the highest score being 90 and the lowest being 75.

CLOSURE

This classroom action research was conducted in two cycles, each consisting of two meetings. The first cycle was conducted on Monday, February 12, 2024, and Friday, February 16, 2024. The second cycle was conducted on Friday, February 19, 2024, and Monday, February 23, 2024. Prior to conducting the classroom action research, the researcher first observed the students' learning process. After conducting observations, the researcher began providing learning to write advertising texts using the method Project Based Learning (PjBL) on students of class VIII C of Dwijendra Middle School, Denpasar, 2024/2025 Academic Year on February 6, 2023. This was done to determine the extent of students' narrative text writing skills in the initial conditions before being given the action. The research results obtained during the implementation of the action.

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THE ROLE OF FIELD EXTENSION WORKERS IN THE SHALLOT AGRIBUSINESS SYSTEM IN BALI PROVINCE

I Gusti Agung Nyoman Dananjaya[1)]

[1)] *Dwijendra University*
guz.d4nan@gmail.com

ABSTRACT

This study aims to analyze the role of field instructors in the shallot agribusiness system in Bali Province. The shallot agribusiness system consists of several subsystems, namely the procurement of production facilities, farming, processing and marketing, and supporting institutions. This study was conducted in each regency and city in Bali Province. The sample selection in this study used purposive sampling, which is a deliberate selection based on the consideration of the presence of field extension workers in the shallot agribusiness system in Bali Province. Thus, the selected sample consisted of 80 shallot farmers and 17 field agricultural extension workers in Bali Province. Data analysis in this study used descriptive data analysis.

The results of the study show that field extension workers play a strategic role in integrating all subsystems of the shallot agribusiness. In the production means procurement subsystem, extension workers act as facilitators in the provision of appropriate seeds and fertilizers. In the farming subsystem, extension workers function as educators and technical assistants through field schools and demonstration plots. In the processing and marketing aspect, extension workers act as mediators between farmers and business actors to strengthen a fair marketing system. Meanwhile, in the supporting institutions subsystem, extension workers assist farmers in accessing financing, training, and strengthening farmer institutions. Field extension workers play a role not only as disseminators of agricultural innovation, but also as agents of social change who encourage the independence and competitiveness of shallot farmers in Bali. Strengthening the capacity of extension workers, government policy support, and synergy between agribusiness institutions are important factors in realizing a resilient and sustainable shallot agribusiness system.

Keywords: *Agricultural Extension Officer, Agribusiness System, Shallots*

1. INTRODUCTION

Field extension workers play a very strategic role in supporting the development of agribusiness systems in Bali Province, particularly in efforts to improve farmers' welfare and the competitiveness of the agricultural sector. Extension workers serve as liaisons between government policies, research institutions, and business actors at the field level. They play a role not only in disseminating agricultural technology innovations, but also in building farmers' capacity to manage their farms efficiently, market-oriented, and sustainably.

Agricultural extension workers play a very important role in developing agribusiness systems in Indonesia, including in the province of Bali. As the spearhead of agricultural development, extension workers are tasked with disseminating technological innovations, assisting farmers in implementing good cultivation practices, and helping to strengthen farmer group institutions. According to Law No. 16 of 2006 concerning the Agricultural, Fisheries, and Forestry Extension System, extension is a learning process for primary actors and business actors so that they

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are willing and able to help and organize themselves in accessing information, technology, and other resources. This shows that extension workers not only function as teachers but also as facilitators and motivators for farmers.

The province of Bali has great potential in the agricultural sector, including leading commodities such as shallots, horticulture, and other food crops. However, farmers still face various challenges, such as limited access to information, low adoption of modern technology, fluctuations in agricultural prices, and weak farmer group institutions. The role of field extension workers is crucial in strengthening each subsystem of agribusiness, from the procurement of production inputs, cultivation processes, processing of produce, to marketing.

According to Soekartawi (2002), an effective agribusiness system must be supported by synergy between farmers, business actors, financial institutions, and other supporting institutions, with extension workers playing a central role as a bridge between these subsystems. In Bali Province, the agricultural sector remains the backbone of the rural economy, especially for leading commodities such as shallots, rice, and horticulture. However, there are still various obstacles, such as low adoption of modern agricultural technology, weak farmer group institutions, and commodity price fluctuations (Bali Province Agriculture and Food Security Agency, 2023).

The transformation of agriculture towards a modern agribusiness system in Bali requires extension workers to have broader competencies, not only in technical aspects of agriculture but also in business management, entrepreneurship, and strengthening farmer institutions. Extension workers are expected to be facilitators, motivators, and innovators in building farmer independence and strengthening partnership networks with the private sector and other supporting institutions.

Strengthening the role of field extension workers is one of the keys to success in realizing a competitive, sustainable, and equitable agribusiness system in Bali Province. Through targeted and continuous assistance, it is hoped that farmers will be able to increase the productivity, quality, and added value of agricultural products, as well as contribute to food security and regional economic development. The purpose of this study is to analyze the role of agricultural extension in the shallot agribusiness system in Bali Province.

2. RESEARCH METODOLOGY

This research was conducted in each regency and city in Bali Province. The selection of research locations was determined using the purposive method, which is a method of deliberately determining research locations based on various considerations. The sample selection in this study used purposive sampling, which is a deliberate selection based on the consideration of the presence of field instructors in the shallot agribusiness system in Bali Province. Thus, the selected sample consisted of 80 shallot farmers and 17 field agricultural instructors in Bali Province.

The types of data in this study are quantitative data, which contains information in the form of numbers, and qualitative data, which contains information in the form of words, sentences, and images. The data sources used in this study are primary and secondary data. Primary data was collected by interviewing shallot farmers and agricultural extension workers using questionnaires/questionnaires. Secondary data was obtained from documents, literature, and data from the Bali Provincial Agriculture and Food Security Office. Data analysis in this study used descriptive data analysis.

3. LITERATUR REVIEW

Previous research results are certainly very relevant as references or comparisons, because there are several similarities in principle, although there are differences in some aspects. Several previous studies that serve as references in this study are:
Hidayat, et. al. (2024) The Role of Field Agricultural Extension Workers in the Adoption of Rojolele Rice Innovations. The objectives of this study are: (1) to examine the role of Field Agricultural Extension Workers (PPL) in the adoption of the Rojolele Srinuk rice variety innovation by farmers; (2) to examine the characteristics of Rojolele Srinuk farmers; and (3) to examine the process of innovation adoption by Rojolele Srinuk rice farmers in Delanggu District. The results of the study show: (1) The role of Field Agricultural Extension Workers (PPL) in the adoption of the Srinuk Rojolele rice innovation, which consists of the roles of facilitator, educator, motivator, and dynamizer in Delanggu Subdistrict, is functioning quite well. This can be seen through several extension activities; (2) The characteristics of Rojolele Srinuk farmers in Delanggu Subdistrict are quite clear and have their own uniqueness, consisting of demographic characteristics, socioeconomic characteristics, and sociocultural characteristics; (3) The stages of the decision-making process for the adoption of the Rojolele Srinuk rice innovation by farmers in Delanggu Subdistrict consist of: the knowledge stage, the persuasion stage, the decision stage, the implementation stage, and the confirmation stage.

Nurida, et. al. (2024) The Role of Agricultural Extension Workers in Assisting Millennial Farmers. This study aims to identify the role of agricultural extension workers in assisting millennial farmers and analyze the importance of optimizing this role in increasing sustainable agricultural productivity. The results of the study show that agricultural extension workers have four key roles: facilitator, mediator, communicator, and consultant. As facilitators, extension workers help millennial farmers access the technology and resources needed for sustainable agriculture. As mediators, they facilitate dialogue between farmers and relevant parties to achieve a better understanding. As communicators, extension workers help convey information and education to farmers about sustainable agricultural practices. Also as consultants, they provide advice and technical guidance to farmers in implementing these practices.

4. RESULTS AND DISCUSSION

4.1 Overview of the Shallot Agribusiness System in Bali Province

The province of Bali is one of the centers of shallot production in eastern Indonesia, with the main producing areas in the regencies of Buleleng, Tabanan, Denpasar, Bangli, Gianyar, and Karangasem. The shallot agribusiness system in Bali involves several interrelated subsystems, namely the production facilities procurement subsystem, the farming subsystem, the processing and marketing subsystem, and the supporting institutions subsystem. Farmers often face various problems such as limited access to high-quality seeds, market price fluctuations, and weak farmer institutions. Therefore, the role of field agricultural extension workers (PPL) is very important to ensure that each subsystem can run synergistically. Extension workers serve as facilitators, communicators, motivators, and technical assistants who help farmers in every stage of agribusiness. Through extension activities, farmers gain knowledge and skills in cultivation, product processing, institutional strengthening, and product marketing. Thus, the presence of extension workers contributes directly to increasing farmer capacity, production efficiency, and strengthening the competitiveness of the shallot agribusiness in Bali Province.

4.2 The Role of Field Extension Workers in the Production Facilities Procurement Subsystem

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Field agricultural extension workers act as facilitators in helping farmers obtain production inputs such as seeds, fertilizers, pesticides, and agricultural tools. Extension workers provide information on the types of shallot seeds that are suitable for Bali's agroclimatic conditions and environmentally friendly fertilization techniques. Extension workers also help connect farmers with production input providers, such as farmer kiosks, village-owned enterprises, or agricultural cooperatives. With this assistance, the process of procuring inputs becomes more efficient and targeted. This is in line with the findings of Rahmizani et al. (2024), who state that the success of agricultural production is greatly influenced by the effectiveness of extension services in procuring production inputs and transferring technological innovations.

4.3 The Role of Field Extension Workers in the Farming Subsystem

In the farming subsystem, extension workers play a key role as educators and technical advisors to farmers. Extension workers provide training on land preparation, planting, fertilization, pest control, and harvest and post-harvest management. Through field schools (SL) and demonstration plots (demplot), farmers learn firsthand in the field about the application of appropriate cultivation technologies. This participatory approach has been proven to improve farmers' ability to manage their farms independently. The application of Good Agricultural Practices (GAP) principles, such as the use of silver black plastic mulch and drip irrigation, is one of the tangible results of the extension process. Anantayu (2011) emphasizes that agricultural extension is a means of non-formal education for farmers to change their behavior and increase productivity.

4.4 The Role of Field Instructors in the Processing and Marketing Subsystem

After the production process, extension workers help farmers understand the importance of post-harvest activities such as drying, sorting, and packaging to maintain the quality of shallots. In terms of marketing, extension workers act as mediators between farmers and business actors to form mutually beneficial partnerships. One of the main obstacles to the shallot agribusiness in Bali is the lack of an integrated marketing system, which causes prices at the farmer level to fluctuate frequently. Extension workers play a role in encouraging the formation of a one-stop marketing system through Gapoktan, thereby increasing farmers' bargaining power. This role is in line with the results of research by Nurida, Evahelda, and Sitorus (2022), which confirms that intensive assistance from extension workers can improve the ability of millennial farmers to access markets and expand their agribusiness networks.

4.5 The Role of Field Instructors in the Supporting Institutions Subsystem

Supporting institutions such as financial institutions, cooperatives, and research institutions play an important role in the agribusiness system. However, not all farmers are able to utilize them optimally. Field extension workers act as liaisons and advocates for farmers in accessing various support facilities, such as the People's Business Credit (KUR) program, Horticultural Farming Insurance (AUTP), and capacity building training. Through the guidance of extension workers, many farmer groups in Bali have begun to transform into independent economic institutions capable of managing their businesses collectively. Anantayu (2012) states that extension workers play a strategic role in strengthening farmer institutions to enhance bargaining power and the sustainability of farming businesses.

4.6 Extension Workers in Farmer Empowerment and Regeneration

In addition to focusing on technical aspects, extension workers also play a role in social empowerment and farmer regeneration. Extension workers strive to attract young farmers to engage in shallot cultivation through digitalization of extension services, entrepreneurship training, and innovation-based agricultural models. According to Nurida et al. (2022), the assistance provided by extension workers to millennial farmers can increase motivation and adoption of new technologies that are

more efficient and environmentally friendly. Thus, extension workers are not only technology transferors but also change agents in shaping a generation of young farmers who are adaptive and competitive.

5. CONCLUSION

Based on the results of the discussion, the conclusion of this study is that field extension workers have a strategic role in integrating all subsystems of the shallot agribusiness in Bali Province. Through their educational, facilitative, consultative, and empowering functions, extension workers are the main drivers in increasing the productivity, independence, and competitiveness of farmers. Improving the capacity of extension workers and institutional support and government policies are key factors in realizing a resilient, efficient, and sustainable Balinese shallot agribusiness system.

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IMPROVING SCHOOL LIBRARY MANAGEMENT IN BANGKOK, THAILAND: Overcoming Challenges and Embracing Digital Integration

Md Miran Hasan [1] and A. K. Mahbubul Hye [2]

[1] *Shinawatra University, Thailand*
E-mail: mhasan.siu@gmail.com

[2] *Shinawatra University, Thailand*
E-mail: mahbubul.h@siu.ac.th

ABSTRACT

Purpose: The purpose of this paper is to investigate the current barriers preventing Thai school libraries from operating effectively and efficiently in Bangkok, and how they might be best overcome by means of an automated library system. Though the school libraries are indispensable to a students' academic success and cognitive growth, however it is under used due to old-fashioned infrastructure condition, finance constraints as well as ill-equipped staff members. The research endeavors to the provide suggestions for reformation with the modernization via digital platforms and professional perfections (Thailand Educational 4.0 Policy).

Design / Methodology/Approach: Both quantitative and qualitative research were collected by a mixed methods strategy.. A survey instrument was used to assess infrastructure, staffing and digital literacy levels of the 25 school librarians as well whereas semi-structured interviews with 10 school administrators from public and private schools. This triangulation methodologically enabled a clear understanding of the operational constraints and supervisory inadequacy in school libraries.

Findings: The study determined the major constraints to effective library administration in Bangkok - lack of funds, inadequate ICT (Information Communication Technology) skills among the school teachers, disconnected cataloguing system and confined interfacing with educational technologies. Many librarians noted difficulties in transitioning libraries from analogue to digital systems due to inadequate training and support. E-library systems, digital cataloging utilities and interactive learning materials are now been grown interest in using. Stakeholders stressed the need for ongoing support to professional development and policy to ensure sustained digital transformation.

Originality/Value: This study will help to fill the gap in this largely ignored area of school library reform in Thailand by offering evidence-based outcomes and practical proposal for its modernizing. Lessons This study demonstrates the importance of integrating skilled human resources, a digital infrastructure, and active community involvement into an integrated management system in juxtaposition to past research focusing mainly on library use. The findings support the national direction of Education 4.0 to develop technology-assisted learning environment.

Keywords: *School Library Management, Digital Integration, Bangkok, Educational Resources, Thailand, Library Challenges, Technology in Education, Education 4.0*

1. INTRODUCTION

School libraries are essential learning centers that encourage literacy, and promote critical thinking and academic achievement. In Bangkok, Thailand, many school libraries in the country and especially in public schools are underused because of obsolete management systems, insufficient facilities and lack of staff training. Although modern technology and devices are becoming part of private and

international schools in the city, a digital divide continues to exist across the wider educational context in terms of access to, or sharing out, innovative library resources (Wanchai, 2018; OBEC, 2021).

At the global level, there are examples of how digital transformation in school libraries through e-resources integration, cloud-based cataloguing, or virtual engagement can ultimately improve learning outcomes as witnessed recently in Singapore, South Korea and Finland (IFLA 2015; UNESCO 2020). This kind of digital blending lends itself not only to access availability but also to the development of 21c skills. In contrast, Thai school libraries encounter ongoing issues—such as the scattered status of digital systems in place, relatively low levels of digital literacy among librarians and lack of policy support—which discouragingly affect the growth toward analogous creative configurations (Thongthew & Trakarnrung, 2022).

This research seeks to identify the immediate problems that prevent effective library management in Bangkok schools and to present workable solutions for their solution through digital applications. Situated within the framework of Thailand's Education 4.0 policy, which promotes learner-centered ICT-integrated education, this study attempts to narrow the gap between current practice and future prospect. It insists on the necessity for library reform to be situated within the wider national initiatives of nurturing digitally literate citizens and inclusive learning environments (Ministry of Education, 2021).

The research considers differences between public and private schools by exploring three distinct dimensions: technological factors, administration and human aspects influencing library outcomes. It also marries quantitative and qualitative information provided by local educators and administrators to get a sense of systemic shortcomings as well as opportunities for reform. Hence, this study contributes to responding to a void in Thai educational literature: school library development has been left underexamined despite its roles in academic and social development (Wong & Lo, 2022).

Utilizing best practices on the regional and international levels, recommendations can be made that provide a comparative model for updating school library services in Bangkok. It underlines the need for integrated management of infrastructure, updated training and digital integration of resources as well as actual involvement with the community. Results are discussed with hope to help libraries, institutional decision makers and national policy makers develop long-term technology enabled library services meeting the needs of Thai students and academics.

Research Objectives

1. To identify what the main management and resource issues are for school libraries in Bangkok.
2. To assess the degree of digital integration in school library programs.
3. To investigate the potential of digitization in the development and provision of library services and users' learning success.
4. To examine the views of librarians and principals on whether digital transformation is achievable in school libraries, as well as what effect it might have.

2. LITERATURE REVIEW

Well resourced school libraries contribute significantly to student learning outcome's. Evidence from research suggests that use of well-resourced libraries run by staff who are trained in library services is associated with improved literacy, reading comprehension, and information-seeking behaviors (Lonsdale, 2003; Lance & Kachel, 2018).

Libraries foster self-directed learning and curiosity, which is particularly true among minority students (Krashen, 2011).

2.1. Global Best Practices in School Library Management

Finland and Singapore are two examples of countries where well-managed school libraries, supported by high-quality digital facilities and active community involvement can have a profound effect on student learning. The school library in Finland values equal access to digital and print material to promote learning through collaboration where students become active contributors of their own inquiry-based knowledge (Löfström, 2017). Similarly, Singapore has worked on its libraries to include e-book systems, digital catalogs and interactive learning resources in them with accompanying professional development for library staff to ensure the effective use of technology (Tan & Chua, 2019).

These models assume that workmanlike library agencies, configured with space, staffing and digital resources are partnered to develop functional living learning centers.

2.2. Digital Library Integration in Southeast Asia

The transformation of school libraries in Southeast Asia to digital is moving ahead with some promising programs and outcomes. Thailand's "e-Book Learn" program is an example how the implementation of digital technology has facilitated equitable access to education materials and resources may be historically doubly challenged in urban areas – such as Bangkok (Srisomboon, 2020). Technology. Identification, Orchestration) There is a range of innovative technologies that have been introduced to supplement classroom teaching through more personalized and flexible learning experiences such as Learning Management Systems (LMS), mobile applications, e-book repositories (Chai & Koh, 2018). These developments are happening alongside regional education at reform initiatives that aim to enhance digital literacy and use of technology in teaching and learning practices. Research suggests varying uptake and digital capabilities amongst teachers and librarians, which can hinder effective technology use (Rahman et al., 2021).

2.3. Situation of School Libraries in Bangkok

Bangkok school libraries exhibit a variety of differences and similarities between themselves in terms of funding, area, collection size, staffing and computers available according to whether the schools are state or private. Libraries are essential resources and hubs for academic support, and student development but many libraries find themselves with perennial challenges that hamper their effectiveness.

2.4. Infrastructure and Accessibility

The conditions and accessibility of school libraries vary significantly from one Bangkok school to the next. Data of libraries reported in private schools with availed space, Latest books and availability of digital resources signify vast space, more financial support and advanced educational environment. Public school libraries, on the other hand, are fraught with obstacles such as overheated library rooms, antiquated furniture, and limited quarters. They often do not have enough room for all of the students (OBEC 2021). Physical environment: t's usability and students' motivation to make use of the library.

And schools don't have the digital infrastructure they need. Digitalized catalog, e-book and online databases are popular of private organizations but many libraries still depend on printed material for their services; those that do have digital systems may find these to be outdated or lackingin proper maintenance (Thongthew & Trakarnrung, 2022). Poor internet quality and insufficient technical support limit the effective use of digital resources, which limits libraries' potential for involvement in technology-mediated learning.

2.5. Staffing and Management

Competent library personnel is one of the prerequisites for effective management of the library and creation of a conducive learning environment. Most public school librarians in Bangkok are not formally trained as librarians because the librarian positions at Bangkok public schools are filled with staff members without library background (OBEC, 2021). This deficiency hinders the ability for effective collection development, information literacy instruction, and digital resources integration. Library professionals, including public librarians are not provided with adequate professional development; as such they are not informed about new technologies and modern practices in the library (Wanchai 2018).

Additionally, because investment in staff development is more stable in private schools, libraries are typically staffed by better-qualified professionals and continue to receive ongoing training, enabling them to offer more innovative library services. That inequity adds to the development of what is already a widening gulf in library quality and services between pubic and non-public educational sectors.

2.6. Student Engagement and Usage

Student utilization of Bangkok school libraries varies widely based on resource quality and availability as well as library activity offerings. Private school students tend to report higher library usage; this is enabled by rich resources and desirable activities (OBEC, 2021). These students are also enriched with the access to online research databases and e-books that enrich their educational experiences, leaving them using library does more often and in greater depth.

On the other hand, students in public schools often have low levels of engagement due to the lack of materials, shortage of digital resources, and lack of programs led by librarians creating a culture that supports reading and information literacy (Wanchai, 2018). This differential impact affects the way students read and how much they achieve in school; students in richer environments develop stronger independent learning habits (Krashen, 2011).

While digital devices have the potential to increase engagement by providing access to diverse content and interactive learning experiences, their use has remained inconsistent.

Most of the students had low use of digital library resources especially for a general intention such are unaware, accessibility and no training of how to use in the efficient ways (Thongthew & Trakarnrung, 2022). The underuse points to the requirement for targeted intervention aimed at enhancing digital literacy and for a more pervasive embedding of technology into library services.

2.7. Barriers to Effective School Library Management

Although these changes occurred, there are still substantial obstacles that make the implementation of school libraries impossible in some areas. The lack of budget in Thailand is still the main obstacle to acquiring modern facilities and keeping library sites (OBEC, 2021). Second, there are inefficiencies attributable to a fragmented management and uneven policy implementation as schools have varying levels of autonomy and support (Wong & Lo, 2022).

Understaffing and limited librarians' digital literacy skills, as well as those of educators, exacerbate these problems. Many school librarians lack a proper preparation in library science and digital resources that would prevent them from properly responding and acting to manage digital collections or integrating technology into their libraries´spaces (Wanchai, 2018). There are few, if any, professional growth opportunities often available especially in the public schools to support capacity building and new approaches (Thongthew&Trakarnrung, 2022).

Cultural factors, such as reliance on print material and low-level knowledge of technology used by students and teachers contribute to challenges in the development of a modern library. Without unified tactics to inform and excite users,

the functionality peers have inherited might not be used as much as it could be used – leading to unfulfilled promise of technological investment (Lance & Kachel, 2018).

2.8. Theoretical Frameworks Informing Library Integration

Theoretical frameworks that have supported effective digital integration in education lay a strong foundation for this study. The Constructivist Learning Theory highlights the value of libraries as action environments for dynamic learning, where learners can build knowledge through exploration and reflection via accessible resources and inquiry-based activities (Piaget, 1954; Vygotsky, 1978).

Technology Pedagogical Content Knowledge (TPACK) provides a lens through which to think about how teachers and librarians can integrate technology with their pedagogy and content allowing for better student learning outcomes (Mishra & Koehler, 2006). This framework also underscores the need for developing staff expertise about technical skill development and the integration of digital tools within curriculum.

The Substitution, Augmentation, Modification, Redefinition (SAMR) model by Puentedura (2006) also offers a continuum for evaluating how technology is being used within libraries: from simply replacing analogue resources to transforming learning experiences and changing the way students interact with knowledge.

Taken together, these models justify the need for a school library to view digital integration in holistic terms; that is, it should have both infrastructure (including technologies and fluent staff) as well as pedagogical coherence to realize educational potentials.

3. CONCEPTUAL FRAMEWORK FOR IMPROVING SCHOOL LIBRARY MANAGEMENT IN BANGKOK

Theoretical Framework & Foundations
Underpinning Theories:
- **Constructivist Learning Theory** (Libraries as inquiry-based, student-centered learning environments supporting knowledge construction)
- **TPACK Framework** (Integration of Technology, Pedagogy, and Content Knowledge for effective teaching and digital resource use)
- **SAMR Model** (Technology integration levels from Substitution to Redefinition, guiding meaningful digital transformation)

Inputs (Key Resources & Support Systems)	**Processes (Management & Integration Activities)**	**Outcomes (Expected Improvements & Impacts)**
Library Infrastructure (physical spaces, hardware, internet connectivity)	Digital Integration of Library Systems (e-catalogs, Learning Management Systems, e-books, interactive digital resources)	Increased Library Usage & Student Engagement
Skilled Personnel (trained librarians & educators, ongoing professional development)	Professional Development & Training Programs for staff to enhance digital literacy and management skills	Enhanced Digital Literacy for Staff and Students

Digital Tools & Platforms (software, databases, online resources)	Management Practices & Community Engagement (collaboration with teachers, students, parents, policy makers)	Alignment with Thailand's Education 4.0 Goals
Policy Support & Sustainable Funding		Sustainable, Innovative, and Equitable Library Management

4. METHODOLOGY

Drawing on a mixed methods research design, this study seeks to gain a holistic understanding of the positive and negative aspects of the school library management in Bangkok. The methodology uses both quantitative and qualitative methods to triangulate materials from different sources in order to achieve the rigorous results regarding data veracity, reliability and depth of understanding. This combination assists in the nuanced analysis of infrastructural, managerial and digital integration-related challenges, whilst faithfully recording the perspectives and experiences of key role players.

The first, quantitative side focuses on what can be numerically measured – the quality of roads, the number of staff and how much they rely on digital tools. Meanwhile, the qualitative part supplies in-depth contextual background by means of interviews regarding the attitude, perception and managerial approach behind these quantitative trends. This methodological combination supports the validity of findings and provides a foundation on which to base pragmatic, evidence-informed guidance.

4.1. Participants

Careful selection of the subjects was to be able to reflect a variety of school libraries in Bangkok, both public and private schools.

The sample included:

1. Twenty-five PSC schools have the following responsible person: a school librarian who carries out library and media center operations, develops collections, and provides resources. These librarians represent a range of experience and digital skill levels, from libraries with different resource allotments.
2. Ten principals, vice-principals, and coordinators who participated in policy development and resource allocation as well as overseeing library services. Their addition signifies institutional emphasis, financial allocation of resources, and how planning is executed in the running of a library.

The sample used purposive sampling to reflect as much diversity in school types (e.g., urban vs. suburban, public vs. private) so that they might uncover disparities and common challenges. Participants were chosen for their preparedness and ability to provide fulsome and honest feedback about their library management operations and digital transformation.

4.1.1. Instruments

To obtain such information, the study utilized different tools for different types of participants:

1. **Structured Survey Questionnaire (for librarians):**

This survey was designed with a combination of closed-ended and Likert-scaled questions to measure library infrastructure, digital resource access, staff training requirements, and use. The questionnaire addressed:

- Access to infrastructure and technology
- Experience with digital literacy and training community members
- Frequency and nature of use of digital tools
- Perceived barriers and needs for support

2. **Semi-Structured Interview Guide (Administrators and Librarians) Introductions:**

These interviews gave respondents the opportunity to further explain solicitation responses and offer more detailed information about:

- Policies of the institution: effect on library funding and staffing
- Culture associated with digital integration and transformation
- Barriers of and facilitators to modernization
- Develop additional features and support

3. Document Review Checklist:

When possible, information contained in current library management records, digital catalog statistics on usage, and training program schedules were reviewed to verify self-reported data and current practices.

The instruments were piloted in two schools that were not part of the main sample to ensure clarity, relevance and reliability, with adjustments made as needed.

4.1.2. Data Collection Procedures

Data were collected over a three-month period in line with ethical guidelines for confidentiality, and voluntary enrolment.

4.1.3. Survey Distribution

The questionnaires were e-mailed via the school network to parents and students, as well as the informed consent forms together with an explanation of what is studied and how the data was being used. Induction reminders enhanced the response rate.

4.1.4. Interviews

Semi-structured interviews were conducted in person and via videoconferencing platforms, as per participant preference and feasibility during the pandemic. Approximately 45 to 60 min sessions were audio-recorded (with consent) then transcribed for use of detailed qualitative analysis.

4.1.5. Document Review

School authorities were requested for permission to access relevant documents which are on-site or sent by email, to complement primary data.

The research team kept in constant contact with participants during data collection to verify responses and ensure completeness.

5. DATA ANALYSIS

Quantitative statistical methods were integrated with qualitative thematic analysis to present a unified interpretation of the findings.

5.1. Data Analysis

Number from the survey were entered into statistical package for social science (373-SPSS Version 18). Descriptive statistics (means, frequencies and percentages) were used to summarize infrastructure status, human resources distribution, and types of using digital materials. Cross-tabulations and chi-square

tests were used to provide inferential statistical analysis of the associations among school types (public vs. private) and levels of digital integration or librarian preparation.

5.2. Analyzing Qualitative Data

Six-phase methodology (Braun & Clarke, 2006) was applied to the interviews transcripts using thematic analysis. During the initial coding, several themes and ideas about difficulties, perceptions and institution practices recurred. Codes were then grouped into primary themes such as “Resource Constraints,” “Digital Literacy Gaps,” “Policy Support Needs” and “Opportunities for Innovation. The NVivo software facilitated systematic sorting and retrieval of coded data to enhance rigor and transparency.

5.3. Triangulation and Integration

The results of both datasets were triangulated to confirm and enrich interpretation. Quantitative evidence of low uptake of digital tools was supported by qualitative stories which described shortfalls in training or infrastructural impediments. This holistic approach helped to identify systemic patterns and complex stakeholder experiences.

5.4. Validity and Reliability

Member checks were done with sampling to confirm if the preliminary findings are true, hence it is improving; in terms of validity. Reliability was assured through standardized coding protocols and peer debriefing among the research team.

6. RESULTS

Findings This part discusses the main results of the quantitative survey and qualitative interview data with school librarians, teachers and administrators in Bangkok. Responses are categorized across four broad sections: (1) Infrastructure and Resources; (2) Staffing and Professional Development; (3) Digital Integration and Technology Readiness; and (4) Administrative Policy Support.

6.1. Infrastructure and Resources

6.1.1. Physical Facilities and Space Limitations

It was found from survey response that most school libraries in Bangkok have limited space. Of the 60 schools surveyed:

- 68.3% (41 schools) stated that their library was too small for the current student cohort.
- 36.7% (22 schools) did not have provision of school library or multimedia centre.
- Of which only 18.3% (11 schools) had refurbished/renovated new interiors of library in last five years.

Respondents stated that outdated and overcrowded facilities deterred student engagement and impeded team learning exercises.

“Many times we have to send students away during the lunch periods because there’s just not enough space.” — Librarian, Public Secondary School

6.1.2. Collection and Cataloging Systems

Library collection sizes varied significantly:

- Fewer than five physical books were found in 55% of schools.
- Of the total, (3)6.7% (10 schools) of them had an operational OPAC system.
- Outdated collections, not fulfilling the curricular requirements: 43.3% respondents reported their current collection being out-of-date and did not conform to the developing curriculum.

A small number of libraries had digital content like online magazines, journals or academic resources.

6.2. Staffing and Professional Development

6.2.1. Librarian Qualifications

- 71.7% of the librarians had a B.Sc degree in LIS.
- But only 23.3 per cent of the professionals undertook any kind of training on digital library system or ICT based cataloguing in the last two years.

Qualification Level of Librarians	Percentage (%)
Bachelor's in LIS	71.7%
Diploma or Certificate in LIS	20.0%
No formal LIS education	8.3%
Received recent digital training	23.3%

6.2.2. Staffing Levels

- Libraries – Commonly A very high percentage (61.7%) were a one-librarian library and operating often on her or his own.
- Librarians were almost universally involved in other duties, whether it was teaching for some or administration for others, which affected the primary focus on library management.

"I am the lone librarian here, and I teach two classes. We just have no time for any kind of digital recording or planning library events." — Librarian, Private School

6.3. Digital Integration and Technological Readiness

6.3.1. Access to digital resources and internet connectivity

Survey results showed that:

- 40% (24 schools) had a computer station in the library.
- On the other hand, only 28.3%(17) revealed that they were enjoying stable high speed internet connection.
- 6.7% (4 schools) were already using some form of digital lending or library management solution.

Digital Infrastructure Available	Schools (%)
Computer(s) with internet	40.0%
Stable Wi-Fi connectivity	28.3%
Tablets or mobile devices for students	10.0%
E-library or digital lending system	6.7%

6.3.2. Use of Digital Resources

Only **30%** of schools reported using any form of **digital content** (e.g., e-books, online databases).

- Commonly reported barriers were:
  1. Lack of budget (82%)
  2. Lack of training (67%)
  3. Lack of administrative support (38%)

"Even if we do get some funding, it always goes to lab stuff or sports — never the library." — School Administrator

6.4. Administrative and Policy Support

6.4.1. Budget Allocation

- 63.3% of the respondents stated that they received less than 20,000 THB per year in funds to manage their library operations.
- Budget allocations were in some public schools split with other departments, thereby reducing their potential for library growth.

"The library budget has increased for over five years. And for anything new, we depend on donations." — Librarian, Government School

6.4.2. Awareness, Support of School Leadership

Administrators had varying impressions based on interviews:

- There was general agreement as to the need for library transformation, but few had specific plans or schedules for improvement.
- Digital transformation was seen as optional by some school leaders, especially when basic academic resources were still missing in schools.

"Truthfully, we are still addressing classroom shortages. It feels like a luxury to digitize the library right now." — Principal, Inner-City School

Summary of Key Findings

Key Finding Area	Observation
Infrastructure	Majority of libraries are small, outdated, and lack modern furnishings.
Staffing	Librarians are often undertrained in digital tools and overstretched.
Digital Readiness	Few libraries have reliable digital systems or internet access.
Policy & Budget Support	Library budgets are low; modernization is not prioritized institutionally.
Stakeholder Sentiment	Strong desire to improve exists, but practical support is lacking.

7. DISCUSSIONS AND IMPLICATIONS

The findings of this study suggest a multidimensional crisis facing the school libraries management and modernization in Bangkok City, stemming from infrastructure, human resource, digital and policy problems. In theory, LFs are supposed to be learning centres that provide the best support services a library should offer but in reality, libraries are trapped by decades of under funding and absence of training and institutional support.

7.1. Infrastructure: The Foundation in Decline

Physical infrastructure is likely to be one of the most visible, if not the most immediate, bottlenecks. The numbers showed that over two-thirds of the libraries surveyed are constrained by space and facilities that are old or out-of-date. These conditions are diametrically opposed to the modern library as a dynamic, student-centered learning landscape. This is consistent with earlier results from UNESCO (2019) which is that well-designed physical spaces significantly influence student motivation and engagement in library use.

Environments lacking modern furniture, collaborative learning spaces or multimedia devices decreases libraries' ability to accommodate interactive study sessions or scholarly group work. As Thailand moves toward a holistic, student centric curriculum (OBEC, 2020), the state of school libraries appears not to meet national educational aspiration.

7.2. Human Resources: The Librarian Under Valued

Underinvestment in librarian training and staffing is a major barrier to progress. Most of the librarians (the majority) are formally trained in library and information science, but fewer have been trained specifically in digital tools or integrated library systems. Many are loaded with teaching, if not admin (if its both) freeing them to focus less on library development.

These findings also support the IFLA's (2021) study, highlighting that continued professional development in digital literacy and instructional technology is essential for librarians to be able to fulfill their role as facilitators of 21st-century skills. Lack of investment in human capital × Two respondents also pointed out that lack of investment on the human side was a barrier to digital transformation, something that generates a collaborator who feels badly.

7.3. Digital Integration: An Uneven, and Unfunded, Transition

The move towards digital libraries in Bangkok is particularly fragmented. Despite priority being given to ICT integration in education by the Thai government (Ministry of Education, 2021), there are few schools with functioning digital library systems, reliable internet or basic digital collections as shown by this study. The top reported obstacles were budget constraints followed by lack of digital training and institutional prioritization.

This highlights a classic "digital divide within cities" where some top end (private or well resourced) schools are moving towards smart learning environments while many of the public-sector schools remain digitally marginalized. In addition, policy and statement language do not always swim in the same waters. Countermeasures Although it's a nationwide goal, there are still some obstacles to the implementation of digital technology in educational systems, including insufficient funding supports, lack of support systems and less programs of capacity -building.

7.4. Administrative Vision and Policy Disconnect

This study also reveals a variable of concern in school leaders' conceptions of libraries. While most principals and staff express an abstract understanding of the library's value, it is rarely translated into concrete strategies or funding commitments. This cognitive dissonance points to more systemic issues where library modernization has not been perceived as a priority for school growth.

OBEC's guidelines on improvement of library facilities have been promulgated periodically, but their execution and the allocation of resources continue to be erratic. With no explicit mechanisms of oversight and accountability, the allocation of resources for school libraries can continue to lag.

7.5. Implications for Equity and Lifelong Learning

The findings highlight growing inequalities in information and access to digital learning tools. Meanwhile, with international education moving to hybrid and online learning systems, vulnerable students without digital library access are at a significant disadvantage. This has implications for academic success, but also readiness for adult life and lifelong learning in the knowledge economy.

This situation underscores the importance of a "rights based approach" to school libraries that will recognize access to books and digital resources, as well as professional librarians, as an educational right not a perk.

7.6. Comparative Insights and Regional Relevance

When compared with similar research in Malaysia, Vietnam and Indonesia, school libraries in Thailand report similar challenges about digital development, but uneven coverage across urban areas. This suggests that there is a need for even more local policy interventions, including assistance tailored not just at the national level, but also in the districts or municipalities.

7.7. Emerging Opportunities

However, the study is recognizing opportunities in addition to the challenges. There is no doubt that librarians are willing to increase their proficiency, administrators open to digital models--if well supported in them- and politicians become more conscious of all this. Strategic approaches, including capacity-building initiatives, targeted investments and public-private partnerships may help enable such transformative change.

This study exposes an alarming yet rectifiable truth; that school libraries in Bangkok are underused and under-resourced, but offer great potential to be powerful educational spaces for change. The gap between policy goals and reality must be bridged by the collaboration of infrastructure construction, faculty training, computer technology installation, and sustained administrative commitment.

National education policies have a great deal to say about information literacy and 21st-century skills, but the reality is pathetic. There are many school libraries in Bangkok which continues to retain outdated physical structures, insufficient digital resources as well as unskilled staff. Although librarians, teachers, and administrators concur that libraries are essential to improving student learning children should never be educated beyond the funds provided for their education; this agreement is rarely reflected in professional programs making decisions about funding and planning.

The smokescreens without holistic digital integration remain an ongoing issue. Surprisingly, the conversation (spurred by its accelerated forced COVID-19 digital learning rampage) on this global shift to digital education has reached policy corridors; yet implementation is fragmented and hardly budgeted for in many Bangkok schools. Moreover, the findings suggest that digital divide is increasingly widening even in urban settings affecting students from public or low-income schools significantly.

8. CONCLUSION

This is an important study indicating where change could occur. Library staff are open to professional development and school administrators are willing to embrace change as long as they're supported. This is a critical moment for policy makers, school and public library leaders, and other private sector partners to work together in revitalizing the conditions of school libraries as inclusive learning environments with access to technology.

In the end, school libraries are not secondary locations or programs on the educational landscape. We need to reimagine them as centers of inquiry, digital discovery and lifelong learning—places where students learn not only academic skills but also creativity, critical thinking, citizenship and entrepreneurship. By addressing the gaps identified in this research and implementing needed improvements, Bangkok can serve as a model for school library progress for 21st-century Thailand.

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APPENDICES

Questionnaire for School Librarians

Target group: 25 librarians at public and private schools in Bangkok.

Objective: This study aimed at investigating the present state of library management: the extent to which digital change occurs, challenges in managing digital libraries and how to improve library services und er a digital world.

Part A: Demographics and Professional Background

Name (Optional): __

School Name (Optional): __

Type of School:

☐ Public

☐ Private

How long have you been a school librarian?

☐ Less than 1 year

☐ 1–3 years

☐ 4–7 years

☐ More than 7 years

Do you have a background or formal education and/or training in library and information science?

☐ Yes

☐ No

Section B: Existing Libraries Resources and Management Practices

Approximately how many items are in your library's collection?

☐ Fewer than 1,000 items

☐ 1,000–5,000 items

☐ More than 5,000 items

Please select the dominant way in which your library catalog is updated or managed.

☐ Manual (paper/card catalog)

☐ Digital but not integrated (e.g., spreadsheets)

☐ Integrability with a contemporary Library Management System (LMS) or computer software

What kinds of academic and information resources are available to students?

(Select all that apply)

☐ Physical Books and Printed Items

☐ Periodicals (magazines, newspapers)

☐ Multimedia resources (audio, video)

☐ E-books/digital reading resources

☐Educational software and apps

☐ Journals and periodicals from online academic databases or digital libraries

C. Digital Integration and Student Engagement

What digital products or platforms have you implemented to help your library users better access and manage information sources?

☐ Yes

☐ No

If 'yes', please indicate what tools/platforms: _

How intensive are students in accessing digital library resources and services online?

☐ Very active

☐ Moderately active

☐ Rarely use

☐ Do not use at all

What are the primary challenges that impact upon the integration and sustainability of digital library services? (Select all that apply)

Limited budget or no funds☐

☐ Insufficient staff training or knowledge.

☐ Poor connectivity or infrastructure on the IT side

☐ No support from the College or administrative personnel.

☐ Students and staff with poor digital skills

☐ Appears to have a bias or old-fashioned regards toward change

Section D: Capacity Development and Professionalization

Have you participated in any digital library management or technology training or workshops?

☐ Yes

☐ No

If yes, how frequently?

☐ Annually

☐ Occasionally

☐ Are you a: ☐ Frequent (several times per year)

What could help you further manage a digitally integrated library? (Select all that apply)

☐ Face-to-Face workshops around digital literacy and LMS use

☐ Online courses or webinars

☐ Mentor and peer support on site

☐ Programs run by public agencies or NGOs

☐ Partnering with technology companies or research institutions

E. Opinions and Suggestions for Improvement

How much do you agree that digital integration could make students learning better and library services more experimental?

☐ Strongly agree

☐ Agree

☐ Neutral

☐ Disagree

☐ Strongly disagree

What would be the three most pressing priorities for improving school library management and digital transformation in Bangkok from your experience?

_____

Questionnaire for School Administrators

Target: 10 administrative staff members at schools in Bangkok

Purpose: Investigating the support of the institution, budgetary priorities, policy perspective and future planning in school library management and digital transformation initiatives.

PART A: ROLE AND SCHOOL PROFILE

Your position/title: __

Type of school:

☐ Public

☐ Private

How long have you been doing this job?

☐ Less than 1 year

☐ 1–3 years

☐ 4–7 years

☐ More than 7 years

Section B: Requests for Institutional Support and Funding

Where does your school library's funding mostly come from?

☐ School operational budget

☐ Government grants

☐ Private or external donations

☐ Other: __

Does your school district have a separate digital library budget (hardware and software as well as training)?

☐ Yes

☐ No

☐ Planned for future allocation

How often do YOU currently assess the effectiveness and impact of the school library on student learning and engagement?

☐ Never

☐ Annually

☐ Per semester/term

☐ More frequently

C. Digital Transformation and Barriers to Implementation

Is your school engaged in digital transformation that includes library initiatives?

☐ Yes

☐ No

☐ Planning phase

If so, please specify the digital tools/ platforms/systems in use:

What are the greatest obstacles that your school faces to adoption of full digital library management? (Select all that apply)

☐ Insufficient funding or resources

☐ No qualified staff or in-house skills

☐ No policy or plan for managing the conflict.

☐Poor stakeholder knowledge or investment

☐ Other (please specify): _

Do you believe there should be ongoing training of librarians on digital literacy and digital literacies?

☐ Yes

☐ No

Part D: Research Vision and Collaborative Opportunity

To what extent does your school's strategic vision place an emphasis on the digital transformation of the library?

☐ Extremely critical

☐ Important

☐ Neutral

☐ Not important

Would you be interested in establishing relationships with outside organizations (NGOs, universities, tech companies) that would help upgrade the school library to make it more digital friendly?

☐ Yes

☐ Maybe

☐ No

What more can be done, or new policy or initiative should be put in place, to support Bangkok school libraries and help them toward digital progress?

MARKETING COMMUNICATION STRATEGY TO DEVELOP BRAND AWARENESS AT SAVAYA BALI COMPANY

Putu Ayu Risky Nandha [1)], Ni Nyoman Cipta Dewi [2)], and I Made Sutika [3)]

[1)] Dwijendra University
e-mail: ayuriskynandha@gmail.com
[2)] Dwijendra University
ninyomanciptadewi84@gmail.com
[3)] Dwijendra University
sutika@undwi.ac.id

ABSTRACT

Savaya Bali, formerly known as OMNIA Dayclub Bali, faced challenges in rebuilding brand awareness after a name and concept change. This study aims to analyze the marketing communication strategies applied in increasing brand awareness and consumer appeal. The research approach uses a qualitative method with a descriptive design, through observation, in-depth interviews, and document analysis. Data were analyzed using the Miles and Huberman models. The results show that Savaya Bali uses communication strategies through social media, digital advertising, event marketing, and word of mouth promotion, with an emphasis on exclusive experiences and luxury branding. This strategy is effective in attracting high-end consumers, despite the challenges of maintaining brand consistency and expanding market share. It is necessary to strengthen digital marketing strategies, increase audience interaction, and collaborate more widely with local communities to strengthen brand awareness in the future.

Keywords: *Marketing Communication Strategy, Brand Awareness, Savaya Bali*

1. INTRODUCTION

A business is highly dependent on the existence of customers. There is nothing more important in business than creating and fostering good relationships with customers, other than the aspect of the completeness of the resources owned by the company. Creating and fostering good relationships with customers is one of the keys to success in running a business in any field. In fact, the presence of business activities is not spared from the strength of the brand. The more influential a brand is, the better and easier it will be to remember. Brands can create an attraction for customers to come and enjoy it. The development of information and communication technology has also changed marketing communication towards a consumer-based interactive approach. This requires companies to use channels such as social media as marketing communication activities. Social media brought a major change to corporate communication practices, enabling two-way communication between companies and consumers. Lack of participation in social media can result in companies missing out on many opportunities.

This situation is relevant to be studied considering the high use of the internet in Indonesia and especially Bali, where the penetration of internet users reaches 59% of the population. The use of social media such as Youtube, Whatsapp, Facebook, and Instagram is an important means of attracting potential consumers and building *brand awareness*. In this context, the change of concept from OMNIA Dayclub Bali to Savaya Bali is a challenge in itself. Even though Savaya Bali has been operating since December 26, 2020, certain people are still more familiar with the brand before. This change requires massive marketing communication efforts through social media to rebuild *brand awareness*.

In this context, the change of concept from OMNIA Dayclub Bali to Savaya Bali is a challenge in itself. Even though Savaya Bali has been operating since December

26, 2020, certain people are still more familiar with the brand before. This change requires massive marketing communication efforts through social media to rebuild *brand awareness*. In order to strengthen the brand of its products, companies need to conduct marketing communication, not only to introduce products, but also to increase customer awareness of the brand's existence. Effective and consistent marketing communication can provide *good impact* and *good value*. Marketing communication through social media is important as a form of adaptation to changes in the business environment. Social media marketing activities allow companies to form brand profiles, introduce online customer service, share product information, and offer special offers in a simple and sustainable way. Through a social media-based marketing communication strategy, companies like Savaya Bali are expected to rebuild *brand awareness* and strengthen the new brand image in the minds of the public.

The formulation of the problem and the purpose of this study is to analyze the marketing communication strategy applied by Savaya Bali in building brand awareness after the name change of OMNIA Dayclub Bali. Marketing communication is a means by which companies apply communication as a strategy to inform, persuade, and remind consumers directly or indirectly about the products or brands offered (Philip Kotler & Kevin Lane Keller, 2012). Social media as a communication channel is defined as an online application program, platform, or mass media tool that facilitates interaction, collaboration, or content sharing between users in general (Kim & Ko, 2012). Social media marketing activities allow for fast and dialogical communication between companies and their consumers, replacing traditional one-way communication (Breitsohl et al., 2015).

A brand is an additional identity of a product, a manufacturer's promise to consumers, and a name that represents a product, service, company, and other related things (Philip Kotler, 2012). *Brand awareness* is the ability of potential buyers to recognize and remember a brand as part of a certain product category (Aaker, 2009). The higher the *brand awareness*, the more likely the product is to be considered in the purchase decision. This research is expected to provide an understanding of marketing communication strategies in building *brand awareness* in Savaya Bali. In addition, the results of this research can be input for companies in developing marketing strategies, as well as enriching the literature on the importance of the role of social media-based marketing communication in shaping and strengthening brands in the midst of changing business concepts.

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This study uses a qualitative descriptive design directly by conducting a deepening in accordance with the research objectives. Qualitative descriptive studies help researchers to gain an in-depth understanding of the phenomenon being studied and allow researchers to understand the subjective perspectives of the participants which can help in gaining insight into a person in responding to a phenomenon. In this study, the researcher *purposively selected* five people as informants based on several considerations, including the length of service both before and after the change of company name. In addition, other sources of research are documentation of secondary data from official social media accounts and internal documents of Savaya Bali. The data collection technique was carried out from January to February 2025, using source triangulation techniques to ensure the validity and reliability of the data. Through observations in the field, researchers documented real marketing communication practices, including digital campaigns implemented, events held, and consumer interactions on social media. Interviews with the marketing team and guests still provide an in-depth perspective on how the communication strategy is received by the audience and how the perception of the Savaya brand is formed among consumers. In addition, the researcher also selected recurring guests in the period of January 1 – February 28, 2025 who were considered to be able to provide relevant and useful information to develop research data.

Before explaining the data collection technique, it is first necessary to describe the definition of the concept used in this study. The definition of the concept aims to provide clarity on the important terms that are the focus of the research. In this case, the definition of the concept used includes *brand awareness* and social media as a means of marketing communication. *Brand awareness* is defined as consumers' awareness of the existence of a brand as measured by their ability to recognize or remember the brand when faced with a particular product. Meanwhile, social media is defined as a digital platform that allows interaction, collaboration, and content sharing between users, and is an effective medium in conveying marketing communication messages to consumers.

To obtain data and information, researchers use several data collection techniques, namely observation, interviews, and documentation. Observation is carried out by directly observing a certain object, phenomenon, or situation to obtain relevant information. The interview was conducted as a meeting of two people to exchange information and ideas through questions and answers to obtain the information needed, where the researcher used an unstructured interview method. Questions develop based on interactions between interviewers and respondents without a fixed question format, with the aim of obtaining more in-depth data and facilitating the disclosure of broad and varied information according to the flow of the conversation. Meanwhile, documentation is carried out by collecting various sources of written data related to objective conditions, genealogy, and other supporting data.

In the data analysis stage, this study uses qualitative techniques based on Miles and Huberman theory, which includes three main steps, namely data reduction, data presentation, and conclusion drawn. Data reduction is carried out through selection, focusing, and simplification of field data so that it becomes meaningful information. The presentation of data is carried out in the form of a narrative to organize complex information to be easier to understand, thus allowing conclusions to be drawn or taken action. Furthermore, conclusions are drawn by analyzing data that has been compiled in a qualitative descriptive manner, by comparing between data to obtain patterns, meanings, and in-depth understandings.

The main instruments of this study are interview guidelines and observation lists used as tools in the data collection process. The presence of researchers in this study is very important, considering that in qualitative research, researchers function as the main instrument. The research was carried out in Savaya Bali, Pecatu Uluwatu, South Kuta District, Badung Regency, Bali, with a data collection period from January to February 2025. The presence of researchers allows direct interaction with informants as well as direct observation of the phenomenon being studied. To maintain the validity of the research results, the researcher used the triangulation technique. This technique is carried out by examining data from various different sources and methods, so that the results of the research can be more reliable and in accordance with the reality in the field.

3. RESULTS AND DISCUSSION

In building *brand awareness*, companies need to implement a planned and effective marketing communication strategy. According to Rogers in Cangara (2013), a communication strategy is a design that is designed to change human behavior on a large scale through the transfer of new ideas. Middleton (2013) also states that a communication strategy is the optimal combination of all communication elements, including communicators, messages, media, recipients, and expected effects, to achieve effective communication goals. In line with that, Chris Fill (2013) emphasized that marketing communication strategies have a role in providing information, persuading, and reminding consumers about the products or services offered.

Brand awareness itself is an important component in building brand strength. Durianto (2013) defines *brand awareness* as the ability of potential consumers to

recognize or remember a brand in a certain product category. Kotler (2015) expands the definition of brand as a symbol or identity that distinguishes a product from its competitors, while Aaker (2015) mentions brand awareness as one of the key elements in building strong brand equity. Departing from these concepts, this study aims to analyze how the marketing communication strategy implemented by Savaya Bali is able to build brand awareness in the midst of competitive competition in the entertainment industry.

The findings in this study show that Savaya Bali's marketing communication strategy has succeeded in creating *awareness* of new brands in a relatively short time. The transformation process from OMNIA to Savaya Bali was not only a name change, but also included an update of concepts, management, and communication approaches. This rebranding was responded to by strengthening visual identities such as The Cube icon, the use of digital technology, and narrative campaigns designed to convey the value of exclusivity and uniqueness of the Savaya experience. The results of the interviews show that Savaya Bali adopts an integrated marketing communication strategy that includes social media Instagram, TikTok, Facebook, organizing world-class events, collaborations with influencers, international media publications, and enhanced digital reservations. Each of these channels is geared towards creating high exposure, building a consistent brand narrative, and shaping an emotional and memorable customer experience. Event marketing is the main backbone of Savaya's brand campaign. By bringing international DJs and top artists to events such as Elrow, Zamna, and The Chainsmokers, Savaya has managed to create a *buzz* that not only attracts the masses but also creates viral visual and emotional content. The visitor's experience is then reprocessed into organic content, such as *repost stories* and *recap videos*, which strengthen the consumer's psychological connection with the brand.

In addition, the use of digital ads such as Instagram and Google *Ads* is aimed at reaching a wider target in a segmented manner, strengthening awareness, especially in new audiences from foreign markets. The consistency of the message and tone of communication, both visually and verbally, makes Savaya's brand communication easily recognizable and associated with an exclusive experience. This is in accordance with the IMC theory by Kotler & Keller (2012), that synergy between communication channels is key to marketing success. Savaya also takes a *customer-based approach,* which makes the visitor experience not just a result, but part of the communication strategy itself. Elements such as premium service, cliff locations with sea views, VIP concepts, and world-class electronic music not only increase visitor satisfaction, but also create stories that consumers voluntarily share on social media. This reinforces aspects *of brand recall* and *brand recognition*, two important components of Aaker's theory of *brand awareness.* This research also confirms the results of previous research, such as a study from Kim & Ko (2012) which emphasizes that social media as a means of communication can accelerate the process of forming brand perception, especially in the entertainment and tourism industry.

The challenges faced by Savaya include *post-rebranding brand consistency,* social media algorithm dynamics, and fierce competition between premium beach clubs in Bali. However, the company was able to answer these challenges through a data-driven approach, the adoption of technologies such as *virtual reality*, and the optimization of cooperation with the media and five-star hotel partners. All of this shows that Savaya is not only focused on one-way communication, but also invests in building an actively engaged community of audiences.

These findings enrich contemporary marketing theory, particularly in the experiential aspects of communication. This study proposes a modification to the classic marketing communication model that focuses too much on messages and media, to emphasize more on the elements of real experience and consumer narrative as the main driver of the formation of brand awareness and long-term loyalty. With this approach, Savaya Bali has not only succeeded in rebuilding its brand after *the rebranding*, but has also positioned itself as a *role model* for premium entertainment destinations that are able to integrate modern marketing communications effectively and sustainably.

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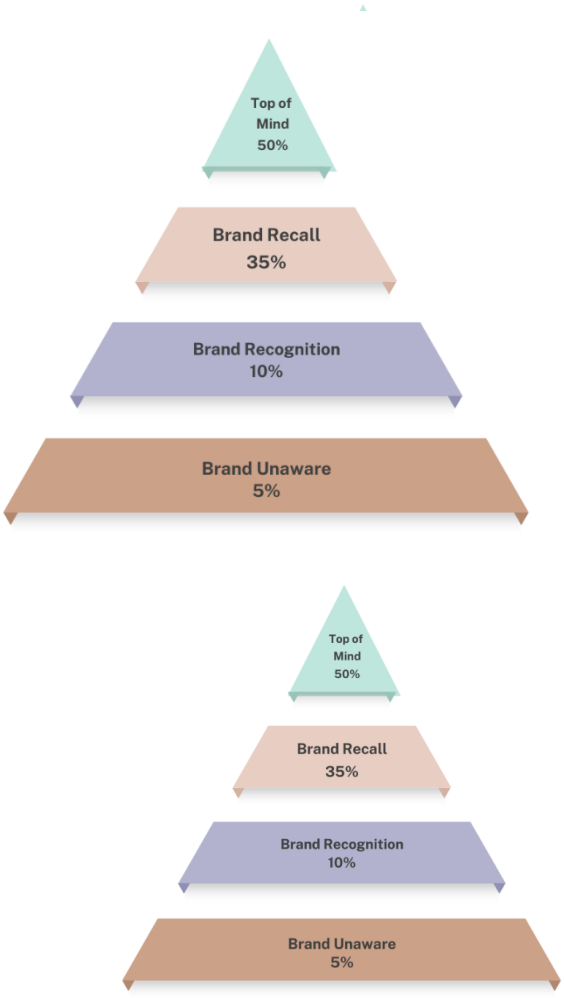

Figure 2. Savaya Bali's brand awareness pyramid by audience recognition rate, shown in percentage
Source: researcher's processed data, 2025

4. CONCLUSION

This research shows that the marketing communication strategy implemented by Savaya Bali in building *brand awareness* is designed in a structured and directed manner, targeting high-end audiences in accordance with the exclusive image carried. Operating in a competitive premium entertainment industry, Savaya Bali understands the importance of creative, innovative, and experience-based marketing communications to maintain brand relevance and strength in the minds of target audiences. Savaya Bali utilizes various marketing communication techniques, such as digital advertising Facebook Ads, Instagram Ads, Google Ads, organizing exclusive events with *a presale ticket* system, public relations through local and international media, digital marketing through social media and influencers, and direct sales through VIP reservations and hotel *concierge cooperation*. The packaging of communication messages is carried out with consistent visual branding, *engaging* storytelling, and an emphasis on the uniqueness of the location and VIP experience, strengthening the perception of premium among consumers. Evaluation of the elements of the marketing communication process, ranging from the sender of the message, the content and encoding of the message, communication channels, to the audience's response, shows that the strategy implemented by Savaya Bali is effective in building *top of mind awareness*. This is reflected in the high level of social media interaction, the success of major events such as Elrow and Zamna, and the high level of recommendations from visitors. Despite facing challenges such as competition between beach clubs, changing entertainment trends, and changes in social media algorithms, Savaya Bali was able to answer them through data-driven innovation and adoption of new technologies, including *virtual reality* to introduce immersive destination experiences. Based on these findings, it can be concluded that Savaya Bali has successfully implemented consistent, innovative, and customer experience-based marketing communications, thereby strengthening *brand awareness* and maintaining its position as a premium entertainment destination in the local and international markets.

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I Made Sutika [1], Ni Nyoman Cipta Dewi [2], and Putu Ayu Risky Nandha [3]

[1] *Dwijendra University*
e-mail: sutika@undwi.ac.id
[2] *Dwijendra University*
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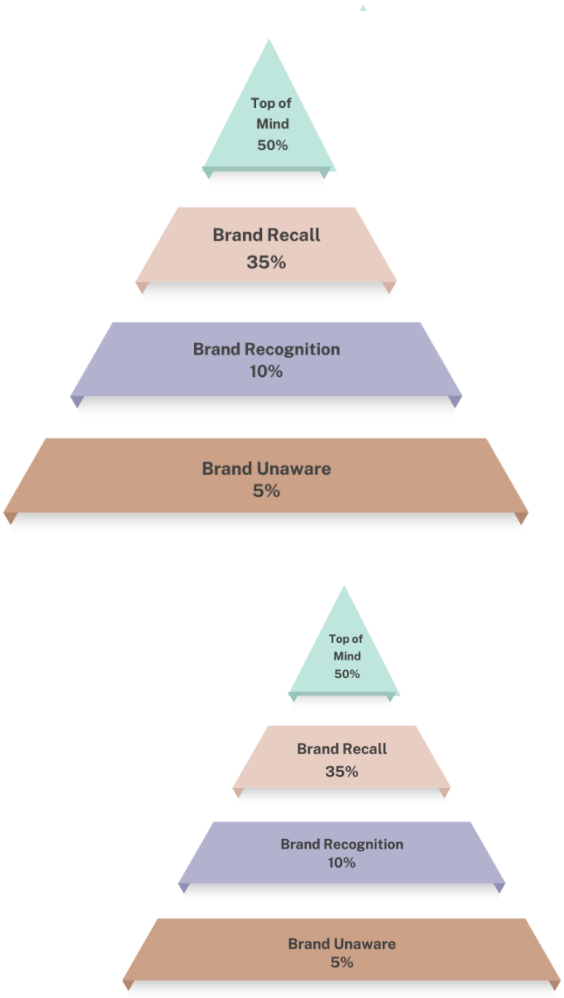

Figure 2. Savaya Bali's brand awareness pyramid by audience recognition rate, shown in percentage
Source: researcher's processed data, 2025

4. CONCLUSION

This research shows that the marketing communication strategy implemented by Savaya Bali in building *brand awareness* is designed in a structured and directed manner, targeting high-end audiences in accordance with the exclusive image carried. Operating in a competitive premium entertainment industry, Savaya Bali understands the importance of creative, innovative, and experience-based marketing communications to maintain brand relevance and strength in the minds of target audiences. Savaya Bali utilizes various marketing communication techniques, such as digital advertising Facebook Ads, Instagram Ads, Google Ads, organizing exclusive events with *a presale ticket* system, public relations through local and international media, digital marketing through social media and influencers, and direct sales through VIP reservations and hotel *concierge cooperation*. The packaging of communication messages is carried out with consistent visual branding, *engaging* storytelling, and an emphasis on the uniqueness of the location and VIP experience, strengthening the perception of premium among consumers. Evaluation of the elements of the marketing communication process, ranging from the sender of the message, the content and encoding of the message, communication channels, to the audience's response, shows that the strategy implemented by Savaya Bali is effective in building *top of mind awareness*. This is reflected in the high level of social media interaction, the success of major events such as Elrow and Zamna, and the high level of recommendations from visitors. Despite facing challenges such as competition between beach clubs, changing entertainment trends, and changes in social media algorithms, Savaya Bali was able to answer them through data-driven innovation and adoption of new technologies, including *virtual reality* to introduce immersive destination experiences. Based on these findings, it can be concluded that Savaya Bali has successfully implemented consistent, innovative, and customer experience-based marketing communications, thereby strengthening *brand awareness* and maintaining its position as a premium entertainment destination in the local and international markets.

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TAG-SWITCHING IN AI-GENERATED PROMPTS BY ENGLISH EDUCATION STUDENTS

Komang Satria Wirasa[1)], Yusuf Loka[2)], Antonius Poro Deta[3)], Ni Luh Komang Ayu Sinta Dewi[4)]
[1)] Dwijendra University
satria.wirasa@gmail.com
[2)] Dwijendra University
yusuflokayusuf@gmail.com
[3)] Dwijendra University
tonideta3@gmail.com
[4)] Dwijendra University
mangayudewi2@gmail.com

ABSTRACT

Language constitutes a fundamental element of culture, serving not only as a means of communication but also as a reflection of the speakers' ways of thinking, values, and social identity. In today's increasingly globalized society, bilingualism has become a common phenomenon, often giving rise to language alternation known as code-switching *in various communicative contexts. With the rapid advancement of technology, the emergence of Artificial Intelligence (AI) has introduced new modes of interaction between humans and machines, particularly in the field of language learning. This study focuses on* tag-switching*, a type of* code-switching *that involves the insertion of a tag phrase or discourse marker from one language into an utterance in another language, as observed in AI-generated prompts produced by students of the English Education Study Program, Faculty of Teacher Training and Education, Dwijendra University. Using a descriptive qualitative approach and drawing upon Poplack's (1980) framework, the research analyzed 287 prompts and identified 89 instances of tag-switching. The findings reveal that students frequently insert English or Indonesian tags for functional, expressive, and pragmatic purposes. These results demonstrate that the use of AI in language learning promotes natural bilingual communication patterns while reflecting students' academic identity, linguistic creativity, and communicative competence in the digital era.*

Keywords: inter-segmental code*,* code switching*,* AI-generated prompts*, Bilingualism, Muysken's (2000)*

1. INTRODUCTION

Language is an important part of a culture that not only functions as a means of communication, on the other hand it also reflects the way of the speaker thought, values, and social identity. In modern society, the use of two languages or bilingualism is becoming increasingly common as many individuals interact in more than one language. This condition is influenced by factors such as education, social environment, and the influence of globalization, which demands the ability to communicate across languages. In situations like this, the phenomenon of language mixing, known as code-switching, often arises, which is the alternating use of two languages in a single utterance or text. This phenomenon shows the social and cultural dynamics that exist in bilingual societies and reflects the ability of the speakers to adjust their language to the context of the communication they are faced with.

Along with technological advances, the emergence of artificial intelligence (AI) has brought about a new form of linguistic interaction between humans and machines.

The use of AI in the academic setting, such as creating AI-generated prompts, such as inserting some 'code' has created a new perspective for linguistic practices. According to Wardhaugh and Fuller (2021), “code” can refer to any part of language that speakers use in communicating, it can be the smaller part of language (word, phrase or other), dialect, or specific speech style. practically, bilingual speakers some time switch from a code to another one depends on the situation, topic, or the person they are talking with. In the digital age, this phenomenon is also evident in interactions between humans and technology. Wirasa et al. (2025) showed the phenomenon of inserting a “code” were found in interactions of human using technology. Wirasa et al. (2025) found the insertion of a code in one language were also common in digital communication, such as conversations between lecturers and students via messaging applications, illustrating how part of technology has become a new medium for bilingual expression. One interesting form to study is intra-sentential code-switching, which is the switching of codes within a single sentence or clause when students use two languages simultaneously in composing prompts for AI systems.

In the case of students in the English Education Study Programme, where English is used as main academic language and since the student all from Indonesia, thus Indonesian is used in everyday convertation. In line with that, the phenomenon of tag-switching in AI prompts can reflect their language proficiency level and linguistic habits. Therefore, this study is important to explore the forms of intra-sentential code that made by the students, the factors that influence the usage of 'code'.

2. RESEARCH METODOLOGY

This study used a descriptive qualitative approach with the aim of describing the forms of intra-sentential code-switching in AI-generated prompts created by students of the English Education Study Programme, Faculty of Teacher Training and Education, Dwijendra University academic years 2025/2026. The research subjects were students from the study programme who were selected because they has bilingual competence in Indonesian and English, thus enabling code-switching practices in the utterances or texts they produced.

Data analysis was conducted using Poplack's (1980) code-switching theoretical framework, which divides code switching into three main types, namely tag-switching, inter-sentential switching, and intra-sentential switching. The focus of this study is on tag-switching, which is code that can be a word or phrase that inserted within a sentence, where elements from two languages are alternately used without changing the main syntactic structure.

The Data collected from 1 to 7 October 2025. This study was done in a classroom setting, where students could use AI (in a learning context) such as ChatGPT. The main data in this study were AI prompts created by the students during learning activities. Each student was asked to generate between five and ten prompts using the AI they normally used, with topics relevant to the course they were studying. Additionally, secondary data was collected by interview or questionnaire to obtain information about the students' bilingual background and language usage habits in interactions with AI. the combination of the main and and secondary data was used as a triangulation to increase the validity of the research results.

3. RELATED RESEARCH/LITERATUR REVIEW

Language is one of main tool in social communication that allows the speakers to express their thoughts and identities. In bilingual communities, speakers would often switch from one language to another in communication setting, moreover this phenomenon known as code-switching. Based on Poplack (1980), code-switching iss a practice of shifting from a language to another in one conversation by bilingual speakers. This phenomenon not only demonstrates a person's linguistic ability of speakers in a particular communication context.

Poplack (1980) categorises code-switching into three main types, which are tag-switching, inter-sentential switching, and intra-sentential switching. Firstly, tag-switching involves inserting a word or short phrase from one language into another without changing the main sentence structure. Secondly, inter-sentential switching occurs between sentences or between independent clauses. This type indicates a change of language after one sentence structure is completed. Thirdly, intra-sentential switching is a form of code-switching that occurs within the same sentence or clause. This type is the most complex because it requires high grammatical competence from the speaker to maintain the syntactic integrity of both languages used.

Intra-sentential switching describes as the ability of bilingual speakers to combine element(s) from two languages within a single grammatical structure without causing meaning or syntactic errors. This phenomenon shows a high level of proficiency, where speakers could switch codes within a sentence structure for the reasons such as; functional, expressive, or even stylistic. In the setting of English language education, bilingual students use intra-sentential switching when they write or speak to clarify the meaning or fill lexical gaps. In today's digital setting, particularly with the increasing use of AI such as chatbots and text generators, has emerged where intra-sentential switching also appears in AI-generated prompts produced by bilingual users.

Previous studies have investigated the phenomenon of tag-switching in several linguistic setting. Rachmawati (2019) showed the interactions between lecturers and students in the classroom, tag-switching is applied as a academic strategy to make complicated concepts easier to be understood. Wahyuni (2020) studied informal student conversations and discovered that intra-sentential switching is used as a tools for lexical limitations. Furthermore, Pratiwi (2021) concluded that the use of two languages in one sentence not only used as communicative function but also becomes a marker of the linguistic identity of the younger generation. Sari (2022), through research on student academic conversations, found that intra-sentential switching is often used to adapt to formal contexts and demonstrate bilingual competence in the academic sphere.

Although these four studies have made important contributions to our understanding of the form and function of intra-sentential switching, they all focus on the context of human communication, whether in classroom, social, or non-AI digital situations. To date, there has been little research examining how the phenomenon of intra-sentential switching arises in the context of AI-generated prompts, i.e. text generated by users when interacting with artificial intelligence systems. However, this context has its own linguistic characteristics, in which bilingual users adapt their language not only for human communication, but also so that it can be ‘understood’ by machines.

Therefore, this study aims to fill this gap by analysing the form and function of intra-sentential switching that appears in AI-generated prompts by English Education

students at Dwijendra University. The results of this study are expected to enrich the study of digital bilingualism, expand the application of Poplack's (1980) theory to the field of digital linguistics, and provide new insights into the representation of the linguistic identity of the academic generation in interactions with artificial intelligence.

4. RESULTS AND DISCUSSION

This section shows the findings of an analysis of tag-switching found in AI prompts created by students of the English Education Study Programme at Dwijendra University. There is 287 prompts collected, 89 prompts were selected as having tag-switching. These findings indicate that students often combine elements of Indonesian and English in a single sentence or clause, reflecting their bilingual competence and flexibility in language use. This phenomenon shows that the use of AI in the context of language learning allows for the emergence of spontaneous and natural bilingual expressions.

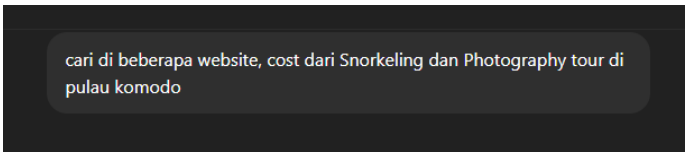

Figure 1. Intra-sentential Code-switching Segment in AI-Generated Prompt by English Education Student

In the English for Tour and Travel course, students are free to use AI as part of technology-based communication exercises. This activity aims to train students' ability to use English functionally in the field of tourism with the help of artificial intelligence (AI). One of the data collected was a prompt: '*cari di beberapa* website, cost *dari* snorkling *dan* Photography tour *pulau komodo*'. This data showed a combination of Indonesian and English used in one sentence structure. Based on Poplack's (1980) classification, this example falls under the category of intra-sentential code-switching, which is code switching that occurs within a single clause or sentence. In this case, the phrase '*cari di beberapa*' is written in Indonesian, while the words 'websites', 'cost,' 'snorkelling,' and 'photography tour' are from English. This code-switching reflects the simultaneous use of two language systems without changing the basic syntactic structure. This phenomenon indicates that students have linguistic awareness and bilingual abilities that enable them to choose the form of language that is considered most efficient and meaningful in the digital context.

These findings support Muysken's (2000) view that code-switching in bilingual discourse is often used as a communication strategy to achieve clarity of meaning, efficiency, and more precise expression. In this context, students seem to prefer English terms for technical terms related to tourism, as they are considered more accurate and commonly used. In addition, Halim and Maros (2014) emphasise that intra-sentential switching reflects a higher level of language proficiency because it requires simultaneous mastery of the syntactic structures of both languages. In the context of AI usage, code-switching is not only a reflection of bilingual competence but also a form of linguistic adaptation to human communication in the digital age.

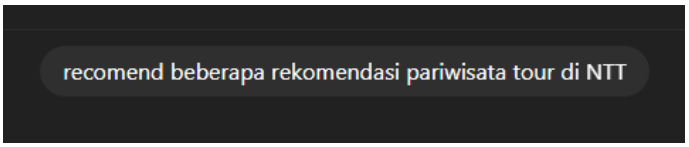

Figure 2. Intra-sentential Code-switching Segment in AI-Generated Prompt by English Education Student

In the same activity in the English for Tour and Travel course, students also produced another AI-generated prompt that read: '*recommend* beberapa rekomendasi pariwisati *tour* di NTT'. This sentence demonstrates a typical form of intra-sentential code-switching, where the word 'Recomend' (a misspelling of recommend) comes from English, while the phrase 'beberapa rekomendasi pariwisati *tour* di NTT' uses Indonesian with a one code there. Based on Shana Poplack's (1980) framework, this code-switching occurs within a single clause without a clear syntactic break, thus classified as intra-sentential switching. This shift reflects how students spontaneously use English elements in the middle of Indonesian sentences to give an academic and professional nuance in the context of tourism. In addition, the misspelling of the word 'Recomend' also indicates phonological or orthographic interference between the two languages used alternately.

These findings indicate that students use English not only to fulfil communicative functions, but also as a symbol of professional competence in the field of tourism, where international terms and terminology are preferred. This is in line with Pieter Muysken's (2000) view that code-switching in bilingual discourse often functions as a strategy of social identity and a marker of membership in a particular bilingual community. As empirical support, a study by Marwa (2014) found that bilingual students often engage in code-switching in academic contexts to fill lexical gaps and assert their social identity. Thus, the use of the word 'Recomend' in this context is not merely a linguistic choice, but also reflects students' pragmatic awareness in adapting to the professional domain they are studying. This phenomenon shows that students' interactions with AI are not only a means of language learning, but also a space for the formation of linguistic and academic identity in the digital age.

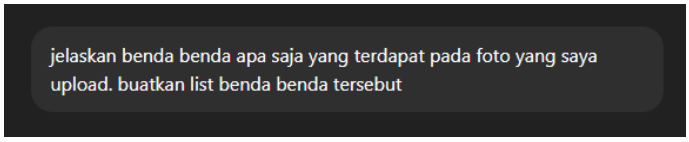

Figure 3. Intra-sentential Code-switching Segment in AI-Generated Prompt by English Education Student

In the learning activities for the Listening course, students also produced an AI-generated promp: '*jelaskan benda benda apa saja yang terdapat pada foto yang saya* upload*. buatkan list benda benda tersebut'*. This prompt shows a form of intra-sentential code-switching, where Indonesian language elements dominate the sentence structure, but the English word 'list' is inserted into the same clause. Based on Shana Poplack's (1980) framework, this type of code-switching is classified as intra-sentential switching because it occurs within a single syntactic unit without a clear separation between the two languages. The use of the word 'list' reflects the students' linguistic awareness in choosing terms that are considered more concise, efficient, and contextual to describe the task of searching for object vocabulary from images.

This phenomenon shows that students not only use English as a communication tool, but also as a means of adapting to a technology-based academic context and foreign language learning. In line with Pieter Muysken's (2000) view, this form of code-switching can be seen as a social and professional identity strategy, whereby students attempt to demonstrate their competence as second language users. Furthermore, the findings of Halim and Maros (2014) also confirm that code-switching in learning environments is often used to overcome lexical limitations and clarify the meaning of the message being conveyed. Thus, the use of the word 'list' in this prompt is not only a form of spontaneous code-mixing, but also reflects students' ability to strategically utilise linguistic resources when interacting with AI for more meaningful learning purposes.

5. CONCLUSION

This study shows that the phenomenon of tag-switching in AI-generated prompts created by students of the English Education Study Programme at Dwijendra University reflects bilingual ability and linguistic adaptation to the digital context. Of the 287 data analysed, there were 89 prompts containing intra-sentential switching, where Indonesian and English elements were used alternately in one sentence structure. These findings are in line with Poplack's (1980) theory, which states that code-switching within a single sentence indicates a high level of language proficiency, as well as Muysken's (2000) view that code-switching functions as a strategy for social and professional identity. In the context of AI-based learning, the simultaneous use of two languages not only serves as a means of communication, but also as a form of representation of students' academic identity and adaptive abilities in the era of artificial intelligence.

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JURIDICAL APPROACH TO THE OPERATIONAL TECHNICAL EVIDENCE IN ACCORDANCE WITH ARTICLE 146 OF LAW NUMBER 1 OF 2009 ON AVIATION

I Wayan Partama Putra

Fakultas Hukum, Universitas Dwijendra
Email : partamap@gmail.com

ABSTRACT

Article 146 of the Aviation Law requires carriers to be responsible for losses caused by delays in the transportation of passengers, baggage, and cargo, unless they are able to prove that such constraints were due to weather factors or operational technical issues. However, this legal provision contains significant ambiguities in the phrases "to prove" and "operational technical," which create legal uncertainty. This study examines the impact of this ambiguity on the contractual liability of airlines and the legal protection of passengers. The research analyzes two main issues: the nature of the norm's ambiguity and its effects on the rights and obligations of the parties involved. The normative juridical method with a conceptual approach and legislation study was employed, alongside grammatical and systematic interpretation analysis of the Aviation Law, the Civil Code, and related regulations. The study finds that the ambiguity in the norm creates legal gaps that can be exploited by airlines, thereby necessitating regulatory revisions to clarify the evidentiary mechanisms and strengthen consumer protection in order to balance rights and obligations in the aviation industry.

Keywords: *Evidence, Aviation, Consumer Protection*

1. INTRODUCTION

Aviation as one of the main modes of transportation plays a strategic role in supporting the mobility of society, the economy, and connectivity between regions, both domestically and internationally. The increasing population has led to a rise in mobility. (Ira Apriyanti dan Muhammad Adyiyami Munthaha, 2017, p. 7) As a fast and efficient mode of transportation, aviation has become the primary choice for modern society. It contributes to increasing community income and expanding employment opportunities. (Jakson Arnold Klasibin, dkk, 2017, p. 13) However, the rapid growth of the national aviation sector not only brings positive impacts but also raises various legal and operational challenges. One critical issue frequently encountered is flight delays, which have the potential to cause losses to passengers, both economic, such as wasted costs and time, and non-economic, such as discomfort and psychological stress.

Aviation is part of a transportation system characterized by its ability to move quickly, using advanced technology, capital-intensive operations, reliable management, and requiring optimal safety and security guarantees. One of the objectives of conducting aviation activities is to realize aviation operations that are safe (safety), orderly and regular (regularity), comfortable (comfortable), and economical (economy for the company). (M. N. Nasution, 2007, p. 2). According to the author's view, law is a set of norms and rules that regulate human behavior in society, which are binding and have sanctions for violators in order to realize order, justice, and legal certainty. Legal protection is the effort and mechanism provided by the legal system to safeguard the rights of individuals and groups from harmful actions, so that everyone can feel safe and obtain justice in social life. Consumer

protection is a term used to describe the legal protection given to consumers in their efforts to fulfill their needs from matters that harm the consumers themselves. (Zulham, 2013, p. 21). The term consumer protection is related to legal protection, thus consumer protection inherently contains legal aspects. The subject matter protected is not only physical but also related to abstract rights. Therefore, consumer protection is closely linked to the legal protection given to consumer rights. (Partama Putra, I Wayan, dkk. 2025, p. 163)

Article 146 of Law Number 1 of 2009 Concerning Aviation (hereinafter referred to as the Aviation Law) regulates the responsibility of airlines in providing legal protection to passengers, stating:

"The carrier is responsible for losses suffered due to delays in the transportation of passengers, baggage, or cargo, except if the carrier can prove that the delay was caused by weather factors and operational technical reasons."

Although textually the provision seems to favor passengers, there remain fundamental normative issues, particularly related to the phrases "to prove" and "operational technical." The absence of explanations regarding the form, standards, and procedures for proof that must be carried out by airlines causes legal uncertainty in its implementation. This condition creates a protection gap, as passengers are in a weak position when airlines present technical reasons without the obligation of concrete and measurable proof.

The issue of evidence in Article 146 of the Aviation Law is closely related to the principles in civil law, especially as regulated in the Civil Code (Kitab Undang-Undang Hukum Perdata - KUH Perdata). The legal relationship between passengers and airlines is a contractual relationship subject to the principles of obligations. Based on Article 1239 of the Civil Code, the party that fails to perform an obligation in an agreement must bear the resulting losses unless it can be proven that the breach occurred due to force majeure. However, force majeure in civil law requires an unforeseen and uncontrollable condition that objectively obstructs the fulfillment of legal obligations.

The absence of explicit legal limits in Article 146 regarding the standards of proof for claims of technical disturbances potentially leads to inconsistent interpretations among aviation business actors. In the civil law system, the burden of proof regarding force majeure lies with the party making the claim. However, due to the lack of clear guidelines, airlines can unilaterally present technical reasons without adequate verification, which ultimately contradicts the principles of legality and legal certainty.

On the other hand, the principle of responsibility in civil law obliges compensation for breaches of contract (non-performance) not caused by force majeure. The ambiguity of the norm in Article 146 can result in negligence regarding the fulfillment of the rights of aggrieved passengers, both in terms of material restitution and legal recognition of the losses suffered. The impact is not only limited to individuals but also implies unequal access to justice in consumer dispute resolution practices.

In the context of contractual relationships, civil law emphasizes the importance of balance between the rights and obligations of the parties. The unclear norm in Article 146 not only affects the implementation of the airline's obligations but also threatens consumer protection as users of aviation services. This lack of clarity creates room for airlines, which have economic advantages and better access to information, to exploit legal loopholes to evade their responsibilities, thus creating structural imbalances between business actors and consumers.

Based on the above issues, this study aims to further examine the ambiguity of the norm in Article 146 of the Aviation Law through a civil law approach. The focus of the study is directed at analyzing the phrase "to prove" in the context of

"operational technical," and to what extent this phrase influences the implementation of the airline's contractual responsibility and legal protection for passengers. This research is expected to contribute to formulating normative recommendations for improving aviation sector regulations.
The research question posed is: How does the ambiguity of the norm related to the phrase 'to prove' in connection with 'operational technical' as regulated in Article 146 of the Republic of Indonesia Law Number 1 Year 2009 on Aviation?

2. RESEARCH METODOLOGY

This research is a normative legal study that positions law as a system of norms analyzed through a legislative regulation approach and a conceptual approach. Data were obtained through library research by reviewing written legal sources such as laws, academic literature, and opinions from legal experts.
The legal materials used include primary legal materials (legislation), secondary materials (legal literature and journals), and tertiary materials (dictionaries and legal encyclopedias). Data collection techniques were carried out using an archival system based on discussion topics. Data analysis was conducted with grammatical interpretation and content analysis methods, while conclusions were drawn deductively from general norms to specific issues.

3. RELATED RESEARCH/LITERATUR REVIEW

Studies on the responsibility of airlines and legal protection for passengers in the context of flight delays have been widely discussed by legal researchers through both normative and empirical approaches. Chandra, Cindy et al. (2016) highlighted the responsibility of airlines in the case of Rolas Budiman Sitanjak against PT. Lion Mentari Airlines, where an imbalance was found between the legal positions of passengers and airlines due to the absence of clear standards of proof regarding the causes of the delay. The research showed that operational technical excuses are often used by airlines as justification without the obligation of adequate proof.
In general, previous literature indicates that the main issue in the implementation of Article 146 of the Aviation Law lies in the ambiguity of the phrases "to prove" and "operational technical." This ambiguity causes the absence of uniform standards of proof in practice, resulting in frequent neglect of passengers' rights. By reviewing various studies and legal theories above, this research emphasizes the need to reconstruct norms and more explicit guidelines for proof to create legal certainty and balance the rights and obligations between airlines and passengers.

4. RESULTS AND DISCUSSION

Based on Article 2 of Law Number 1 of 2009 concerning Aviation, the main objective of organizing aviation activities is to facilitate the mobility of people and goods through air routes by emphasizing aspects of safety, comfort, and protection of air transportation activities. This objective is directed to support the smooth operation of national economic activities. With the implementation of an effective air transportation system, the public benefits in terms of time and energy efficiency in mobility activities.
The provision regarding airline responsibility for flight delays is regulated in Article 146 of Law Number 1 of 2009 concerning Aviation. The article states that the carrier is responsible for losses arising from delays in the transportation of passengers, baggage, or cargo, except if it can be proven that the delay was caused by weather factors or unavoidable operational technical conditions. Thus, the law provides an exception to liability if the airline can present strong evidence regarding the cause of the delay.

The Ambiguity of the Phrase "To Prove" Related to Operational Technical

Norm ambiguity is a condition where a norm exists but lacks a clear meaning or the norm generates more than one meaning, causing it to be vague or unclear. (Akbar Rakhmat Irhamulloh Abbas dan Arinto Nugroho, 2017, p. 4) The ambiguity of the norm in Article 146 can be linked to the Minister of Transportation Regulation Number 89 of 2015 concerning Flight Delay Management, particularly regarding the aspect of airline responsibility towards passengers. Although the law provides an exemption from liability if the delay is caused by weather or operational technical factors, there is no adequate explanation of the standard of proof or the definition of operational technical conditions themselves. Consequently, airlines have the potential to interpret the phrase broadly to absolve themselves of legal responsibility.

From a grammatical interpretation perspective, the word “to prove” derives from the root word "evidence”, which in the Indonesian dictionary means something that states the truth of an event, actual information, or a sign. The term "evidence" originated from the Dutch word "bewijs," which is understood as something that states the truth of an event. (https://kbbi.web.id/bukti) In legal dictionaries, "bewijs" refers to anything showing the truth of certain facts or the falsity of other facts by the parties in a court case, providing material for the judge's assessment. Meanwhile, " prove " means to show evidence, and " proof " is defined as the process, act, or method of proving (Eddy O.S. Hiariej, 2012, p. 3)

According to the author's view, the legal relationship between passengers and airlines falls under carriage contracts as regulated in Article 1233 of the Civil Code (KUHPer), where legal obligations may arise from agreements or laws. Therefore, provisions regarding liability in Article 146 of the Aviation Law should be interpreted with regard to Article 1243 on breach of contract (wanprestatie) and Articles 1244 and 1245 on force majeure.

Force majeure is a circumstance occurring after an agreement is made that hinders the debtor from fulfilling their obligation, where the debtor cannot be blamed, does not bear the risk, and could not have anticipated it at the time the agreement was made, prior to the debtor's failure to perform (P.N. H. Simanjuntak, 2017, p. 295) If the airline claims that the delay was due to operational technical reasons, then based on Article 1244 of the Civil Code, the airline must prove that the cause of the delay was genuinely beyond its control and not due to negligence. Therefore, the burden of proof regarding force majeure should lie with the airline, not the passenger.

In relation to the Minister of Transportation Regulation Number 89 of 2015, Article 146 of the Aviation Law needs to be interpreted harmoniously. The regulation explicitly governs passenger rights in the event of delays, including the airline's obligation to provide compensation if the delay exceeds thirty minutes.

Ministerial Regulation Number 89 of 2015 also outlines the factors causing flight delays in Article 5 paragraph (1), stating that such factors include airline management, operational technical factors, weather, and others. (Chandra, Cindy, 2016, p. 7) However, the regulation also provides an exception if the delay is caused by force majeure or unavoidable operational technical disruptions. The issue is that the phrase "operational technical" in both provisions is not elaborated in detail, which creates the potential for differing interpretations among interested parties.

In practice, airlines often use aircraft technical malfunctions as an operational technical excuse to absolve themselves from compensation obligations. However, if analyzed based on the principle of legal certainty, damages that are predictable

or preventable through regular maintenance cannot be categorized as force majeure but rather as negligence, which still imposes legal responsibility on the airline.

The Implications of Norm Ambiguity in Legal Practice

The issue of evidence in flight delay disputes is a crucial aspect that requires in-depth analysis. Article 146 of the Aviation Law creates uncertainty about which party should bear the burden of proof. This ambiguity leads to legal uncertainty, directly affecting the protection of passenger rights and the enforcement of airline obligations.

In civil law, the principle actori incumbit onus probandi means the burden of proof lies with the party bringing the lawsuit or claiming a right, as stated in Article 1865 of the Civil Code. Theoretically, passengers who feel aggrieved must prove the existence of damages caused by the delay and the airline's responsibility for the incident. However, in cases of delays due to operational technical factors, the burden of proof is unbalanced because only airlines have access to flight technical data and information.

The ambiguity of the phrase "to prove" in Article 146 opens opportunities for airlines to avoid responsibility by stating that the delay was caused by circumstances beyond their control, often categorized as force majeure.

Under the concept of force majeure, the claimant must prove that:

1. The circumstance genuinely occurred beyond their control.
2. There was no element of fault or negligence in operational management.
3. Reasonable steps were taken to avoid or minimize the delay. (R. Subekti, 2005, p. 40)

Because the norm does not specify a clear standard of proof, airlines often provide operational technical reasons without adequate evidence to passengers or aviation authorities. This condition contradicts the principle of fairness in evidence law, where the party controlling the evidence should bear the obligation to prove the truth of their claim.

Article 1365 of the Civil Code states: "Every act that causes harm to another obliges the person at fault to compensate for the loss." Losses in law can be classified into two categories: Material Loss and Immaterial Loss. Material Loss refers to actual losses suffered by the plaintiff. Immaterial Loss refers to loss of potential benefits or profit that the plaintiff might have received in the future. (Brahmantya, I. B. B., 2023, p. 1118-1119)

The absence of a clear standard of proof results in passengers having difficulty claiming compensation for damages caused by delays, whether in the form of material losses such as additional costs or immaterial losses such as lost time and discomfort. Consequently, airlines can easily argue that the delay was beyond their control and evade legal responsibility.

The lack of explicit regulations regarding the limits of force majeure and breach of contract in this context potentially harms passengers. Therefore, a more systematic legal interpretation and policies clarifying the standard of proof and airline liability in flight delay cases are required. Systematic interpretation connects sections within relevant legislation or other laws, or reads legislative explanations to understand the intended meaning (Hanifah, Farhana Nabila dan Muliawan Anatomi, 2020, p. 119)

Within the consumer protection framework, the fundamental principle in providing aviation services requires that passengers as consumers receive legal protection for suffered losses. However, the ambiguity of the phrases "to prove" and

"operational technical" in Article 146 potentially weakens this protection. Without a definite standard of proof, airlines may avoid compensation obligations while passengers struggle to claim their rights, causing an imbalance between airlines and passengers, thus undermining the effectiveness of consumer protection.

The core of a legal protection system for air transport consumers is the consumer's interest because consumers are the center of all air transport activities. Without consumers, there would be no justification for large investments in air transport infrastructure. The importance of consumers becomes significant to air transport service providers when there is competition within the industry, offering consumers choices among several providers of comparable quality in equipment and service. (Trisna Dewi, Ni Made, 2021, p. 125)

Consumer protection is a term used to describe legal protection given to consumers in their efforts to meet needs and avoid harms (Article 1 paragraph (1) of the Indonesian Consumer Protection Law No. 8 of 1999). It encompasses protection related to goods and/or services, from acquisition to consequences of use. (Zulham, 2013, p. 22)

According to the principle of legal responsibility in carriage contracts, airlines must bear the consequences of breach of contract unless force majeure is proven. The burden of proof for force majeure should belong to the airline. However, since Article 146 does not detail proof standards, airlines often claim operational technical issues without concrete evidence, conflicting with legal responsibility principles and potentially ignoring passengers' right to compensation.

The principle of legal certainty demands that legal norms be clearly, firmly formulated, and applied consistently. The ambiguity of "to prove" and "operational technical" in Article 146 results in varied interpretations by airlines, passengers, and law enforcement, causing uncertainty in rights and obligations and enabling injustice, as passengers lack legal certainty while airlines exploit loopholes to avoid liability. Hence, clear and measurable proof guidelines are essential for fair, transparent, and consistent norm application.

5. CONCLUSION

The ambiguity of the norm in Article 146 of Law Number 1 of 2009 concerning Aviation, particularly in the use of the phrase "to prove" related to "operational technical," has significant implications for the attainment of legal certainty in the aviation sector. Juridically, the article intends to regulate the form of airline responsibility towards passengers in the event of flight delays. However, the absence of concrete explanations regarding the meaning and mechanisms of proof leads to various interpretations among passengers, airlines, and law enforcement authorities. The lack of clear standards concerning the party obligated to prove and the form of evidence required creates potential for abuse, especially by airlines attempting to evade compensation obligations.

In practice, this condition causes an imbalance in the legal standing between passengers and airlines. Airlines hold a dominant position because they have full control and access to technical information about the causes of delays, whereas passengers lack the ability or means to prove that the delay was due to the airline's negligence rather than external factors beyond control. As a result, the burden of proof becomes disproportionate, with passengers often in a weak position when asserting their rights, while airlines can hide behind operational technical reasons to avoid legal liability. This situation undermines legal protection for aviation service consumers, as passengers do not receive adequate guarantees to claim compensation for unjustified delays.

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UTILIZING LOCAL CULTURE MATERIALS TO SUPPORT SUSTAINABLE DEVELOPMENT GOALS AT A HINDU UNIVERSITY

Ni Nyoman Tantri[1)]

[1)] Institut Agama Hindu Negeri Tampung Penyang Palangka Raya
ninyomantantri.03@gmail.com

ABSTRACT

This study explores the integration of the local culture of Central Kalimantan, specifically Batang Garing/ Batang Haring, which represents the Tri Hita Karana (THK) philosophy rooted in the Dayak Hindu Kaharingan community, into English language teaching at a Hindu-based university. Batang Garing, revered as the "Tree of Life", symbolizes the harmonious relationship among God, humans, and nature, highlighting moral balance, cultural identity, and sustainability. This study addresses the lack of culturally relevant English teaching materials that incorporate learners' local values and experiences. It aligns with the goals of Sustainable Development Goal 4 (Quality Education) and Goal 11 (Sustainable Cities and Communities), emphasizing inclusive, equitable, and culturally responsive education.

Employing a qualitative design within the ADDIE framework, the study conducted a comprehensive need analysis through questionnaires and interviews with three English teachers and twenty-five students. Findings reveal that although students recognize the importance of English for academic and communicative purposes, they still face significant challenges in listening, reading, speaking, and writing. Their motivation and engagement increase when learning materials relate to their cultural backgrounds.

The study affirms that local culture materials, integrating Batang Garing values, not only enhance students 'language proficiency but also promote moral development and cultural sustainability. Embedding local wisdom into English language teaching offers a valuable pathway for achieving sustainable education in both local and global contexts.

Keywords: *Local Culture Materials, Need Analysis, Sustainable Development Goals (SDGs)*

1. INTRODUCTION

Nowadays, proficiency in English is essential for students in higher education. One of its benefits is accessing a wide range of learning resources that can help them become more competent in their particular subject. Hence, English is taught in all universities, including those with non-English departments. English is categorized into two, namely, as a core subject and as a supporting subject (Akhiroh & Semarang, 2020). The contents of the English course at higher education are adjusted according to the characteristics of the university concerned. It is in line with the decree of the Minister of National Education Number 232/U/2000 that the institutional curriculum is structured institutionally (Kemendiknas, 2000)).

The primary objective of teaching English to non-English majors is developing students' language proficiency to meet academic and personal goals. The Hindu religious study program at Institut Agama Hindu Negeri Tampung Penyang Palangka Raya (IAHN TP) uses a General English framework to teach English, with a focus on fundamental language skills that are relevant in a variety of

contexts. In order to encourage and actively involve students in the learning process, it is imperative that the materials utilized are contextual and suited to their requirements. This means that they should represent students' cultural backgrounds and real-life experiences.

According to preliminary analysis of the English curriculum and students' performance records reveal that students at IAHN TP Palangka Raya face significant struggle in all four English language skills: listening, reading, speaking, and writing. Many students obtain unsatisfactory grades, and interviews with English teachers indicate a general lack of active psychological engagement in the classroom. Despite physically attending classes, students' interest and involvement levels are still low. Limited utilization of technology-based resources, poorly contextualized instructional materials, and ineffective teaching techniques are some of the factors causing these difficulties.

Furthermore, while the goals of learning English stated in the curriculum is to provide graduates who are not only capable of using English as an international language but also to be able to communicate the basic principles of the Hindu religion as the basic body of knowledge of the learners studying at Hindu religious departments. In fact, for a long period, the topics of the teaching materials are still not represented in the knowledge based on Hindu subject matter as stated in the curriculum. Moreover, the provided English materials are compiled without following a systematic process, such as through the needs analysis of the learners. Thus, the available teaching materials do not successfully achieve the goals of English learning. Furthermore, the provided resources have not been modified to align with the *Merdeka Belajar*- focused Indonesian National Qualifications Framework Curriculum (KKNI), which is the curriculum used in this department.

Enhancing language proficiency and promoting moral and cultural sustainability are two benefits of integrating *Batang Garing* values aligned local culture resources into English instruction. Goal 4 (Quality Education) and Goal 11 (Sustainable Cities and Communities), in particular, which promote inclusive, equitable, and sustainable education that maintains cultural variety, are in line with such integration (Nations, 2025; UNESCO, 2025). To create responsible global citizens, education for sustainable Development (ESD) promotes integrating sustainability ideas and cultural identities into curricula.

In order to fill in the gaps, this study investigates the creation of culturally relevant General English resources that incorporate local knowledge at IAHN TP Palangka Raya. In line with *Batang Garing* beliefs, it seeks to shed light on students' requirements and preferences for language learning resources, supporting the institutions' mission to promote high-quality instruction in line with sustainable development principles.

2. RESEARCH METHODOLOGY

This study employed a qualitative design within the analysis phase of the ADDIE framework to identify students' needs in developing local culture-based English learning materials at IAHN TP Palangka Raya. The participants were purposefully selected, consisting of three English teachers and five sophomore students as interviewees, and twenty-five freshmen as questionnaire respondents. Semi-structured interviews and questionnaires with an emphasis on students' needs, preferences, and learning challenges were used to gather data (Kholis & Azmi, 2023). The data were analyzed qualitatively using content and narrative analysis, while quantitative responses were summarized in percentage distributions and interpreted following the framework of Miles and Huberman (Sugiyono, 2009).

3. RELATED RESEARCH/ LITERATURE REVIEW

Integrating local culture into English language teaching makes learning more meaningful and relevant to students' lives. Language and culture are inseparable,

and when English is taught through learner's cultural contexts, it enhances motivation, participation, and identity formation (Kramsch, 2001). In Indonesia, the inclusion of local wisdom in the curriculum is mandated to promote engagement and learning achievement (Minister of Education and Culture Regulation No.3, 2020). Incorporating the Dayak Hindu Kaharingan symbol *Batang Garing*, which reflects the *Tri Hita Karana* philosophy, gives students at IAHN TP Palangka Raya a meaningful and culturally rich foundation for learning English (Kumara et al., 2025; Mau & Sukawati, 2019; Murtini et al., 2025). The *Tri Hita Karana* philosophy, which serves as a moral and ecological foundation for education, places an emphasis on harmony between God, people, and nature (Dharmayanti & Sawitri, 2024; Redana & Mujiyono, 2023). By incorporating its ideals into English language instruction, students can develop their linguistic proficiency and cultural understanding while also promoting character-based and sustainable learning (Adnyana & Sasia, 2018).

Since the learners are dominated by the Dayak culture, namely the adherents of Hindu Kaharingan, the English teaching materials should consider the unique characteristics of the learners real-life underpinning the concept of *Tri Hita Karana.* Then, it is highly urgent to address the parallelism of *Tri Hita Karana* concept to Hindu Kaharingan. In line with this, Mau & Sukawati (2019) introduce *Batang Garing* as the local wisdom of Central Kalimantan which is in line with the concept of *Tri Hita Karana,* the basic concept of Balinese Hinduism. It depicts an impartiality and harmonious relationship of three dimensions (God, human, and nature) as a source of peace in life. *Batang Garing/ Haring* derives from *Bahasa Sangiang,* the ancient language of Dayak ethnic and written in *Panaturan, a* religious scripture of Hindu Kaharingan, symbolizing as the tree of life. It owns three branches that represents three appreciations as a guideline of life (*haring hatungku tungket langit*), namely: 1) *kayu gambalang nyahu,* reflects the relationship between human and God; 2) *kayu pampang seribu,* to address the relationship between human and fellow humans; and 3) *kayu erang tingang*, which symbolizes the relationship between human and nature. Thus, as a local wisdom, *Batang Garing* is elucidated as a basis and goal of life for the Dayak ethnic in Central Kalimantan.

Furthermore, integrating local culture in education aligns with the Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities), which advocate inclusive and culturally responsive learning (UNESCO, 2025). By promoting sustainability, respect for diversity, and social peace, local wisdom like *Tri Hita Karana* transforms education into a means of fostering environmental consciousness and global responsibility (Antini & Artini, 2025; Metera et al., 2025; Sholicha, 2022). Therefore, integrating the principles of *Batang Garing* and *Tri Hita Karana* into English language instruction not only protects cultural heritage but also equips students to actively contribute to sustainable development on a local and global level.

4. RESULTS AND DISCUSSIONS

4.1 Findings

The results of students' voices were examined in this part in light of the necessity of developing local culture English learning materials for Hindu higher education context. Result from a questionnaire asking students about their experiences learning English, as well as their needs, desires, and challenges, particularly in Hindu Education Study Program at Institut Agama Hindu Negeri Tampung Penyang Palangka Raya become the quantitative data in this study.

The learners' demographic information, which included their age, gender, school graduate, parents' education, and parent's occupation as well as the learners' experiences on English professional development, the level of English proficiency, and the learners' daily English use. Details information in the following table was the demographic information of the learners.

Table 1. Learners' Demographic Data

Variable	Category	Frequency	Percentage
Age	< 20 years old	21	84
	> 20 years old	4	16
Gender	Male	11	44
	Female	14	56
School Graduate	SMA	19	76
	SMK	6	24
Parent's education	SD	9	36
	SMP	10	40
	SMA	0	0
	Diploma	1	4
	Bachelor	2	8
	Master	0	0
	Doctor	0	0
	Others	3	12
Parent's work	Farmer	23	92
	Civil servant	0	0
	Merchant	0	0
	Self-Employed	0	0
	Others	2	8

The following figure illustrates the students' experiences enrolling in any English language programs. The first figure showed that totally the learners almost never experienced in a course or program that could support their English skills. Eighty percent of students admitted that they had never participated in any activities at enhancing their English.

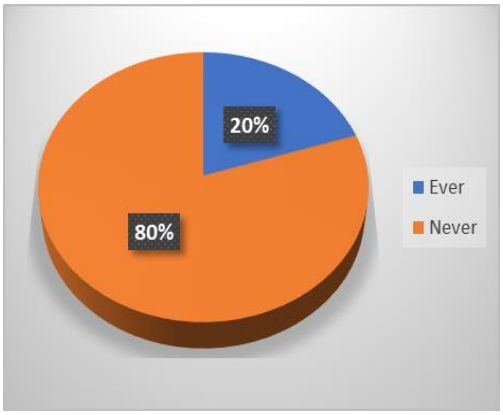

Figure 1. The learners' Experiences on English Program

Additionally, figure two showed that the findings related to the students' level of English proficiency. As demonstrated by the data, the learners were at the lowest level, with 80% of them in the beginner level, 12% in the advanced level, and 4% in the intermediate level.

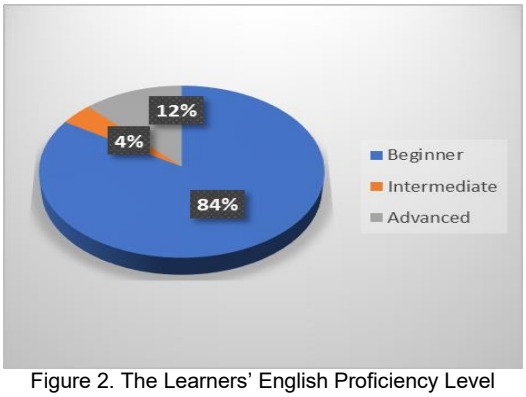

Figure 2. The Learners' English Proficiency Level

The learners' English profile also demonstrated by daily usage of English. The findings demonstrated that learners' daily usage of English varied in frequency. In the range of 12%, several of the students had previously practiced regularly. While the range of learners who hardly ever used English and those who never used it in their everyday activities were similar, some of the learners had encountered it on a daily basis. The total of 48% of students who reported using English occasionally provided the answer.

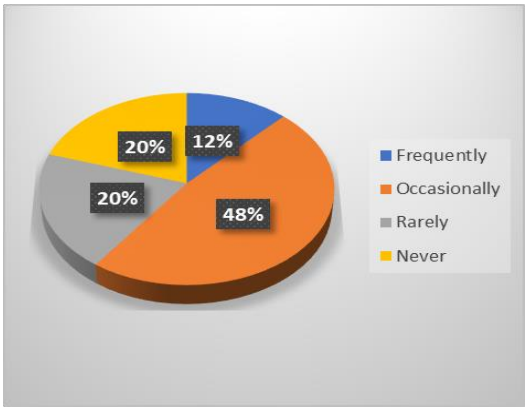

Figure 3. The Learners' Daily English Use

Furthermore, the learners' insight regarding the value of English language proficiency in bolstering their academic pursuits were classified as very significant, important, rather important, and not important. The results showed that speaking was one of the skills that the students were most worried about. Next were writing, listening, grammar, vocabulary, reading, and pronunciation. The following is how it was illustrated in figure 4.

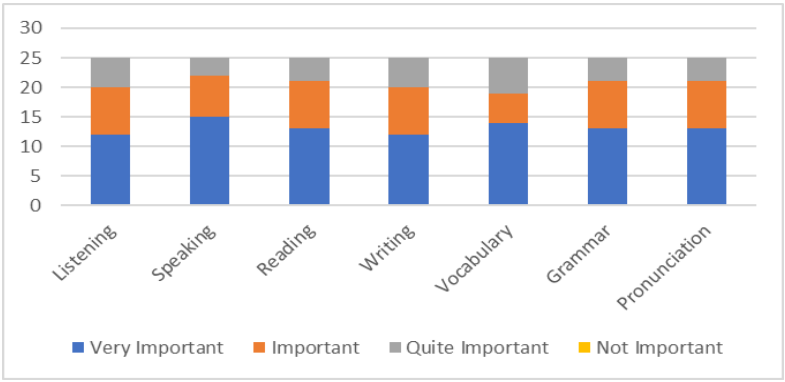

Figure 4. The Learners' Preferences Language Skills

The findings shown in Figure 5 then showed that, on average the eight criteria, the eight criteria for developing local culture English learning materials at a Hindu university were 12.5%. The criteria for learning resources that students required were shown below.

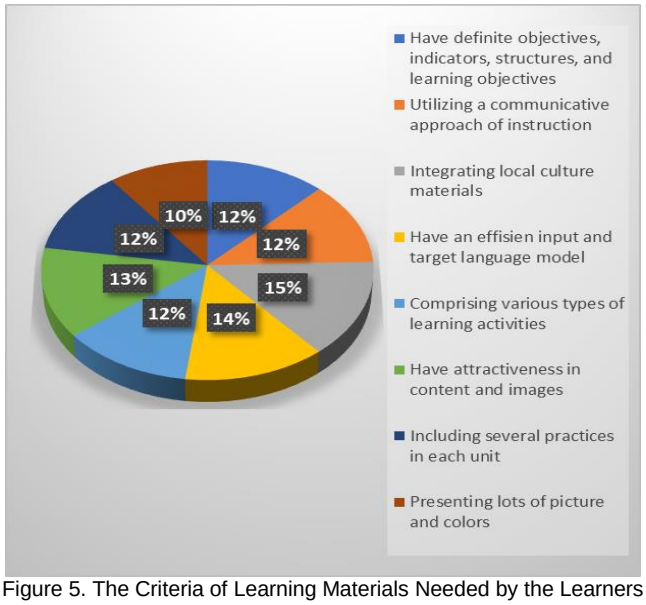

Figure 5. The Criteria of Learning Materials Needed by the Learners

The subjects or topics selected for the materials were also taken into consideration in order to assess the learners' needs in developing local culture English learning materials which relate to *Batang Garing* as the representation of *Tri Hita karana* as well as addressing the theory of culture proposed by Koentjarangingrat that viewed culture into three: cultural ideas, social practices, and cultural objects/ artifact. The findings demonstrated that out of the sixt theme presented to the students, local custom or ritual was the one they preffered or found most interesting. Traditional cuisine, regional folklore, traditional games, holy sites, and customary law were the next topic covered.

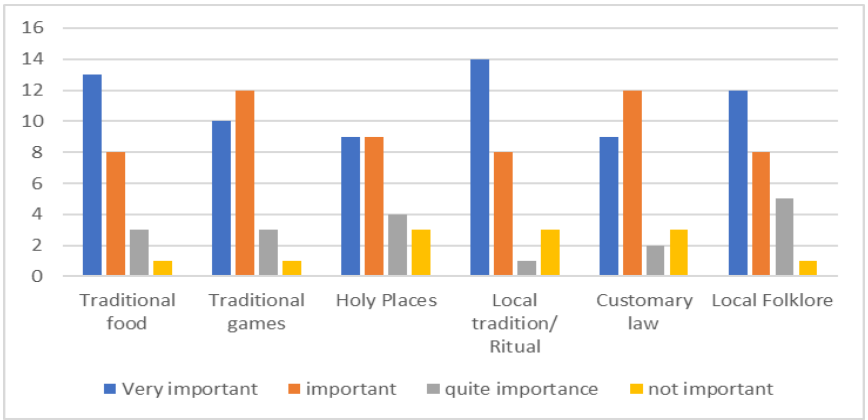

Figure 6. The Topic of Local Culture Needed by the Learners

The next findings was the method of learning preferences. The data of the study showed that the learners' method preference was dominated by games, simulation, and role-plays, project-based learning, followed by group discussion, group presentation, individual assignment, teacher lecture, and problem-based learning.

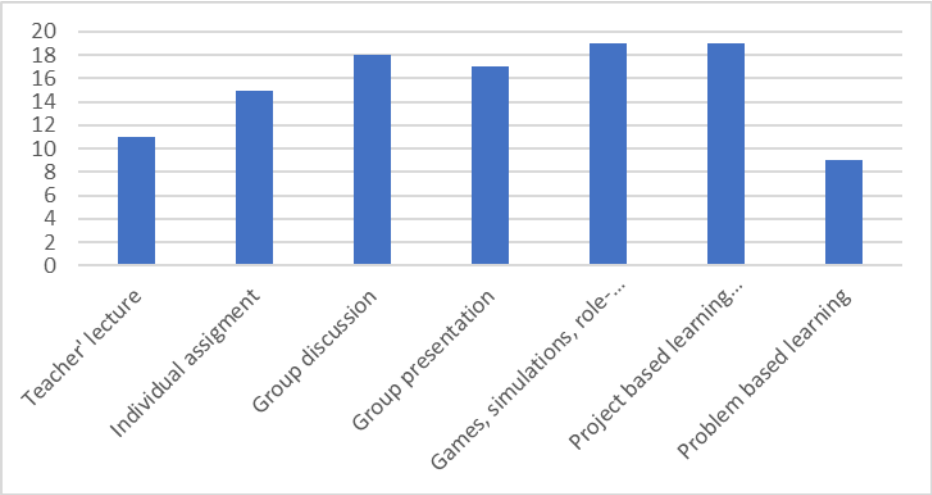

Figure 7. The Learner's Learning Preferences

The disadvantages of learning English were also mentioned by the students, even as the information about their needs and desires was provided. Both receptive (reading and listening) and productive (speaking and writing) language abilities were the source of the challenges. Figure 8 showed that speaking was the most difficult skill for the students to acquire. It was followed by reading skills to be hard experienced by the learners. Meanwhile, both listening and writing skills showed balance difficulties for IAHN TP learners.

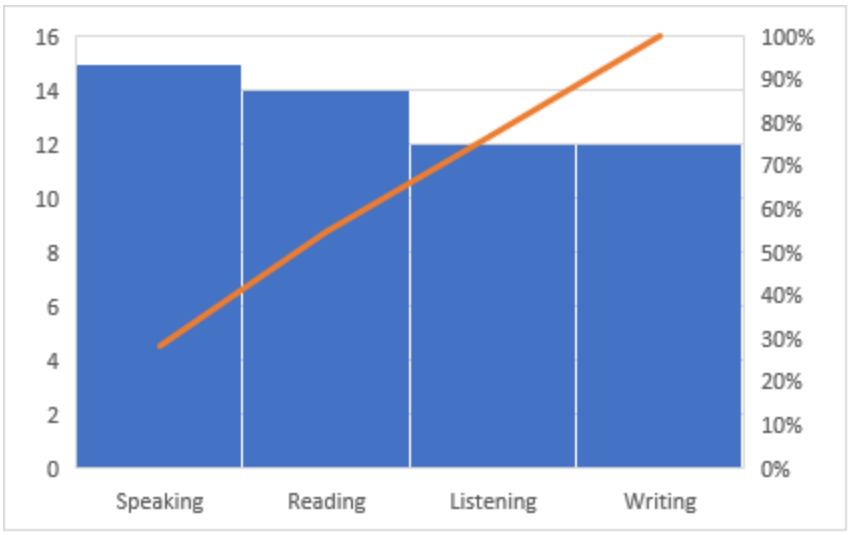

Figure 8. The Learners' difficulties level on each skill

The questionnaire results have been clarified. The next step was to be describe the qualitative data from the interview. Five main topics were used as interview guidance, namely the learners' motivation in studying English, the difficulties of learning English, the needs of the topic of local culture learning materials to learn, the media used for learning, and the learning approach.

The data from the questionnaires have been elucidated. Then it came to describe the qualitative data from the interview. Five main topics were used as interview guidance: 1). The learners'motivation in studying English; 2). The difficulties in learning English; 3). The topics of local culture English materials related to Batang Haring; 4). The media employed in learning; and 5). The method utilized in learning.

The following summary provides insights from students and the English teachers of Hindu Education Study Program regarding the five topics from the interview results.

Table 1. Interview results from Students and Teachers

No	Topics	Statements
1.	The learners' motivation in studying English	Most students perceived English as a challenging subject due to their limited vocabulary mastery and difficulties in pronunciation and comprehension. Many students showed a lack of confidence in their ability to learn, especially when they came across foreign words or when their pronunciation and spelling differed, which made them hesitant to speak in front of others. Additionally, most students found the materials linguistically heavy and less relatable to their cultural experiences. Overall, the students' voices emphasize the need for contextual, culturally relevant, and interactive English materials that foster both linguistic competence and learning motivation.
2.	The difficulties in learning English	The students' difficulties in learning English showed the majority of students struggles with all four language abilities, with speaking, writing, and reading being the most difficult. Several students expressed that they struggled to comprehend reading texts and found challenging to generate and organize ideas during writing activities. Listening also appeared to be a problematic skill for some learners, particularly when understanding different accents or fast speech. However, several students felt that speaking was the most challenging skill. They acknowledged that they struggled with fluency and felt nervous about making mistakes when attempting to speak freely. Pronunciation issues also made it difficult to participate in class discussions, which led to hesitancy and decreased confidence. Students also admiited that a major factor in these difficulties was their little exposure to English outside of the classroom. Overall, these findings indicate that students' difficulties in learning English stem not only from linguistic limitations but also from a lack of authentic practice, motivation, and exposure to maningful langauge use.
3.	The topics of local culture learning materials to learn	The students considered necessary to make English learning more engaging and meaningful. The students expressed a stomng preference for learning materials that are relevant to their field of the study and closely connected to their local culture. The students also mentioned that when teachers provided the familiar topics to learn, they could comprehend the lesson more effectively. The finding highlights how crucial it is to contextualize English instruction through local culture-based materials, which not only improve linguistic proficiency but also foster a sense of belonging and cultural awareness of the students.
4.	The media employed in learning	Most students acknowledged that teachers has utilized modern instructional tools such as projectors and Power Point slides to support classroom learning. However, teachers found these methods dull and unsinspiring because they frequently used slide-based lecturers without any multimedia integration or interactive elements. Many students said that teacher-centered lessons were common, with teachers explained the materials and assigning activities at the conclusion of the class. Low classroom engagement was thought to be caused by the sparse use of diverse media types, such as audio resources, interactive exercises, or images related to cultural themes. Students also noted that, with little usage of digital or interactive platforms, printed textbooks continued to be the main source of knowledge.
5.	The method utilized in learning	Most students agreed that they needs various teaching methods to engage them in learning English both in individual and in group.

4.2 Discussion

The findings reveal that integrating local culture into English learning materials plays an essential role in addressing the challenges faced by students of IAHN TP Palangka Raya. The majority of the students in the Hindu Education Study Program still have trouble pronouncing words correctly, speaking confidently, and having a large vocabulary. Additionally, they are not exposed to English outside of the classroom. These challenges imply that students' learning is not adequately supported by traditional materials, which are frequently divorced from their

circumstances. English-language resources have greater significance, relatability, and motivation when they mirror students' cultural experiences.

Additionally, studnets indicated a significant desire to learn about local cultural subjects like customs, traditional food, folklore, and holy places. When the content represented their values and community, they felt more involved. Beacuse it embodies harmony between God, people, and nature, *Batang Garing*, the local wisdom that represents *Tri Hita Karana*, provides a rich framework for such integration. Students can simultaneously improve their language skills and cultural awareness by using *Batang Garing*-based learning resources. This method contributes to the notion of education that promotes cultural preservation and sustainable development by enabling them to learn English while still feeling proud of their background.

Another crucial element has to do with classroom procedures. Projectors and Power Point slides are example of technology that teachers have started utilizing, yet students still find the lessons boring and teacher-centered. Project-based learning, role-playing, presentations, and gaming are among the more dynamic and engaging activities that they like. These choices demonstrate that studnets would to participate more actively as opposed to passively. Through the integration of interactive techniques and resources rooted in local culture, educators can establish a more engaging and significant environment. This combination promotes students to utilize English in authentic contexts that are meaningful to their culture and familiar to them.

Finally, there are more exstensive educational advantages of incorporating local culture into English instruction. In addition to strengthening their understanding of regional knowledge and values, it helps studnets grow more comfortable speaking English. This kind of approach is in line with the tenets of sustainable education, which emphasizes moral growth and respect for cultural identity in addition to academic success. Thus English instruction at Hindu universities can serve as a bridge between local culture and global communication, fostering the development of knowledgeable,culturally sensitive, and long-lasting students.

CONCLUSION

This study emphasizes how crucial it is to create English language learning resources that are rooted in local culture, especially those that honor *Batang Garing* as the representation of *Tri Hita Karana*. The results demonstrate that IAHN TP Palangka Raya students encounter considerable difficulties in obtaining English language abilities, including speaking, listening, reading, and writing, primarily as a result of learning new subjects. Students are more engaged and enthusiastic when the learning materials relate to their cultural background. Incorporating local knowledge into language instruction not only improves students' language proficiency but also cultivates a stronger sense of cultural pride and belonging.

The integration of local culture into English teaching also supports the goals of sustainable education by promoting harmony between academic growth, cultural preservation, and moral values. Developing materials based on *Batang Garing* encourages students to view English as a tool for expressing their local identity in a global context. Therefore, universities, especially those with strong cultural and religious foundations, are encouraged to design English programs that balance global communication skills with local wisdom. Such an approach can contribute to producing graduates who are not only proficient in English but also culturally conscious and morally grounded citizens.

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FEASIBILITY STUDY ON CONDUCTING A MEDICAL CAMP IN WASHIM DISTRICT, MAHARASHTRA

Dr.K.Rao Prashanth Jyoty[1)], Ms.K. Prathyusha Rao[2)], Ms.Sharmila[3)], Ms.Subitsha[4)]

[1)]Assoc.Prof & Head BBA, DGVC, Chennai, Tamil Nadu
[2)]II M Com DGVC, Chennai, Tamil Nadu
[3)]Data Analyst, Fe Fund Info Tech, Olympia Tech Chennai, Tamil Nadu
[4)]Finance Analyst, HDFC Bangalore, Karnataka

ABSTRACT

Healthcare access in rural India remains limited due to poor infrastructure, lack of medical records, and weak sanitation facilities. This study examines the feasibility of conducting a medical camp in Washim District, Maharashtra. The objectives are to evaluate the sanitation practices of the community, analyse prevailing health conditions, and propose the creation of a robust digital and physical medical record system for every individual in the district. The study adopts a mixed-methods approach including surveys, interviews, observational analysis, and secondary data review. Findings indicate high prevalence of water-borne diseases, malnutrition, and inadequate sanitation facilities. Establishing medical camps, supported by a centralized health record system, can significantly improve preventive and curative healthcare delivery in Washim.

1. INTRODUCTION

Washim District in Maharashtra, located in the Vidarbha region, is predominantly rural and characterized by agriculture-based livelihoods. Despite government interventions, healthcare services remain underutilized due to inadequate infrastructure, shortage of healthcare professionals, and poor sanitation. Lack of structured medical records has led to fragmented treatment histories, limiting long-term healthcare planning. A medical camp in Washim provides an opportunity to assess community health, improve sanitation awareness, and build a systematic medical record for every individual, enabling continuity of care.

2. SCOPE OF THE STUDY

a) To analyse the sanitation facilities and practices within Washim District.
b) To evaluate the prevalent health conditions of the population.
c) To develop a framework for maintaining individual medical records.
d) To suggest strategies for sustainable healthcare delivery through medical camps.

3. REVIEW OF LITERATURE

a) "Green finance research around the world: a review of literature" by ***Peterson K. Ozili (2022)*** explores the concept of green finance, its importance, and strategies to increase green financing.
b) "The Green Transition: Public Policy, Finance, and the Role of the State" by ***Roventini and Semieniuk (2019)*** discusses the role of public policy and finance in the green transition.
c) "Impact of climate change on the reproduction, distribution and abundance of herpetofauna: A review of Literature" by ***Lakhnarayan Kumar***

Bhagarathi et al. (2024) examines the impact of climate change on herpetofauna.

d) "Thyroid disorders and COVID-19: a comprehensive review of literature" by ***Narges Anbardar et al. (2025)*** investigates the relationship between thyroid disorders and COVID-19.
e) "Fostering Green Finance for Sustainable Development in Asia" by ***Durrani et al. (2020)*** explores the role of green finance in achieving sustainable development goals.
f) "Achieving the United Nations sustainable development goals" by ***Bebbington and Unerman (2018)*** discusses the role of accounting and accountability in achieving the SDGs.
g) "Green finance research around the world: a review of literature" ***by Peterson K. Ozili (2022)***
h) "The Green Transition: Public Policy, Finance, and the Role of the State" ***by Roventini and Semieniuk (2019)***
i) "Thyroid disorders and COVID-19: a comprehensive review of literature" ***by Narges Anbardar et al. (2025)***

4. OBJECTIVES OF THE STUDY

a) To identify common health issues prevalent among children, women, and elderly populations
b) To assess the sanitation status of households and community infrastructure in Washim District.
c) To study the feasibility of establishing a district-wide medical camp and health screening initiative.
d) To design a model for recording and maintaining individual medical records (digital + physical).
e) To suggest interventions for long-term health improvement and disease prevention.

5. RESEARCH METHODOLOGY

The study will adopt a mixed-method research approach:

A. Primary Data Collection
1) Household surveys (structured questionnaires on sanitation and health practices).
2) Medical screening camps (blood tests, BMI, blood pressure, etc.).
3) Focus group discussions with community leaders and health workers.
4) Interviews with healthcare providers and district health officials.

B. Secondary Data Collection
1) Review of government health reports (National Health Mission, Census, District Health Reports).
2) Literature review on rural sanitation and healthcare access in India.

C. Sampling Method
Stratified random sampling covering villages, semi-urban areas, and marginalized communities.

D. **Target sample size: 1,000 households across Washim District**.

E. Data Analysis
Quantitative data analysed using statistical tools (SPSS/MS Excel). Qualitative data analysed through thematic coding.

6. PROPOSED MODEL

Module Overview

The medical camp implementation plan is designed to provide a structured approach to organizing a medical camp in Washim District, Maharashtra. The plan includes pre-camp planning, camp setup, medical record creation, post-camp activities, and budget allocation.

MODULE DETAILS			
Component	**Description**	**Responsible**	**Timeline**
Pre-Camp Planning	Identify location, schedule date and time, assemble medical team, procure equipment and supplies, promote medical camp	Organizing Committee	Weeks 1-4
Camp Setup	Set up registration desk, conduct medical screenings, provide consultation services, conduct sanitation awareness sessions	Medical Team	Day 1
Medical Record Creation	Assign unique ID, create digital health records, maintain physical records	Medical Team	Day 1
Post-Camp Activities	Schedule follow-up appointments, analyze data, generate report, plan future medical camps	Organizing Committee	Days 2-7

BUDGET ALLOCATION		
Activity	**Timeline**	**Activity**
Medical Equipment	30%	
Medicines and Supplies	25%	
Human Resources	20%	
Publicity and Logistics	15%	

TIMELINE	
Activity	**Timeline**
Pre-Camp Planning	Weeks 1-4
Medical Camp Setup	Day 1
Post-Camp Activities	Days 2-7

Questionnaire

Section 1: Demographic Information

1. Age: _____
2. Gender: _____
3. Occupation: _____
4. Education Level: _____

Section 2: Sanitation Practices

1. Do you have access to a toilet in your household? (Yes/No)
2. What is the primary source of drinking water in your household? (Borewell, Well, Municipal Supply, etc.)
3. How often do you practice handwashing before meals? (Always, Sometimes, Rarely)

Section 3: Health Conditions

1. Have you experienced any health issues in the past 6 months? (Yes/No)
2. If yes, what were the health issues? (Fever, Diarrhea, Malnutrition, etc.)
3. Have you received any medical treatment for the health issues? (Yes/No)

Section 4: Healthcare Access

1. How far is the nearest healthcare facility from your residence? (Distance in km)
2. Have you visited a healthcare facility in the past 6 months? (Yes/No)
3. What mode of transportation do you use to access healthcare facilities? (Walk, Public Transport, Private Vehicle, etc.)

Section 5: Medical Records

1. Do you maintain any medical records for yourself or your family members? (Yes/No)

2. If yes, what type of medical records do you maintain? (Digital, Physical, Both)

Report Format Patient Medical Health Assessment Report

1. Patient ID: _____
2. Name: _____
3. Age: _____
4. Gender: _____
5. Medical History: _____
6. Current Health Issues: _____
7. Treatment Plan: _____
8. Follow-up Date: _____

Data Analysis Quantitative data will be analysed using statistical tools (SPSS/MS Excel). Qualitative data will be analysed through thematic coding.

Integrated Medical Camp & Record System (IMCRS Model):

1. Medical Camp Setup
2. Temporary clinics in villages
3. Basic diagnostics (blood, urine, X-ray, ECG, ultrasound).
4. Data Collection
5. Each patient registered with unique ID (Aadhar-linked if possible).
6. Personal health details recorded digitally (cloud-based storage).
7. Sanitation & Health Assessment
8. Household-level sanitation surveys linked to medical records.
9. Mapping of disease clusters and sanitation deficiencies.
10. Follow-up Mechanism
11. Health workers update records during follow-up visits.
12. Data shared with district health authorities for planning.
13. Findings (Hypothetical/Expected Outcomes)
14. Sanitation: 40% of households lack access to proper toilets; open defecation persists.
15. Water Quality: High dependence on borewells; contamination risks due to poor drainage.
16. Health Conditions: High prevalence of anaemia in women (35%), malnutrition in children (30%), diabetes and hypertension in adults
17. Healthcare Access: Limited availability of specialist doctors; high patient-doctor ratio.
18. Record Keeping: Absence of digital health records leads to repetitive treatments and uncoordinated care.

7. SUGGESTIONS

a) Establish **WEEKLY** medical camps across the district
b) Implement digital health cards linked with Aadhar for each resident.
c) Strengthen sanitation infrastructure under Swachh Bharat Mission with community participation.
d) Promote health awareness programs on hygiene, nutrition, and preventive care.
e) Train local ASHA workers and health volunteers in record-keeping and basic diagnostics.
f) Collaborate with NGOs and private hospitals for funding and specialist visits.

8. CONCLUSION

The feasibility study reveals that Washim District faces significant challenges in sanitation and healthcare access. Conducting medical camps provides a practical, short-term solution to address immediate health concerns while creating a foundation for long-term improvements through structured medical records. A sustainable model combining healthcare delivery, sanitation improvement, and digital health tracking can substantially improve the district's health outcomes.

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AUTHENTIC LEADERSHIP IN EDUCATION: A BALINESE PHILOSOPHICAL PERSPECTIVE THROUGH TRI KAYA PARISUDHA

I Wayan Aryawan[1)], and Ni Nyoman Sri Mastini[2)]

[1)] Dwijendra University
Email: iwayanaryawan@gmail.com

[2)] Dwijendra University
Email: srimastini52@gmail.com

ABSTRACT

Authentic leadership is increasingly discussed in the world of education because it emphasizes authenticity, reflective awareness, relational transparency, and moral consistency in decision-making. Previous research has shown that authentic leadership is able to increase trust, motivation, and performance in educational organizations. However, most research still focuses on Western perspectives and has not explored the integration of local wisdom as an ethical and spiritual foundation in educational leadership. This is where there is a research gap, namely how authentic leadership can be enriched with local philosophies that have strong moral and spiritual dimensions. This article aims to examine authentic leadership through the perspective of Balinese Hindu philosophy Tri Kaya Parisudha, which emphasizes purity of mind (manacika), speech (wacika), and deeds (kayika). The method used is a literature review with a conceptual-philosophical approach, which examines the theory of authentic leadership in education and connects it with the teachings of Tri Kaya Parisudha as the basis of local values. The analysis was carried out by mapping the linkages between the four dimensions of authentic leadership (self-awareness, relational transparency, internalized moral perspective, and balanced processing) with the three main pillars of Tri Kaya Parisudha. The results show that the integration of the two gives birth to a more complete authentic leadership model: educational leaders are not only consistent in their values and actions, but also uphold purity of thought, word, and deed. This model strengthens trust, harmony, and an ethical climate in the educational community while fostering a holistic character in students. These findings confirm that Balinese local wisdom has the universal potential to enrich the global discourse of educational leadership and provide an ethical framework that can be adapted to multicultural contexts.

Keywords: authentic leadership, educational leadership, Tri Kaya Parisudha, Balinese philosophy, local wisdom.

1. INTRODUCTION

Authentic leadership has become a paradigm that is gaining increasing attention in the contemporary world of education due to its ability to create an environment that encourages trust, motivation, and performance of educational organizations (Hsu et al., 2024). This concept emphasizes self-authenticity, reflective awareness, relational transparency, and moral consistency in decision-making as the main foundation of effective leadership practices (Gardner et al., 2021). In the context of education, authentic leadership focuses not only on achieving academic goals, but also on the formation of character and moral integrity of the entire educational community.

Previous research has shown that authentic leadership can increase teacher engagement, job satisfaction, and ultimately have a positive impact on student learning achievement (Shie & Chang, 2022). Studies conducted by Menashko & Pestusco (2025) revealed that education leaders who apply authentic leadership principles tend to create a more positive organizational climate and encourage innovation in learning practices. The dimensions of authentic leadership, which include self-awareness, relational transparency, internalized moral perspectives, and balanced processing, have been shown to contribute significantly to leadership effectiveness in a variety of educational organizational contexts.

Nevertheless, much of the research on authentic leadership is still focused on Western perspectives and has not explored the integration of local wisdom as an ethical and spiritual foundation in educational leadership (Ahmed, 2023; Gunada et al., 2024; Sanjani et al., 2024).These limitations create significant research gaps, particularly in the Indonesian context which is rich in local philosophies and values that can enrich the understanding of authentic leadership. This condition suggests the need for a more in-depth exploration of how local wisdom can be integrated with modern leadership theory to create a more holistic and contextual model of leadership.

In the midst of Indonesia's cultural diversity, Balinese Hindu philosophy through the teachings of Tri Kaya Parisudha offers a unique perspective that can enrich discussions about authentic leadership in education. Tri Kaya Parisudha, which literally means "three holy deeds," teaches about the purity of thought (manacika), words (wacika), and deeds (kayika) as the ethical foundation of human life (Suardana, 2018). This concept is not only relevant in a spiritual context, but it also has profound implications for leadership practices in educational institutions, where integrity and authenticity are key to building trust and creating a conducive learning environment.

The integration of the Tri Kaya Parisudha philosophy with authentic leadership becomes relevant in the context of Indonesia's multicultural education, where education leaders are faced with the challenge of managing diversity while maintaining universal ethical values. Research by Wimbawati et al. (2025) shows that the implementation of Tri Kaya Parisudha values in the context of education has proven to be effective in shaping students' character and creating a harmonious school climate. This indicates that Balinese philosophy has the potential to make a significant contribution to the development of a more comprehensive educational leadership model rooted in local values.

Research on authentic leadership in education shows that four key dimensions—self-awareness, relational transparency, internalized moral perspectives, and balanced processing—have a strong correlation with the success of educational organizations (Almutairi et al., 2024; Hsu et al., 2024). In this context, the self-awareness dimension requires leaders to have a deep understanding of their own values, strengths, and weaknesses. Relational transparency requires leaders to communicate openly and honestly with all members of the educational community. An internalized moral perspective emphasizes consistency between the values

embraced and the actions taken, while balanced processing refers to the leader's ability to objectively analyze information before making a decision.

The relationship between the dimensions of authentic leadership and the pillars of Tri Kaya Parisudha shows a deep philosophical harmony. The purity of mind (manacika) in Tri Kaya Parisudha correlates with the dimensions of self-awareness and balanced processing in authentic leadership, as both emphasize the importance of mental clarity and self-reflection. The purity of words (wacika) is in line with relational transparency, which prioritizes honest and open communication. Meanwhile, the sanctity of actions (kayika) is closely related to an internalized moral perspective, which demands consistency between the values embraced and the actions taken (Murdana, 2021).

The implementation of Tri Kaya Parisudha values in educational leadership has the potential to create a learning environment that is not only academically effective, but also shapes students' holistic character. Research by Pujiani et al. (2024) reveals that educators who apply the principles of Tri Kaya Parisudha in learning practice are able to create a more harmonious classroom atmosphere and encourage the development of students' moral values. This suggests that the integration of local philosophy with modern leadership theory can make a significant contribution to improving the overall quality of education.

In the context of globalization and modernization of education, the urgency of developing a leadership model that is rooted in local wisdom but relevant to the demands of the times is becoming increasingly important. Studies conducted by Shahin et al. (2024) and Suri (2025) show that educational leadership that integrates local values with universal principles tends to be more effective in creating sustainable, positive change. This phenomenon indicates that Tri Kaya Parisudha as a Balinese local wisdom has universal potential that can be adapted in various multicultural educational contexts, not only in Indonesia but also at the global level.

Based on the description above, this study aims to examine authentic leadership through the perspective of Balinese Hindu philosophy Tri Kaya Parisudha in the context of education. Through a literature review approach with a conceptual-philosophical perspective, this study will analyze the relationship between the dimensions of authentic leadership and the pillars of Tri Kaya Parisudha to develop a more comprehensive model of educational leadership. It is hoped that the results of this research can contribute to the development of educational leadership theories that are not only effective practically, but also rooted in strong moral and spiritual values, so as to be able to create a generation that is not only intellectually intelligent but also noble in character.

2. RESEARCH METHODOLOGY

The research method in this article uses a qualitative approach with the types of literature study research and conceptual studies. The qualitative approach was chosen because it aims to explore and understand the philosophical meaning of authentic leadership in the context of education through the perspective of Balinese philosophy, especially the values of Tri Kaya Parisudha. The research subjects are in the form of scientific literature and documents relevant to the theme of authentic leadership, Balinese philosophy, and the application of local values in educational leadership. The data collected is in the form of secondary qualitative data from articles, books, reputable international scientific journals, and other reliable documents. This method is relevant for deepening the analysis of how local values can be integrated into a conceptual framework of authentic leadership in education.

The data collection method is carried out through library research with the process of collecting, sorting, and critically studying relevant scientific sources from the last decade. The data analysis technique used is thematic analysis that focuses on the identification of the main themes that arise from the understanding of the

literature and the relationship between the concept of authentic leadership and the values of Tri Kaya Parisudha. This thematic analysis makes it easier for researchers to compile a holistic and integrated synthesis of authentic leadership rooted in local philosophy. This approach is in line with the methods used in previous authentic leadership research that emphasizes deep understanding through qualitative studies to explore the essence of the concept of leadership (Gardner et al., 2021; Northouse, 2021).

3. RELATED RESEARCH

Research on authentic leadership in the context of education shows that this leadership style is able to improve various positive outcomes such as organizational performance, job satisfaction, and trust among members of educational organizations (Gardner et al., 2021). Authentic leadership emphasizes aspects of self-awareness, relational transparency, internalized moral perspectives, and balanced processing that are significantly correlated with a positive school climate and teacher motivation (Shao et al., 2025). Systematic studies by Hsu et al. (2024) also show that authentic leadership encourages innovation and staff involvement in the learning process, which reinforces the effectiveness of educational leadership.

In addition, the literature has begun to recognize the importance of integrating local wisdom into educational leadership models to enrich the moral and spiritual dimensions. In the context of Indonesia, especially Bali, the philosophy of Tri Kaya Parisudha as part of the local Balinese Hindu wisdom offers a framework of values that prioritizes the purity of thoughts, words, and deeds, which is relevant to be associated with the dimension of authentic leadership (Suardana, 2018). Research focusing on education with the integration of Tri Kaya Parisudha shows an improvement in the character and harmony of the educational environment (Sedana et al., 2022; Wimbawati et al., 2025). Thus, combining authentic leadership and local values based on Tri Kaya Parisudha can present a more holistic and contextual model of educational leadership.

4. RESULTS AND DISCUSSION

The results of this study show that authentic leadership in the context of education involves four important dimensions, namely self-awareness, relational transparency, internalized moral perspective, and balanced processing (Hsu et al., 2024; Lynch et al., 2022). These four dimensions have been empirically proven to be able to build trust, increase motivation, and improve performance in educational organizations (Gardner et al., 2021).

In addition, the analysis also reveals the three main pillars of Tri Kaya Parisudha, namely purity of mind (manacika), speech (wacika), and deeds (kayika) as a strong moral and spiritual foundation in the context of Balinese culture. These pillars provide an additional dimension and enrich authentic leadership values, which have traditionally been based solely on psychological and ethical aspects.

From the thematic analysis, it was found that there is a close correlation between the dimensions of authentic leadership and the three pillars of Tri Kaya Parisudha as follows:

1) Self-Awareness and Balanced Processing are related to Purity of Mind (Manacika). Both dimensions of authentic leadership require deep self-reflection and mental clarity in decision-making, which is in line with manacika's teachings that prioritize purity of intentions and thoughts (Murdana, 2021).
2) Relational Transparency is related to Purity of Speech (Wacika). This dimension demands honesty and openness in communication and social interaction, just as wacika emphasizes authenticity and purity of words in building trust (Hsu et al., 2024).

3) The Internalized Moral Perspective is compatible with Purity of Deeds (Kayika) because it emphasizes the consistency between the values embraced and the actual actions taken by the leader, in accordance with the teachings of kayika that encourage holy and morally responsible actions (Suardana, 2018).

This correlation tabulation is presented in the following table:

Table 1. The Relationship of Authentic Leadership with Tri Kaya Parisudha

The Dimension of Authentic Leadership	The Triple Crown Jewel	Leadership Implications
Self-Awareness & Balanced Processing	Purity of Mind (Manacika)	Clear self-reflection, pure intentions and views in decision-making
Relational Transparency	Purity of Speech (Wacika)	Honest communication, building trust and openness of social relationships
Internalized Moral Perspective	Purity of Deeds (Kayika)	Moral consistency in actions and policies

Source: Data analysis results, 2025

This model of integration results in an educational leadership approach that not only emphasizes psychological and ethical aspects, but is also rooted in Balinese cultural and spiritual values, enriching the authentic leadership dimension. This model emphasizes that education leaders must maintain the purity of thoughts, words, and deeds as a holistic unit that supports each other to create an ethical, harmonious, and inspiring climate in educational institutions. The diagram of this model can be illustrated as below.

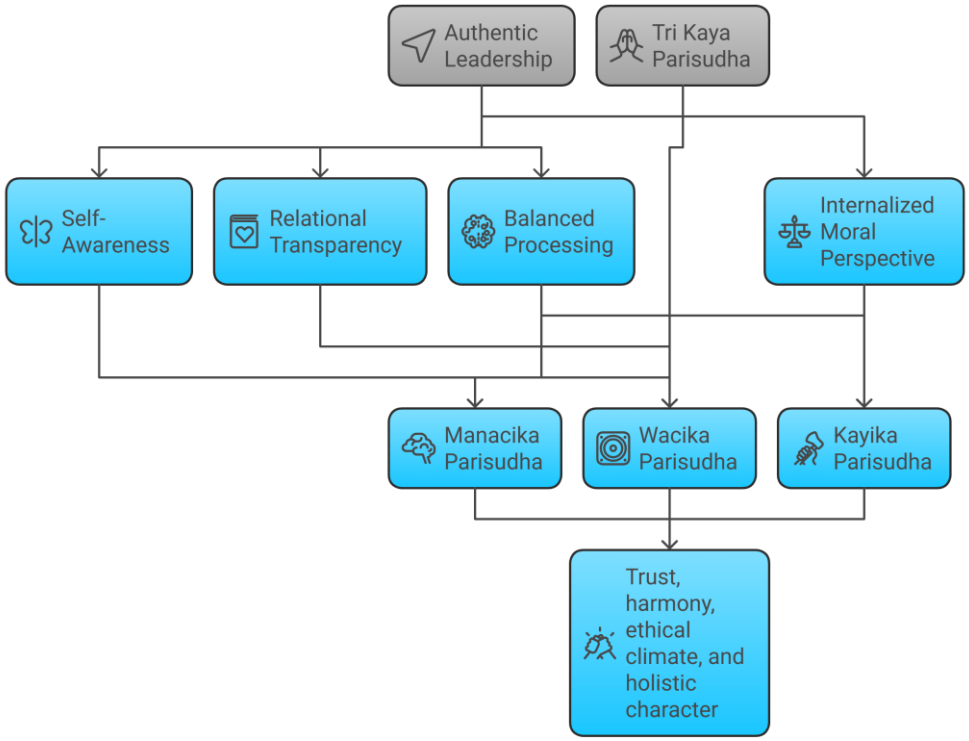

Figure 1. Tri Kaya Parisudha-Based Authentic Education Leadership Model
Source: Data analysis results, 2025

The merging of local values with authentic leadership theory results in more culturally and spiritually authentic leadership practices. This is in line with the findings of Ibrahim et al. (2025) who stated that local wisdom can strengthen the universal principle of leadership, thereby resulting in sustainable and adaptive change in multicultural educational institutions.

Leadership colored by purity of thought, speech, and deeds allows leaders to strengthen a school climate of mutual trust and respect, which is essential in an educational environment (Gardner et al., 2021). The authenticity of leaders based on local philosophies can also create holistic character values in learning, forming students who are not only intellectual but also ethical behavior (Paramita et al., 2024).

In addition, the dimension of relational transparency that is in harmony with wacika can reduce conflicts and strengthen collaboration between school stakeholders. It helps create a culture of open dialogue that supports innovative and collaborative learning (Sanders, 2018; Sompron, 2024).

This leadership model recommends that educational institutions conduct leadership training that integrates the values of Tri Kaya Parisudha so that educational leaders are not only administratively competent but also able to instill the values of purity in all aspects of their leadership.

The application of this model will strengthen a learning atmosphere that is not only productive but also upholds moral and spiritual values. Leaders who apply this model are expected to be able to be role models that reflect the balance between self-authenticity and local cultural wisdom.

Further research is expected to conduct empirical studies using mixed methods to test the effectiveness of this leadership model at various levels of education and different locations, in order to strengthen external validity and generalization of results. In addition, it is necessary to develop a valid and reliable measurement instrument based on Tri Kaya Parisudha to help evaluate leadership practices in the field.

5. CONCLUSION

The integration of authentic leadership concepts with the values of Tri Kaya Parisudha results in a holistic and contextual model of educational leadership. The study found that the four dimensions of authentic leadership, namely self-awareness, relational transparency, internalized moral perspective, and balanced processing, are philosophically and practically interrelated with the three pillars of the Tri Kaya Parisudha, namely purity of mind (manacika), purity of speech (wacika), and purity of deeds (kayika). This integration gives birth to a leadership model that not only emphasizes authenticity and consistency of values in action, but also upholds the purity of intentions, words, and actions as a whole.

This authentic leadership model based on Tri Kaya Parisudha is able to strengthen trust, harmony, and ethical climate in the educational community while fostering a holistic character in students. This approach is relevant and effective in a multicultural educational context and can be the foundation for the development of adaptive and sustainable leadership in the future. Thus, this model not only makes a theoretical contribution to leadership studies, but also offers practical guidance that is suitable for application in educational environments rooted in local and spiritual values.

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THE REINVENTION OF SCIENCE AND SOCIAL LEARNING (IPAS) THROUGH P5 PROJECTS TO FOSTER INDEPENDENCE AND STUDENT AGENCY IN ELEMENTARY SCHOOL STUDENTS

Dewi Juniayanti[1)], Santi Boba Repi[2)]

[1)] *Dwijendra University*
dewijunia57@gmail.com
[2)] *Dwijendra University*
santirambu103@gmail.com

ABSTRACT

This study explores the implementation of the Projek Penguatan Profil Pelajar Pancasila (P5) within the Merdeka Curriculum at SD Dwijendra Denpasar, focusing on how it contributes to the development of self-regulated learning among fourth-grade students. The P5 initiative serves as a pedagogical innovation aimed at fostering the six dimensions of the Pancasila Student Profile faith in God Almighty and noble character, global diversity, mutual cooperation, independence, critical thinking, and creativity. Grounded in the philosophical principles of Pancasila, P5 integrates project-based learning (PBL) as a means of cultivating students' autonomy, responsibility, and moral integrity through contextual and experiential learning. Employing a qualitative descriptive design, data were collected through observation, interviews, and documentation involving school leaders, teachers, and students. The analysis followed Miles and Huberman's interactive model, encompassing data reduction, data display, and conclusion drawing. The findings reveal that P5 implementation at SD Dwijendra Denpasar has significantly enhanced students' initiative (80%) and responsibility (85%), indicating strong engagement and independence in learning activities. However, aspects such as time management (75%) and problem-solving (70%) still require further guidance. Supporting factors include teacher collaboration, student enthusiasm, and institutional support, while inhibiting factors involve limited time allocation, lack of standardized teaching materials, and varied student readiness. Overall, P5 has proven effective in integrating character education with academic learning, enabling students to internalize Pancasila values through meaningful projects such as environmental awareness and cooperative art activities. Theoretically, this research contributes to the growing body of knowledge on project-based character education within Indonesia's Merdeka Curriculum. Practically, it offers insights for teachers in designing P5-based learning strategies that nurture independence, critical reflection, and moral development. The study concludes that P5 serves as a transformative medium for building self-regulated, creative, and responsible learners in primary education.

Keywords: *Pancasila Student Profile, Merdeka Curriculum, project-based learning, self-regulated learning, character education.*

1. INTRODUCTION

The Kementerian Pendidikan dan Kebudayaan Republik Indonesia (Kemendikbud), as the governmental body responsible for the national education sector, has formulated a series of strategic policies to address the persistent issue of low educational quality in Indonesia. One of the flagship initiatives is the establishment of the "Sekolah Penggerak" program, which aims to foster the

Pancasila Student Profile (Profil Pelajar Pancasila). This profile embodies essential values and competencies, including noble character, independence, critical thinking, creativity, collaboration through gotong royong, and respect for global diversity. The concept is grounded in the Indonesian Education Roadmap 2020–2035, which acknowledges the urgency of adapting to technological advancements, social dynamics, and environmental challenges at the global level (Kemendikbud, 2020).

According to Ki Hajar Dewantara, education cannot be separated from the cultivation of moral values, physical development, and intellectual growth of learners to shape them into socially responsible individuals. In line with this perspective, character education plays a central role in developing students' potential and nurturing them to become civilized citizens who embody the principles of Pancasila (Wahyuni & Arifin, 2021). The dimensions of the Pancasila Student Profile consist of faith in God Almighty and noble character, global diversity, mutual cooperation, independence, critical thinking, and creativity. These dimensions represent both moral and civic values as well as 21st-century skills that are crucial for students' holistic development.

The notion of the Pancasila Student portrays Indonesian learners as globally competent individuals who internalize and practice the values of Pancasila. In doing so, they cultivate a strong national identity while developing the skills and confidence necessary to participate and contribute meaningfully to global society (Hasanah et al., 2022). Project-based learning (Projek Penguatan Profil Pelajar Pancasila or P5) is an integral strategy for implementing these values. A project refers to a structured sequence of activities designed to achieve specific goals by engaging students in problem-solving, investigation, and decision-making within a defined time frame (Rahayu & Purwanti, 2023).

Pancasila, as a national philosophical foundation, is an appropriate framework encompassing values and skills essential for every Indonesian learner. Empirical studies have shown that the values embedded in Pancasila align with global competencies and 21st-century skills such as collaboration, communication, critical thinking, and creativity (Mulyani & Sudrajat, 2022). Thus, developing the Pancasila Student Profile not only reinforces national identity but also equips learners with the competencies required to face global challenges.

Character development is at the heart of the Pancasila Student Profile, aiming to instill positive attitudes and habits that reflect Pancasila's ethical principles. In this sense, Indonesian students are expected to embody lifelong learning, strong personal values, and behavior aligned with Pancasila's moral foundation (Nugroho & Santosa, 2023).

The Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia (Kemendikbudristek) introduced the "Merdeka Curriculum", a curriculum model designed to provide flexibility for educators in selecting learning materials relevant to students' needs, interests, and local contexts. It was developed as a response to the limitations of previous curriculum systems and aims to enhance students' potential through more dynamic and meaningful learning experiences. One of its core components is project-based learning, which emphasizes active engagement and contextual problem-solving (Ramdani & Fitriani, 2023).

Character, in the Indonesian linguistic and psychological context, refers to psychological, moral, and personal attributes that distinguish individuals and encompass temperament, morals, and ethical behavior (Sugiyanto & Hasan, 2020). In educational psychology, character also relates to moral qualities such as integrity and honesty, which are expected to be stable and consistent traits.

Zimmerman defines self-regulated learning as "students' ability to actively direct, manage, and control their learning processes, including setting learning goals, selecting strategies, and monitoring and evaluating outcomes" (Zimmerman, 2018). Individuals with strong moral qualities aim to give their best to God, themselves, others, the environment, the nation, and the world by optimizing their intellectual, emotional, and motivational potential. Project-based learning is an

effective approach to fostering responsibility, collaboration, and autonomy in students (Majid & Rochman, 2015).

An initial observation conducted at SD Dwijendra Denpasar from October 11 to December 9, 2024, with the assistance of Ibu Trisna, revealed that the implementation of the P5 program had begun at the school. However, teachers still encountered several challenges, primarily due to insufficient understanding and preparation for carrying out P5 activities. The school selected Pancasila dimensions focusing on religiosity, faith in God Almighty, noble behavior, independence, and cooperation for Grade 1, and added critical thinking for Grade 4. Sample activities included religious practice, moral behavior, and collaborative projects. Based on the above background, this research aims to examine the development of self-regulated learning among fourth-grade students through the implementation of the Pancasila Student Profile Strengthening Project (P5) at SD Dwijendra Denpasar within the framework of the Merdeka Curriculum.

To ensure the research remains focused and aligned with its objectives, the scope of this study is clearly defined. The research is limited to fourth-grade students at SD Dwijendra Denpasar during the odd semester of the 2024/2025 academic year. The object of the study is the implementation of the Pancasila Student Profile Strengthening Project (P5) within the context of the Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia Merdeka Curriculum. Geographically, the research is confined to the school's environment, ensuring that the data collected reflect contextual and practical realities. The research problem formulated is: *How does the Pancasila Student Profile Strengthening Project (P5) contribute to the development of self-regulated learning among fourth-grade students at SD Dwijendra Denpasar during the 2024/2025 academic year?* This question provides a clear direction for examining the relationship between P5 implementation and students' independence in learning (Hasanah et al., 2022; Zimmerman, 2018).

The primary objective of this study is to investigate how P5 facilitates the development of self-regulated learning in fourth-grade students. The expected outcomes include both theoretical and practical contributions. Theoretically, the research is anticipated to enrich educational science literature, particularly in the field of project-based learning, character education, and contextual learning strategies aligned with the Merdeka Curriculum (Rahayu & Purwanti, 2023; Ramdani & Fitriani, 2023). Practically, the findings are expected to guide teachers in designing learning strategies that foster students' active participation, reflection, and autonomy; support students in developing responsibility, decision-making, and self-directed learning skills; and strengthen schools' efforts in implementing P5 as a core component of character education. Furthermore, this study may serve as a reference for future researchers interested in exploring self-regulated learning and character development through project-based learning approaches (Mulyani & Sudrajat, 2022; Nugroho & Santosa, 2023).

2. RESEARCH METODOLOGY

This study employs a qualitative research design with a descriptive approach to explore and interpret the implementation of the Pancasila Student Profile Strengthening Project (P5) within the Merdeka Curriculum at SD Dwijendra Denpasar during the 2024/2025 academic year. Qualitative descriptive research enables the researcher to gain a deeper understanding of social and educational phenomena through direct engagement with participants and natural settings (Creswell & Poth, 2018). The research design focuses on interpreting how P5 is carried out in the classroom and how it contributes to fostering students' character development particularly their self-regulated learning skills. The participants are selected using purposive sampling, emphasizing individuals with relevant knowledge and roles, including the principal, homeroom teachers, PPKn teachers, and fourth-grade students. The study takes place at SD Dwijendra Denpasar, located on Jalan Kamboja No. 17, Denpasar, Bali, during the even semester of the

2024/2025 academic year (October 11–December 9, 2024). Data are drawn from both primary and secondary sources. Primary data include direct verbal statements and actions collected through observations and structured interviews, while secondary data consist of documented materials such as archives, lesson plans, and learning modules relevant to P5 implementation.

To collect data systematically, the researcher employs three instruments: observation, interviews, and documentation. Observations are conducted using a non-participant approach, allowing the researcher to objectively record classroom activities and student engagement during P5 learning sessions. Structured interviews are prepared with guiding questions to ensure data consistency and depth of information. The interviews involve school leaders, teachers, and students, aiming to uncover their perceptions and experiences related to P5 implementation and its influence on student character development (Patton, 2015). Documentation includes the collection of written and visual records such as teaching modules, school archives, and other relevant supporting materials. Data analysis follows the interactive model proposed by Miles and Huberman, consisting of three key stages: data reduction, data display, and conclusion drawing (Miles et al., 2019). Data reduction involves summarizing and selecting the most relevant information, data display is presented in narrative and visual formats such as flowcharts and category relationships, and conclusions are drawn iteratively, verified through continuous data collection and interpretation. This analytical process enables the researcher to construct a comprehensive narrative on how P5 strengthens student autonomy and character.

Ensuring the validity and reliability of qualitative data is crucial. Therefore, this study applies triangulation techniques to verify the credibility of findings. Source triangulation involves cross-checking data from various participants (school principal, teachers, and students) to identify consistencies and differences in perspectives. Technique triangulation compares data obtained from interviews, observations, and documentation to enhance the robustness of interpretations (Flick, 2018). Through this method, the researcher ensures that the findings are credible, contextually grounded, and theoretically meaningful. This triangulated approach not only strengthens methodological rigor but also aligns with the principles of qualitative research that emphasize depth, trustworthiness, and reflexivity. Ultimately, this research method provides a solid framework to examine how the Pancasila Student Profile Strengthening Project (P5) contributes to building self-regulated learning and character education within Indonesia's Merdeka Curriculum.

3. RELATED RESEARCH/LITERATUR REVIEW

Theoretical Foundation: Project for Strengthening the Pancasila Student Profile (P5)

The Project for Strengthening the Pancasila Student Profile (P5) is a key component of the Merdeka Curriculum, designed to foster character and competency development in Indonesian students. The six dimensions of P5 include: faith and devotion to God Almighty, global diversity, mutual cooperation, creativity, critical thinking, and independence (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022). This initiative provides educators with a platform to connect classroom learning with real-world contexts, encouraging students to analyze, observe, and respond to issues in their environment (Hamzah, 2023).

P5 serves as a co-curricular project-based learning program that enhances students' capacity to think critically, work collaboratively, and act creatively. It reflects Indonesia's vision to cultivate 21st-century competencies through holistic, contextual, and student-centered learning (Kemendikbud, 2022). The holistic principle encourages comprehensive understanding of issues by integrating personal, social, and environmental aspects. Meanwhile, the contextual approach situates learning within real-life experiences, while the student-centered and

exploratory principles emphasize autonomy and creative exploration (Paramitha et al., 2023).

Implementation of P5 in the Merdeka Curriculum

Under the Merdeka Curriculum, P5 functions as an interdisciplinary project focusing on authentic learning experiences. It is structured to help students engage with contemporary issues such as climate change, digital transformation, and social inclusion, allowing them to design tangible solutions aligned with their cognitive and emotional development levels (Nurfirda, 2023).

This model integrates values of Pancasila into daily learning practices, not only as moral guidance but as a framework for critical action and civic engagement. The projects are designed collaboratively between schools, communities, and industries to foster experiential learning beyond the classroom. Such collaboration enhances students' motivation and self-efficacy, contributing to the development of independent learners (Dela Rahmania, 2024).

Project-Based Learning (PBL) and Its Connection to P5

Project-Based Learning (PBL) is a pedagogical model that complements P5 by emphasizing problem-solving, collaboration, and contextual learning. It consists of three main stages planning, implementation, and evaluation (Thomas, 2000). In the planning stage, teachers design structured project activities with clear objectives. During implementation, students engage in hands-on exploration, teamwork, and creative expression. The final stage involves reflection and evaluation, where students assess their performance and learning outcomes (Bell, 2010).

Within the framework of P5, PBL serves as a medium through which students can translate abstract Pancasila values into real-life applications. For example, projects such as "Sustainable Lifestyle" or "Democratic Voice" enable students to internalize environmental awareness and civic responsibility (Nurfirda, 2023). Hence, PBL provides both structure and flexibility, allowing the integration of cognitive and affective domains in character education.

Relationship Between P5 and Pancasila Values

The relationship between the *Project for Strengthening the Pancasila Student Profile (P5)* and the foundational philosophy of *Pancasila* can be understood through three interconnected dimensions: values, goals, and methods. P5 embodies the moral and philosophical essence of Pancasila by translating its five fundamental principles faith in God, humanity, unity, democracy, and social justice into educational practices that are relevant to the contemporary learning context (Rohman, 2023). Both P5 and Pancasila share the overarching goal of shaping holistic individuals who are intelligent, ethical, and socially responsible citizens, capable of contributing positively to their community and nation. Furthermore, P5 operationalizes the ideals of Pancasila through participatory, project-based, and experiential learning models, enabling students not only to understand but also to *live* and *practice* these core values in real-life contexts (Paramitha et al., 2023). This pedagogical approach ensures that the philosophical values of Pancasila are not merely taught as abstract concepts but are internalized through meaningful, hands-on experiences that promote personal growth, civic engagement, and character formation.

Independent Learning (Kemandirian Belajar)

Independent learning is a critical factor in achieving successful learning outcomes. It refers to students' ability to take responsibility for their own learning through self-regulation, motivation, and critical reflection (Boekaerts, Zeidner, & Pintrich, 2019). According to Ningsih & Nurrahmah (2018), self-directed learning

enables learners to plan, monitor, and evaluate their progress effectively. Students with high learning independence tend to show initiative, self-confidence, and persistence in solving problems (Egok, 2018; Hakim, 2017).

Widuroyekti (2021) identifies key indicators of learning independence, including initiative, responsibility, time management, and problem-solving. Similarly, Wahyuningsih (2020) emphasizes two aspects initiative/creativity and responsibility as crucial to fostering autonomous learning behavior. These dimensions are essential for developing lifelong learners capable of adapting to rapid educational and social changes.

Related Studies

A number of previous studies have explored the implementation and impact of the *Project for Strengthening the Pancasila Student Profile (P5)* in primary education, offering valuable insights into its effectiveness and challenges. Nurfirda (2023) analyzed the implementation of P5 through Engeström's Activity Theory and found that projects such as *"Democratic Voice"* and *"Sustainable Lifestyle"* successfully fostered student collaboration, contextual learning, and critical engagement within SD Dwijendra Denpasar. Similarly, Paramitha et al. (2023) examined the role of P5 in cultural character formation among fourth-grade students at the same institution, revealing that cultural projects such as the *Damar Kurung Lantern Festival* effectively nurtured cooperation, artistic creativity, and pride in local identity. In another study, Amanabella (2019) investigated character education as a means to improve student behavior and emphasized that effective character formation depends heavily on systematic planning, implementation, evaluation, and teacher modeling. Complementing these findings, Dela Rahmania (2024) focused on P5's *Sustainable Lifestyle* theme, demonstrating that collaborative teaching strategies and efficient resource management enhance students' environmental awareness despite certain challenges, such as limited materials and time constraints. Building upon these previous works, the current study aligns with the general consensus that P5 plays a pivotal role in shaping students' personal and social competencies. However, it differs by specifically examining how P5 fosters *self-regulated learning behaviors* including responsibility, initiative, and decision-making among elementary school students at SD Dwijendra Denpasar, thereby expanding the scope of previous character-based research into the domain of independent learning development.

Conceptual Framework

The conceptual framework of this study connects P5 implementation with the development of students' learning independence. Through participation in P5 projects, students are encouraged to engage actively, make decisions, and reflect on their learning processes. This interaction promotes cognitive, affective, and behavioral dimensions of autonomy, aligning with the principles of the Merdeka Curriculum and the ideals of Pancasila-based education (Kemendikbud, 2022; Boekaerts et al., 2019).

4. RESULTS AND DISCUSSION

Implementasi Kurikulum Merdeka di SD Dwijendra Denpasar

Implementasi Kurikulum Merdeka di SD Dwijendra Denpasar dimulai pada tahun ajaran 2022/2024 dan masih tergolong baru bagi sekolah tersebut. Langkah ini menandai perubahan penting dalam paradigma pendidikan, terutama dalam membangun pembelajaran yang berpusat pada peserta didik. Berdasarkan hasil wawancara dengan Kepala Sekolah SD Dwijendra Denpasar, diperoleh informasi bahwa kurikulum ini baru diterapkan selama dua tahun dan mencakup kelas rendah hingga kelas tinggi, yaitu kelas I dan kelas VI. Kepala sekolah menegaskan

bahwa proses penerapan Kurikulum Merdeka masih berada pada tahap awal sehingga membutuhkan waktu dan adaptasi agar dapat berjalan optimal di masa mendatang (Wawancara, 21 Maret 2025). Secara konseptual, penerapan kurikulum ini berlandaskan pada penguatan karakter dan pengembangan profil pelajar Pancasila yang menjadi arah baru pendidikan nasional. Profil Pelajar Pancasila diyakini mampu membentuk peserta didik yang berkarakter, beriman, dan berakhlak mulia melalui pembiasaan nilai-nilai Pancasila dalam kehidupan sehari-hari di lingkungan sekolah.

Dalam konteks ini, Projek Penguatan Profil Pelajar Pancasila (P5) berperan sebagai sarana implementatif dari nilai-nilai Pancasila dalam proses pembelajaran. Seperti yang dijelaskan oleh Ibu Trisna, wali kelas IV, dasar utama pelaksanaan P5 adalah penanaman karakter siswa. Ia menambahkan bahwa meskipun karakter dapat diajarkan melalui berbagai mata pelajaran, P5 memberikan ruang yang lebih luas bagi guru untuk mengelola pembelajaran secara kreatif dan kontekstual, sesuai karakteristik sekolah masing-masing. Pembelajaran P5 tidak terikat pada buku tertentu, melainkan disesuaikan dengan kebutuhan dan potensi lingkungan sekolah, sehingga guru dituntut untuk mengembangkan proyek yang menarik dan relevan bagi siswa. Menurutnya, tujuan utama dari P5 adalah membentuk karakter siswa yang mandiri dan bertanggung jawab melalui kegiatan proyek yang menanamkan nilai-nilai moral dan sosial (Wawancara, Ibu Trisna, 19 Maret 2025).

Pendapat tersebut diperkuat oleh Ibu Asrini yang menyatakan bahwa hubungan antara P5 dan pendidikan karakter sangat erat, karena setiap tema dalam P5 mengandung dimensi tertentu yang berkaitan langsung dengan pembentukan karakter peserta didik. Ia mencontohkan bahwa setiap kegiatan proyek mengandung nilai-nilai religius, nasionalis, integritas, kemandirian, gotong royong, dan bernalar kritis yang secara tidak langsung membentuk pribadi pelajar yang berkarakter (Wawancara, Ibu Asrini, 19 Maret 2025). Berdasarkan pandangan tersebut, dapat disimpulkan bahwa P5 bukan hanya sarana pembelajaran berbasis proyek, tetapi juga menjadi wadah pembinaan karakter yang integral dengan Kurikulum Merdeka.

Tahap Pelaksanaan Pembelajaran P5 dalam Penanaman Karakter

Hasil penelitian menunjukkan bahwa pelaksanaan P5 di SD Dwijendra Denpasar masih berlangsung secara bertahap sejak diberlakukannya Kurikulum Merdeka. Program ini melibatkan seluruh guru, meskipun pelaksanaannya difokuskan pada kelas I dan VI. Kepala sekolah menjelaskan bahwa jadwal pelaksanaan P5 tidak selalu bersamaan antarkelas dan sering kali dilakukan secara kolaboratif antar guru. Pelaksanaan proyek dilakukan secara tim agar setiap guru dapat berkontribusi sesuai keahliannya, mencerminkan prinsip gotong royong yang juga menjadi nilai inti Pancasila (Wawancara, Kepala Sekolah, 21 Maret 2025).

Dalam praktiknya, guru merancang kegiatan P5 yang menekankan keterlibatan aktif siswa dalam proses belajar dan penciptaan produk nyata. Siswa diajak untuk mengidentifikasi masalah di lingkungan sekitar, merancang solusi sederhana, serta merefleksikan nilai-nilai yang dipelajari. Dari hasil wawancara dan observasi, terlihat bahwa guru berperan sebagai fasilitator yang membimbing siswa untuk menemukan makna belajar dan mengembangkan kemandirian. Penerapan P5 di SD Dwijendra Denpasar dengan demikian tidak hanya mendukung implementasi Kurikulum Merdeka tetapi juga menjadi strategi utama dalam pembentukan karakter dan penguatan nilai-nilai kebangsaan pada peserta didik.

The process of implementing the *Projek Penguatan Profil Pelajar Pancasila* (P5) at SD Dwijendra Denpasar is carried out in Grades I and VI. However, the schedules for implementation are not always synchronized—some coincide, while others differ depending on the current academic plan.

P5 Project Results

One of the projects completed by Grade IV students was a collage made from natural materials such as dried leaves. This project was part of a P5 theme emphasizing the values of *mutual cooperation* (*gotong royong*) and *love for the environment*. In this activity, students were asked to collect dried leaves from their surroundings either from home or school and then create collage artworks according to their imagination.

The artwork was created as part of the implementation of the P5 project under the theme *Love for the Environment*. Students independently collected natural materials (dried leaves) and arranged them into the shape of a bird. This activity not only fostered creativity but also cultivated responsibility and independence, as students were required to plan their ideas, manage their time, and complete the project without relying entirely on their teachers or parents.

Based on the statements of the principal, the homeroom teacher, and Mrs. Astrini, it can be concluded that:

> *"In developing P5 projects, it is not only the responsibility of the assigned teacher but also of other teachers who should participate, particularly in fostering students' character development." (Interview, March 19, 2025)*

Stages of P5 Learning Implementation in Character Building

Planning Stage

The planning stage is the initial and most crucial phase that teachers must carry out before implementing the P5 program. It aims to ensure that the *Projek Penguatan Profil Pelajar Pancasila* runs effectively and optimally.

As stated by **Mrs. Asrini**,

> *"The Merdeka Curriculum continues the essence of the K13 Curriculum, emphasizing student-centered learning. It has a positive impact not only on students but also on teachers, making them more creative and motivated to prepare effective learning processes. The main goal is for teachers to act as facilitators, while students take the central role in learning." (Interview, Mrs. Asrini, March 19, 2025)*

Similarly, the Grade IV homeroom teacher added:

> *"As a new teacher, I feel enthusiastic about the Merdeka Curriculum. Compared to K13, which was administratively heavy, this new curriculum is slightly simplified, even though some administrative tasks still exist."*

From these opinions, it can be understood that teachers at SD Dwijendra Denpasar enthusiastically welcomed the implementation of the *Merdeka Curriculum*, particularly the P5 program. They actively prepare and plan to ensure that the program is effectively executed.

Preparation of P5 Learning

Before conducting learning activities, teachers must prepare several important aspects to ensure optimal outcomes. One crucial element is determining an effective learning strategy. As Mrs. Trisna explained:

> *"Our strategy for Grade IV focuses on one dimension per semester. We believe giving sufficient time to understand one dimension thoroughly is more effective than trying to handle multiple dimensions at once. During our teacher meetings (KKG), we decide on the topic for the semester and design a detailed learning plan to achieve it."*

According to Mrs. Ni Putu Mastrini, this approach ensures effective time management and allows teachers to focus on relevant developmental aspects for each grade level.

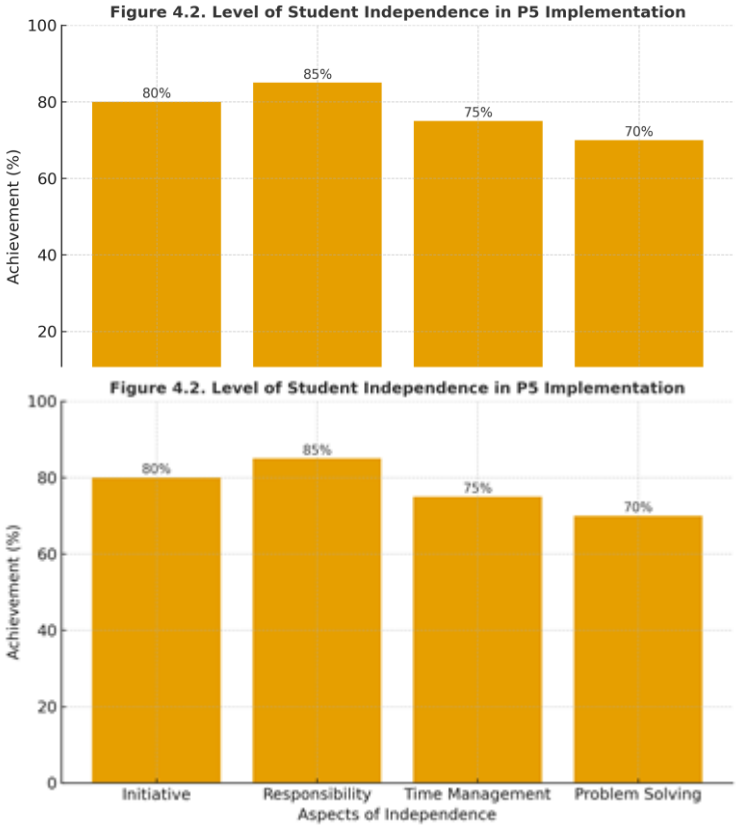
Dimensions of the Pancasila Student Profile in Each Phase

The implementation of P5 learning in the *Merdeka Curriculum* is closely linked to the dimensions of the *Pancasila Student Profile*. Mrs. Asrini explained:

> *"In P5 learning, we always refer to the dimensions of the Pancasila Student Profile because P5 is inherently connected to it." (Interview, March 19, 2025)*

Observations also confirmed that Grades I and VI adopted several key dimensions: *faith and devotion to God Almighty and noble character, independence, critical reasoning,* and *mutual cooperation*. Through these dimensions, the school aims to develop well-rounded students with strong character.

To support the analysis of the P5 implementation at SD Dwijendra Denpasar, the following diagram and tables present the results of observations and interviews conducted with teachers and students. The visual and tabular data aim to illustrate how the *Projek Penguatan Profil Pelajar Pancasila (P5)* contributes to developing students' learning independence, as well as the supporting and inhibiting factors influencing its implementation.



lementation of the *P* Denpasar. The diagr lity (85%) and initiat elf-directed in carry such as time mana g, suggesting that students require further guidance in organizing learning schedules and responding to challenges independently. Overall, the average independence score of 77.5% indicates a *good* category of student self-regulated learning development through P5 activities.

Table 1. Observation Results of Students' Learning Independence (Based on P5 Aspects)

No.	Aspect of P5	Indicators of Student Independence	Observation Results	Category
1	Initiative	Students show willingness to start learning activities without teacher direction.	80%	Very Good
2	Responsibility	Students complete assigned projects and tasks on time.	85%	Excellent
3	Time Management	Students are able to plan and manage time effectively during projects.	75%	Good
4	Problem Solving	Students are able to find alternative solutions when facing challenges.	70%	Fairly Good
Average			**77.5%**	**Good**

Source**:** Observation and interview results, processed by the researcher (2025)

Presents detailed observations of students' learning independence based on the main aspects of P5. The data align with the findings from Figure 1, reinforcing that P5 helps nurture students' initiative and sense of responsibility through experiential and contextual learning. These aspects are vital in shaping independent learners capable of managing their learning processes without heavy dependence on teacher direction. However, continuous mentoring is needed to strengthen time management and critical thinking as part of students' long-term learning autonomy.

Table 2. Supporting and Inhibiting Factors of P5 Implementation at SD Dwijendra Denpasar

No.	Category	Description	Example
1	Supporting Factors	Strong collaboration among teachers in project implementation.	Team-teaching between homeroom and subject teachers.
2	Supporting Factors	High enthusiasm and participation from students.	Students actively engage in discussions and presentations.
3	Supporting Factors	Support from school management and availability of resources.	School provides facilities for project-based activities.
4	Inhibiting Factors	Limited time allocation for project sessions.	Overlap with other subjects in the curriculum.
5	Inhibiting Factors	Lack of specific P5 teaching materials or guidebooks.	Teachers create materials independently based on context.
6	Inhibiting Factors	Variation in student motivation and readiness.	Some students require more guidance and supervision.

Source**:** Observation and interview results, processed by the researcher (2025)

Highlights both the supporting and inhibiting factors that influence the success of P5 implementation at SD Dwijendra Denpasar. Supporting factors include strong teacher collaboration, enthusiastic student participation, and institutional support from the school management. These elements contribute significantly to the effective delivery of P5 projects. Conversely, inhibiting factors such as limited time allocation, lack of standardized P5 materials, and varying levels of student motivation present challenges to the program's consistency. Despite these limitations, teachers' adaptability and creativity in designing localized projects help ensure that P5 continues to foster character development and learning independence in line with the values of *Profil Pelajar Pancasila*.

5. CONCLUSION

Based on the findings presented in the previous chapter, it can be concluded that the implementation of the Projek Penguatan Profil Pelajar Pancasila (P5) at SD Dwijendra Denpasar, particularly in Grade IV, demonstrates significant progress in developing students' learning independence. P5 has become an effective educational platform that integrates academic learning with real-life experiences, encouraging students to become active, creative, and responsible learners. The research findings show that the school has successfully embedded the core dimensions of the Profil Pelajar Pancasila—faith and devotion to God Almighty, noble character, independence, critical thinking, and collaboration—into daily classroom practices. These dimensions serve as a foundation for teachers in designing meaningful P5 projects that strengthen students' character and align with the goals of the Merdeka Curriculum.

Furthermore, students have shown notable growth in initiative and creativity. Many actively seek information, propose innovative ideas, and make decisions independently throughout their project work. Their creativity is evident in how they design and present project outcomes that reflect both originality and problem-solving abilities. Alongside this, there has been a visible increase in students' sense of responsibility; they are more consistent in completing assignments on time and demonstrating commitment to achieving quality results, although a few still struggle with procrastination and lack of ownership. Time management remains an area for improvement, as some students can organize their schedules effectively while others face difficulties balancing multiple tasks and deadlines. Similarly, students' problem-solving skills vary—some are capable of identifying and addressing challenges independently, while others still rely on teacher guidance or peer assistance to complete their work.

The success of P5 implementation at SD Dwijendra Denpasar is supported by several positive factors, including strong leadership from the principal, a collaborative and conducive school environment, and adequate time allocation for planning and conducting project-based learning. However, several obstacles also hinder optimal implementation. These include teachers' limited understanding of P5 concepts, the need to adapt to the new Merdeka Curriculum, insufficient access to digital resources and teaching materials, and differences in students' levels of comprehension and engagement. Despite these challenges, the overall implementation of P5 has made a meaningful contribution to nurturing independent, responsible, and character-driven learners in the primary education context.

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THE ROLE OF HINDU VALUES IN PUBLIC RELATIONS : A COMMUNICATION PERSPECTIVE ON RELIGIOUS ENGAGEMENT

Astuti Wijayanti[1)], I Gusti Ayu Putri Trisnayanti [2)], and Ni Made Indiana[3)]

[1),2),3)] *Fakultas Dharma Duta, UHN I Gusti Bagus Sugriwa Denpasar*
[1)]*wijayanthi91@gmail.com*
[2)]*putritrisnayanti31@gmail.com*
[3)]*indiana@uhnsugriwa.ac.id*

ABSTRACT

This study explores the role of Hindu values in shaping public relations (PR) practices within religious and cultural contexts. Public relations, in its contemporary understanding, extends beyond institutional image building to encompass the preservation of cultural identity, the cultivation of public trust, and the promotion of social cohesion. Grounded in Hindu philosophical frameworks such as Tri Hita Karana (harmony with the divine, humanity, and nature), Tat Twam Asi (empathy and mutual respect), and Desa Kala Patra (contextual adaptability), this paper argues that Hindu values provide an ethical and sustainable foundation for communication strategies. Employing a conceptual approach through critical literature review and contextual case reflections, the paper highlights how Hindu-based Public Relations (PR) contributes to cultural sustainability and community development. Illustrative examples include the elevation of Nyepi as a global symbol of peace and environmental awareness, and the role of institutions such as Parisada Hindu Dharma Indonesia (PHDI) in advancing cultural diplomacy and interreligious dialogue. Furthermore, the discussion addresses challenges in the digital era, particularly regarding the risks of misinformation, secularization, and cultural commodification, alongside the opportunities offered by digital platforms for broader engagement. The findings demonstrate that the integration of Hindu values into PR practices enriches the discipline by embedding ethical, empathetic, and culturally resonant principles, thereby supporting the achievement of sustainable development goals (SDGs), specifically in the domains of cultural preservation and community development.

Keywords: Public Relations, Communication, Hindu Values, Cultural Sustainability, Religious Engagement

1. INTRODUCTION

Communication is fundamental to social interaction, the strengthening of community cohesion, and the affirmation of cultural identity. Within the field of public relations (PR), communication is not merely understood as the transmission of messages but as a strategic process designed to build trust, foster mutual understanding, and sustain long-term relationships between institutions and their publics. Accordingly, PR serves as a crucial mechanism for constructing a positive institutional image while reinforcing the social and cultural values embedded within society.

Previous studies on PR have predominantly focused on corporate, political, and governmental contexts. However, in recent decades, the role of PR within religious settings has increasingly gained scholarly attention. Religious public relations have become particularly significant in multicultural societies such as Indonesia, where religion is deeply intertwined with cultural values and social development. In this context, communication practices grounded in spiritual and ethical principles are essential, as they strengthen the role of religion as a source of moral guidance, social harmony, and ecological balance.

Hinduism, one of the world's oldest religions, offers a rich philosophical foundation for understanding communication and religious PR. In Bali, Hinduism functions not only as a belief system but also as a cultural framework that shapes social organization, religious rituals, and patterns of interpersonal interaction. Core values such as *Tri Hita Karana* (harmony among humans, God, and nature), *Tat Twam Asi* (the principle of empathy and respect), and *Desa Kala Patra* (contextual adaptation to place, time, and circumstance) provide the ethical basis for sustaining harmonious social relations. As noted by Titib (2003), Hindu teachings embody philosophical and ethical dimensions that can be applied to communication practices and social relationships grounded in harmony and mutual respect.

Within Indonesia's plural and dynamic social landscape, Hindu-based religious PR assumes a pivotal function in preserving cultural heritage and fostering social cohesion. Bandem (2014) argues that culturally rooted communication strategies can serve as effective tools of cultural diplomacy, enhancing the positive image of Hinduism both nationally and internationally. Through PR practices, religious institutions such as *Parisada Hindu Dharma Indonesia* (PHDI) can expand their social functions beyond religious authority, acting as agents of cultural and moral transformation.

A tangible manifestation of Hindu values in religious PR is evident in the transformation of the Nyepi celebration. Originally a local ritual, Nyepi has evolved into a global symbol of communication that conveys universal messages of peace, self-reflection, and environmental awareness. This phenomenon illustrates how Hindu values can be translated into transnational public messages, reinforcing the position of Hindu culture within global discourses on sustainable development.

Nevertheless, the dynamics of the digital era introduce new challenges for religious institutions in managing public communication. The rapid growth of social media and digital platforms has transformed how religious messages are created, disseminated, and interpreted. On one hand, digital technology provides vast opportunities to expand the reach of religious education and communication. On the other, it poses significant risks, including misinformation, secularization, and the commodification of sacred symbols, all of which may erode spiritual authenticity. Therefore, religious PR strategies must adapt to this evolving communication landscape while maintaining the integrity and spiritual essence of their messages (Nasrullah, 2017).

Contemporary PR theories emphasize ethics, dialogue, and cultural adaptation as foundational elements for establishing mutually beneficial relationships between institutions and their publics (Grunig & Hunt, 1984; Habermas, 1991). Yet, research linking these theoretical perspectives to religious frameworks—particularly Hinduism—remains limited. This article seeks to address this gap by examining Hindu values as the ethical and philosophical foundation of religious PR practices. It contributes to the development of communication theories grounded in cultural and religious contexts, offering a new perspective on sustainable and value-based PR.

Aligned with the Sustainable Development Goals (SDGs)—specifically Goal 11 (Sustainable Cities and Communities) and Goal 16 (Peace, Justice, and Strong Institutions)—this paper highlights how Hindu values can enhance the role of PR in promoting inclusive development rooted in local wisdom. Thus, this study is not

only conceptual but also offers practical insights for developing sustainable religious communication strategies oriented toward social harmony and moral sustainability.

2. RESEARCH METODOLOGY

A. Type and Approach of Research

This study employs a conceptual research approach, combining literature-based analysis and contextual reflection on public relations (PR) practices from the perspective of Hindu values. This approach is chosen because the study focuses on integrating modern communication theories with Hindu philosophy to develop a model of religious public relations grounded in cultural, ethical, and spiritual values.

The research is qualitative-descriptive in nature, utilizing both conceptual and interpretative approaches. The conceptual approach is applied to identify and examine key theories in communication and public relations that are relevant to Hindu philosophical values. Meanwhile, the interpretative approach is used to understand the philosophical meanings contained in Hindu teachings such as *Tri Hita Karana*, *Tat Twam Asi*, and *Desa Kala Patra*, and to relate these principles to the practice of religious PR within the socio-cultural context of Hindu communities in Indonesia, particularly in Bali.

B. Data Sources

This study relies on secondary data, obtained through comprehensive literature review. The data sources include:

- Academic literature, both international and national, such as communication journals, public relations theory books, and scholarly works on religious communication and cultural ethics;
- Institutional documents, including activity reports, publications, and official statements issued by Hindu organizations such as *Parisada Hindu Dharma Indonesia* (PHDI), Hindu educational institutions, and religious communication media;
- Scientific articles and credible online resources related to the development of religious PR and digital communication between 2015 and 2025.

All sources were selected purposively based on the relevance of the topic, the novelty of the information, and their contribution to the conceptual framework of this research.

C. Data Analysis Techniques

The data analysis process consists of three main stages:

- Data Reduction – selecting and simplifying literature data to identify major themes related to communication theory, Hindu values, and religious PR practices.
- Conceptual Analysis – synthesizing communication theories (such as *Excellence Theory 2.0* and *Dialogic Communication Theory*) with Hindu philosophical concepts. This stage aims to construct a conceptual understanding of how Hindu values can be integrated into modern PR practices.
- Contextual Reflection – applying the results of conceptual analysis to empirical contexts such as Hindu religious communication in Bali, the activities of *Parisada Hindu Dharma Indonesia* (PHDI), and the transformation of the Nyepi celebration into a medium of global cultural communication.

This analytical process follows the principles of the interpretive paradigm, emphasizing the understanding of meanings and values embedded within social and religious practices (Creswell & Poth, 2018).

3. RELATED RESEARCH/LITERATUR REVIEW

Public relations (PR) theory has developed from a focus on persuasion and publicity toward a more ethical and dialogic discipline. Foundational theories such as Grunig and Hunt's (1984) Four Models of Public Relations and the Excellence Theory (Grunig, 1992; Grunig & Grunig, 2022) emphasize symmetrical communication, transparency, and mutual understanding between organizations and their publics. In the digital era, Dialogic Communication Theory (Kent & Taylor, 2002) further highlights the importance of openness and two-way dialogue, encouraging organizations to engage publics through participatory and ethical communication.

Recent studies have expanded PR discourse into cultural and religious contexts. Curtin and Gaither (2007) proposed the Cultural-Economic Model, emphasizing cultural identity and local wisdom in global communication practices. In Indonesia, Rakhmat (2005) and Nasrullah (2017) explored the ethics of religious communication and the concept of Digital Religion, showing how faith-based institutions adapt to online environments while preserving spiritual values. Likewise, Bandem (2014) argues that communication rooted in local culture can serve as an effective form of cultural diplomacy, enhancing social harmony and strengthening the image of Hinduism in global society.

Hindu philosophy provides a rich ethical and spiritual foundation for communication. Core principles such as *Tri Hita Karana* (harmony among God, humans, and nature), *Tat Twam Asi* (empathy and respect), and *Desa Kala Patra* (contextual adaptation) reflect the essence of dialogic and ethical communication (Titib, 2003). Despite the growing scholarship on religious communication, limited studies have explicitly integrated Hindu philosophy with PR theories. Therefore, this study bridges that gap by developing a conceptual framework that unites Hindu ethical values with contemporary PR models to promote sustainable, culturally grounded, and spiritually conscious communication practices.

4. RESULTS AND DISCUSSION

Transformation of Hindu Values in Religious Communication Practice

The conceptual analysis reveals that Hindu values function not only as moral foundations but also as a strategic communication framework in religious public relations. When *Tat Twam Asi*, *Tri Hita Karana*, and *Desa Kala Patra* are operationalized in an integrated way, religious communication transcends its informative function and becomes an instrument for shaping social, cultural, and ecological consciousness.

A clear example is found in the transformation of Nyepi Day, which has evolved from a local spiritual ritual into a symbol of global communication. The message of "silence and harmony" is now delivered through digital campaigns, television programs, and social media content targeting international audiences. This transformation demonstrates how Hindu values occupy a space in global public communication—not merely transmitting religious messages but promoting universal values such as peace, ecological awareness, and self-reflection.

This evolution positions religious PR as a form of cultural soft power and value diplomacy. The uniqueness of Hindu-based communication lies in its dialogic approach: rather than imposing belief, it invites global audiences into conversation through shared humanistic values.

Ethical and Relational Dimension (Tat Twam Asi)

The ethical dimension of communication rooted in *Tat Twam Asi* offers an alternative to Grunig's (2019) two-way symmetrical communication model. The principles of empathy and equality embedded in this concept enable communication that is dialogic, participatory, and grounded in mutual trust.

In interfaith relations, such an approach has strategic significance. Empathetic communication reduces the potential for social tension and fosters interreligious dialogue. For instance, *Parisada Hindu Dharma Indonesia* (PHDI) regularly engages in interfaith cooperation through the *Forum Kerukunan Umat Beragama* (Interreligious Harmony Forum). This dialogic approach not only strengthens the organization's image but also broadens the reach of religious messages as an inclusive social force. Thus, *Tat Twam Asi* should be understood not merely as a moral principle but as a communication strategy across identities, capable of building social bridges within Indonesia's pluralistic society.

Sustainability Dimension (Tri Hita Karana)

Within the framework of *Tri Hita Karana*, religious communication extends beyond relationships among humans and God to include the environment. This perspective broadens the scope of religious PR from social relations to ecological relations.

A concrete example is the recontextualization of *Tumpek Uduh*, a traditional ceremony promoting environmental care, into the campaign "Hindu Peduli Lingkungan" (Hindus for the Environment). Such initiatives deliver spiritual messages about reverence for nature while also influencing public behavior toward ecological responsibility.

This demonstrates that *Tri Hita Karana* transforms religious PR into an agent of social and environmental change, connecting spirituality with global sustainability agendas such as the Sustainable Development Goals (SDGs)—specifically Goals 13 (*Climate Action*) and 15 (*Life on Land*).

Adaptability Dimension (Desa Kala Patra)

Adaptation is essential in the digital era. The Hindu principle of *Desa Kala Patra* provides a philosophical foundation for communication flexibility without compromising sacred values. Religious messages are now delivered not only through traditional sermons but also through digital content such as short videos, infographics, podcasts, and webinars.

For instance, *Parisada Hindu Dharma Indonesia* (PHDI) effectively uses Instagram and YouTube to communicate value-based and spiritual messages in visually engaging formats, reaching younger and global audiences. However, this adaptation presents ethical challenges such as commodification and the loss of sacred meaning. Therefore, religious PR practitioners must safeguard the authenticity of spiritual communication while ensuring that digital transformation enriches, rather than diminishes, the depth and moral integrity of the message.

Integrative Model of Hindu-Based Religious Public Relations

Synthesizing the three dimensions ethics, sustainability, and adaptability this study identifies a conceptual pattern of religious public relations practices grounded in Hindu values**.** The analysis shows that Hindu philosophy provides an ethical foundation for communication, a moral orientation toward sustainability, and a flexible strategy for adapting messages in digital environments**.**

Table 1. Conceptual Synthesis of Ethical, Sustainability, and Adaptability Dimensions in Hindu-Based Religious Public Relations

Dimension	Hindu Value	Communication Function	Strategic Implication

Ethics & Empathy	*Tat Twam Asi*	Builds dialogue, trust, and inter-identity communication	Strengthens religion's role in social diplomacy
Sustainability	*Tri Hita Karana*	Links spirituality with social and environmental issues	Supports global sustainability agendas (SDGs)
Adaptability	*Desa Kala Patra*	Adjusts messages to technological and cultural contexts	Expands communication reach to digital generations

This synthesis illustrates that religious public relations inspired by Hindu values functions not merely as a medium for delivering spiritual messages, but also as a means of social, cultural, and ecological transformation. It combines the philosophical depth of Hindu ethics with the practical effectiveness of modern communication theories, creating a paradigm of public communication that is locally grounded and globally relevant.

Theoretical and Practical Implications

The integration of Hindu values into PR practice generates significant theoretical and practical implications.

- Theoretically, it broadens existing communication theories by incorporating moral and philosophical dimensions, paving the way for non Western, context sensitive perspectives in communication studies.
- Strategically, it offers a new communication model grounded in cultural ethics and spirituality, relevant to multicultural societies.
- Institutionally, it empowers religious organizations to act as agents of social transformation, cultural diplomacy, and ethical leadership in the public sphere.

5. CONCLUSION

This study highlights the importance of integrating Hindu philosophical values into the practice of religious public relations. The conceptual analysis demonstrates that Hindu teachings such as *Tat Twam Asi*, *Tri Hita Karana*, and *Desa Kala Patra* are not merely moral doctrines but serve as guiding principles for ethical, sustainable, and adaptive communication in contemporary contexts. These values enable religious communication to move beyond persuasion and information-sharing, transforming it into a medium for cultural dialogue, social empathy, and environmental awareness.

The findings suggest that religious public relations inspired by Hindu philosophy functions as an instrument of social harmony and moral diplomacy. The principle of *Tat Twam Asi* fosters empathy and mutual respect, supporting interfaith dialogue and inclusive communication. *Tri Hita Karana* links spirituality with ecological consciousness, aligning communication practices with global sustainability goals. Meanwhile, *Desa Kala Patra* provides the philosophical foundation for adaptability, allowing religious messages to remain relevant in the digital era without compromising their sacred authenticity.

Theoretically, this study contributes to broadening public relations scholarship by introducing a non-Western, value based communication perspective that integrates ethics, culture, and spirituality. Practically, it encourages religious institutions

particularly *Parisada Hindu Dharma Indonesia* (PHDI) to strengthen their role as agents of cultural diplomacy, moral leadership, and sustainable development.

Ultimately, Hindu-based religious communication offers a value-oriented paradigm of public communication one that unites strategy with spirituality, effectiveness with ethics, and tradition with innovation. By grounding communication in moral and cultural wisdom, this approach reaffirms the continuing relevance of Hindu philosophy in addressing the ethical, social, and environmental challenges of the modern world.

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HYBRID URBAN SPACE: INNOVATION OF PUBLIC SPACES INTEGRATING TECHNOLOGY, CULTURE, AND SUSTAINABILITY
(Case Study: Denpasar City)

A. A. Ayu Sri Ratih Yulianasari[1)], Ni Putu Diah Agustin Permanasuri [2)], Maria Ferdinanda Lena[3)], Andi Arfa Mula Putra[4)]

[1)] Dwijendra University, Denpasar, Indonesia
[2)] Universitas Palangka Raya
[3, 4)] Dwijendra University
gung.gegratih@gmail.com

ABSTRACT

Rapid urbanization and tourism-driven economic growth in Denpasar City have created significant challenges for the continuity of traditional cultural spaces, environmental resilience, and technological transformation of public spaces. As the capital city of Bali, Denpasar's public spaces are not only urban facilities but also cultural and spiritual arenas shaped by Balinese identity. This research examines the concept of Hybrid Urban Space as an innovative urban design strategy that integrates technology, cultural values, and sustainability into public space development. Using a descriptive qualitative approach, this study analyzes three major public spaces — Puputan Badung Public Square, Lumintang City Park, and Niti Mandala Renon Civic Park — through field observations, stakeholder interviews, and document analysis. The findings reveal that Denpasar has begun to adopt digital infrastructure such as smart lighting, Wi-Fi services, and surveillance systems; however, the integration remains partial and tends to prioritize functionality over cultural and ecological meaning. The proposed design model highlights four key strategies: adaptive smart technology, cultural-based spatial reinterpretation, sustainable tropical design, and socially adaptive public space programming. The study concludes that hybrid public spaces have strong potential to support inclusivity, maintain cultural authenticity, and enhance environmental resilience while advancing smart city development. This approach contributes to the achievement of Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities, especially in the context of culturally distinctive Southeast Asian cities such as Denpasar.

Keywords: *hybrid urban space; smart city; Balinese culture; public space; sustainable urban design; Denpasar.*

1. INTRODUCTION

Denpasar City, as the capital of Bali Province, plays a strategic role as the center of government, economy, and culture in the southern region of Bali. Over the past two decades, the dynamics of urbanization in Denpasar have progressed rapidly due to the growth of the tourism and service sectors. Based on data from the Central Bureau of Statistics (BPS, 2023), the population of Denpasar City has reached more than 725,000 inhabitants, with the highest density found in West and North Denpasar Districts. Meanwhile, the Sarbagita metropolitan area (Denpasar–Badung–Gianyar–Tabanan) has developed into a unified urban region with a population of over 2 million. This growth poses significant pressure on infrastructure, spatial planning, and the availability of inclusive public spaces. Increased economic activity and population mobility have caused public spaces to

experience not only physical pressure but also shifts in social meaning and function (Sari et al., 2022).

Along with these changes, the function of public spaces in Denpasar has shifted from traditional communal spaces closely tied to cultural and religious activities into multifunctional areas that are sometimes dominated by economic and tourism interests. City Park Lumintang, Puputan Badung Field, and Niti Mandala Renon Field, for example, now serve as recreational areas, event venues, and social spaces, yet they simultaneously face issues of cultural value degradation and limited ecological capacity (Yuliana & Prasetya, 2021). Field studies by Ardika (2020) also indicate that changes in land use and commercialization pressures have led to a “distortion of identity” in Denpasar’s public spaces, where traditional areas formerly used for rituals are increasingly utilized for consumptive activities. This condition requires new approaches to designing public spaces that balance the needs of modernity with the preservation of local cultural values.

In addition to socio-cultural pressures, Denpasar is also dealing with serious ecological challenges. Changes in land use and the loss of green open space have increased the city’s vulnerability to disasters such as flooding, particularly in East and South Denpasar (BNPB, 2024). The rise in extreme rainfall due to climate change highlights the weakness of the urban environmental resilience system. Yet, public spaces play an important ecological role in cities—functioning as water infiltration zones, urban lungs, and microclimate stabilizers (Widiastuti et al., 2023). Therefore, strategies for developing public spaces in Denpasar must be sustainability-oriented, encompassing ecological, social, and cultural aspects.

Amid these dynamics, the development of digital technology and smart city concepts presents new opportunities to improve the efficiency and quality of urban space management. Smart city implementation in Indonesia, including Denpasar, has begun to be applied through the use of public information systems, environmental sensors, and data-based energy management (Syalianda & Kusumastuti, 2021). However, several studies highlight that smart city initiatives in Indonesia remain technocentric and have not sufficiently considered socio-cultural dimensions and citizen inclusivity (Haikal et al., 2025). This has created a gap between digital infrastructure and local context. Technology is applied without regard to social characteristics, cultural rituals, or local value systems that shape spatial identity. As a result, “smart” public spaces often lose their social meaning and cultural aesthetic.

To address these challenges, the concept of Hybrid Urban Space has emerged—an innovative approach combining three essential domains: technology, culture, and sustainability. According to Tan (2022), hybrid urban space is a form of public space that is not only physical but also contains interconnected digital, social, and ecological layers. In the context of a cultural city like Denpasar, this concept can be interpreted as an integration of smart technologies (such as environmental sensors, energy-efficient lighting, or participatory digital platforms) with local cultural expressions (such as traditional Balinese spatial arrangements, ritual symbols, and communal activities) as well as the implementation of green design principles (energy efficiency, environmentally friendly materials, and green open spaces). Hence, the hybrid urban space becomes not only functional but also a representation of the city’s identity, innovation, and sustainability.

Previous studies show that the hybrid space approach can enhance community engagement and strengthen social cohesion amid urban transformation. Choi, Bruyns, and Reeve (2023) found that the concept of the negotiated public realm—public spaces negotiated between economic, social, and technological interests—can create a more inclusive and adaptive urban form. Similar principles could be applied in Denpasar, where balancing Bali’s sacred cultural values with the

demands of modern urban life can be achieved through the design of public spaces that harmoniously accommodate both. This approach is also aligned with the Sustainable Development Goals (SDGs), particularly SDG 11: Sustainable Cities and Communities, which emphasizes the importance of inclusive, safe, resilient, and sustainable urban development (United Nations, 2022).

Considering these conditions, this research aims to examine how the Hybrid Urban Space concept can be applied to public spaces in Denpasar City as a strategy to preserve Bali's cultural identity while adopting technological innovation and sustainability principles. The main focus of the study is to understand how public spaces can serve dual functions: as social spaces that facilitate interaction and cultural activities, and as adaptive spaces leveraging technology to strengthen the city's ecological resilience. Through a multidisciplinary approach that integrates architectural, technological, cultural, and environmental perspectives, this research is expected to provide a conceptual model for future public spaces that are contextual, inclusive, and beneficial for the people of Denpasar and other tropical cities facing similar challenges.

2. RESEARCH METODOLOGY

This research employs a descriptive qualitative approach with a multidisciplinary paradigm, integrating perspectives from architecture, urban planning, technology, culture, and the environment. A qualitative approach was chosen because the focus of this study is to understand the meanings, values, and socio-cultural interactions that shape hybrid public spaces in Denpasar. As stated by Creswell (2014), qualitative research allows researchers to explore phenomena in depth within their natural context, taking into account the subjective meanings produced by participants and their social environments. This approach is relevant because the concept of Hybrid Urban Space is not only related to the physical aspects of space but also to how communities interact with and adapt to technology and social change.

The study, titled "Hybrid Urban Space: Innovative Public Spaces Integrating Technology, Culture, and Sustainability (Case Study: Denpasar City)", was conducted in Denpasar with three case study locations: Puputan Badung Field, Lumintang City Park, and Niti Mandala Renon Field. These locations were selected based on their function, scale, and the level of interaction between technology, culture, and sustainability. The types of data used include both primary and secondary data. Primary data were obtained through field observations, in-depth interviews, and visual documentation. Observations were carried out to understand spatial characteristics, social functions, and the integration of technological and cultural elements at each site. Meanwhile, secondary data were collected from literature studies, urban planning reports (Denpasar RTRW and RDTR), smart city policy documents, and scholarly publications regarding public spaces, Balinese culture, and sustainability (e.g., Choi et al., 2023; Tan, 2022).
Data collection techniques consisted of three complementary methods:

(i) Field observations, in-depth interviews, and study of documentation and literature. Direct observations were conducted to identify the existing conditions of public spaces in Denpasar, including community activities, circulation patterns, and physical elements representing cultural, technological, and environmental integration. A place-based observation approach was adopted to understand spatial experience phenomenologically based on the temporal and operational context (Seamon, 2018).

(ii) In-depth interviews, conducted semi-structurally with three key groups of informants: Denpasar City Government officials—particularly from the Public Works and Spatial Planning Agency (PUPR) and Communication and Information Agency (Kominfo)—responsible for smart city policies and public space management; architecture and urban planning practitioners involved in

the design of public areas; and cultural figures or local communities engaged in social and ritual activities in public spaces. These interviews aimed to explore stakeholder perspectives on the integration of technology and cultural values in shaping adaptive public spaces.

(iii) Documentation and literature study, conducted to supplement primary data by reviewing photographs, city morphology maps, activity videos, and municipal policy archives. The reviewed academic literature includes theories on hybrid urban space, smart city planning, and cultural sustainability as the conceptual foundation of this study (Tan, 2022; Haikal et al., 2025; Choi et al., 2023).

Data analysis employed thematic analysis, consisting of three stages:

(a) Data reduction — selecting relevant data related to technology, culture, and sustainability;

(b) Data presentation — in the form of city morphology maps, relational diagrams, and visual interpretations of hybrid urban space;

(c) Verification and synthesis — producing a Hybrid Urban Space concept based on Denpasar's local identity.

3. LITERATUR REVIEW

The theoretical review in this study aims to provide a conceptual foundation for the formation of hybrid public spaces that integrate technological, cultural, and sustainability aspects. The relevant theoretical frameworks can be grouped into four main categories:

(a) Contemporary Public Space Theory

In the development of architecture and urban design, the concept of public space is no longer understood merely as a physical space, but as an arena of social, economic, and cultural interaction. According to Ntakana (2025), modern public spaces must function as inclusive social environments that accommodate diverse activities and social groups. This indicates a paradigm shift from public space as a static container toward a dynamic urban interface that responds to social change.

Choi, Bruyns, and Reeve (2023) introduce the concept of the Negotiated Public Realm, which explains how contemporary public spaces emerge through negotiation among various interests: government, communities, and the private sector. Such negotiation produces hybrid forms of public space—simultaneously commercial and public, traditional and modern, physical and digital. In the context of Denpasar, this theory is relevant to explain the shifting functions of public spaces influenced by local culture, tourism, and digitalization demands.

(b) Hybrid Space Theory and Urban Digitalization

The concept of Hybrid Urban Space is rooted in hybrid space theory developed by Adriana de Souza e Silva (2006) and further expanded by Heinrich (2025). Hybrid space is defined as a convergence of physical and digital dimensions where social interaction is no longer limited by traditional spatial boundaries. In hybrid public spaces, digital technologies—such as environmental sensors, public Wi-Fi, smart lighting, and participatory applications—create an added layer that enriches user experience.

Heinrich (2025) also argues that hybrid spaces reflect a symbiotic relationship between humans and technology, producing new urban experiences. In this research, hybrid space theory is used to analyze how digital infrastructure installed in Denpasar's public spaces (such as at Lumintang City Park or Niti Mandala Renon) influences social interaction patterns.

Additionally, Di Marino (2023), in Hybrid Cities and New Working Spaces, emphasizes that urban hybridization is not solely a physical phenomenon, but also cultural—transforming how people perceive and attach meaning to space. Thus, in Denpasar, hybrid urban spaces may be understood as the intersection between

traditional Balinese spatial systems (based on Tri Mandala and Natah) and modern digital city systems introduced through smart city initiatives.

(c) Cultural and Environmental Sustainability Theory

Sustainability in urban architecture is not only about energy efficiency and environmental management but also the preservation of cultural values. Soini and Birkeland (2014) introduce the concept of Cultural Sustainability, which asserts that sustainable development must protect cultural heritage as part of a city's identity. This theory is crucial in Denpasar, where public space character is inseparable from Tri Hita Karana—the harmony between humans, nature, and God.

Ehab et al. (2025) developed a framework for resilient green space design, emphasizing ecological and social connectivity in sustainable public spaces. This principle is relevant to Denpasar's current issues: seasonal flooding and loss of green spaces due to rapid urbanization. Ecological landscape elements—such as natural drainage systems, tropical vegetation, and the use of local materials—become key strategies in designing sustainable hybrid spaces.

(d) Resilient Urban Design Theory

Resilient Urban Design provides perspectives on how public spaces adapt to social, economic, and ecological changes. Wagner (2025) argues that modern cities must create public spaces that are flexible, climate-resilient, and responsive to digital society dynamics. In Denpasar, resilience is reflected in the multifunctionality of public spaces—accommodating both traditional ceremonies and recreational or digital-based activities.

Rode and Bhargava (2024), in Hybrid Cities: Conceptual Framework and Methodology, explain that future hybrid cities are characterized by the integration of three primary layers:

1. Technological layer — digital systems and smart infrastructure
2. Social layer — community, culture, and public activities
3. Ecological layer — sustainability and environmental resilience

This multilayered integration forms the core analytical foundation of this research.

(e) Conceptual Synthesis

Based on the theoretical review, Hybrid Urban Space can be understood as the synthesis of three interconnected dimensions:

1. Technological dimension — implementation of digital systems and smart infrastructure to enhance spatial efficiency.
2. Cultural dimension — rooted in local values, spatial symbolism, and Balinese social practices.
3. Sustainability dimension — promoting ecological efficiency and urban climate resilience.

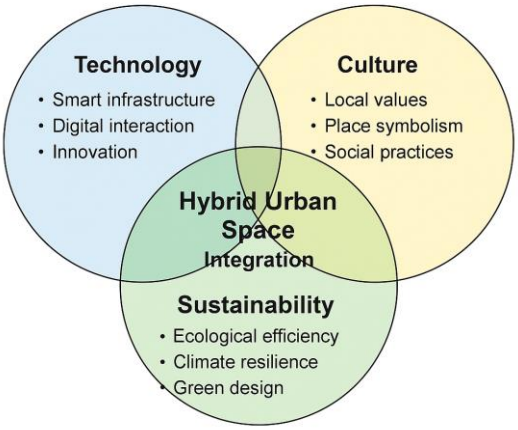

Figure 1. Hybrid Urban Space Conseptual Model.

These three dimensions intersect to form the conceptual framework of this study, referred to as the Integrative Hybrid Urban Space Model (Figure 1). This model illustrates the dynamic relationship between technological innovation, cultural preservation, and ecological sustainability in the design of public spaces in Denpasar.

4. RESULTS AND DISCUSSION

4.1 Analysis of Existing Conditions of Public Spaces in Denpasar City

Denpasar City has unique public space characteristics rooted in Balinese cultural values that are spiritual, communal, and ecological in orientation. However, rapid urbanization and tourism expansion have driven significant changes in the morphology of the city's public spaces. Based on field observations conducted between 2024 and 2025, three major types of public spaces were identified as case study locations: Puputan Badung Field, Lumintang City Park, and Niti Mandala Renon Field. Each of these spaces represents different forms and dynamics of public space but collectively reflect the identity of modern urban Denpasar.

(A) Puputan Badung Field: A Historic Public Space

Puputan Badung Field is the civic heart of Denpasar, rich in historical significance and spirituality. It serves as a venue for traditional ceremonies, historical commemoration, and daily social interaction among residents. Observations indicate that although its traditional functions remain, there has been a shift in how the space is utilized—from ritual practices toward recreational activities. Additionally, technological infrastructure such as smart lighting, CCTV surveillance, and public Wi-Fi has been implemented since 2019 through the Denpasar Smart City initiative. While these upgrades enhance social function and safety, they also pose challenges in balancing modernization with the preservation of traditional values (Choi et al., 2023).

Figure 2. Puputan Badung Field

Architecturally, the spatial layout of Puputan Badung Field still maintains a symmetrical composition with symbolic orientation toward Pura Jagatnatha, reflecting the Balinese Tri Mandala spatial principle. However, modern interventions such as digital parking facilities and tourist kiosks occasionally disrupt visual continuity and spatial sacredness. Thus, this space illustrates hybrid conditions where cultural sacredness coexists with contemporary urban demands.

(B) Lumintang City Park: A Recreational and Digital Public Space
Lumintang City Park represents the emerging modern face of Denpasar's public spaces—more interactive, digital, and youth-oriented. Field observations show the park is particularly active during the evening, enhanced by sensor-based smart lighting systems. Public Wi-Fi access, digital sound systems, and LED public information displays demonstrate the integration of smart infrastructure in the city's outdoor environments.

Figure 3. Lumintang City Park

However, the study found that the presence of such technologies has not fully enhanced intergenerational interaction. Activities tend to be fragmented: younger groups dominate digital zones, while elderly visitors prefer quieter, more traditional green areas. This condition suggests that digital public spaces require more inclusive design strategies to bridge different social groups (Languillon-Aussel, 2021). From a sustainability standpoint, Lumintang Park performs relatively well in tropical vegetation management and water infiltration capacity, but its socio-cultural aspects still need strengthening to ensure that technology does not overshadow local spatial identity.

(C) Niti Mandala Renon Field: A Monumental and Multi-functional Space
Niti Mandala Renon Field exemplifies a relatively balanced integration of cultural, recreational, and tourism functions. The area is surrounded by government buildings, a museum, and the Bajra Sandhi Monument—the landmark commemorating Bali's historical struggles. Activities are highly diverse, ranging from sports and cultural festivals to digital-based annual events such as the Denpasar Smart Festival.

Figure 4. Niti Mandala Renon Field

Spatially, the field has an open structure with a radial layout that reinforces its monumental function and the city's visual identity. Sustainability integration is shown through green corridors, open drainage systems, and the use of solar-powered energy-efficient lighting. However, as Rode and Bhargava (2024) highlight, public spaces of this nature often face challenges in maintaining a balance between public accessibility and government administrative control. Excessive regulation may restrict social spontaneity and community-driven innovation.

4.2 Evaluation of Hybrid Elements Implementation (Technology, Culture, Sustainability)

Based on the synthesized findings from the three case studies, the implementation of the Hybrid Urban Space concept in Denpasar can be categorized into three primary layers of interaction:

(A) Technological Layer
Denpasar has succeeded in integrating digital components into public spaces through smart lighting, public Wi-Fi, and data-based security systems. However, this integration remains partial and does not yet create a participatory digital spatial experience. As stated by Wagner (2025), digital public spaces should encourage inclusive civic interaction—for example, through citizen reporting applications or location-based community information systems.

(B) Cultural Layer
Balinese cultural values continue to serve as the foundation for spatial structure and public space aesthetics. Spatial orientation toward mountains and the sea, the use of local materials such as batu padas and teak wood, and symbolic architectural elements show continuity between modern space and local spirituality. The challenge lies in avoiding superficial symbolic decoration that lacks meaning. As noted by Soini and Birkeland (2014), cultural sustainability requires not only preserving visual form but also maintaining the social meanings embedded within it.

(C) Sustainability Layer
The three observed public spaces demonstrate ecological sustainability efforts such as increased green space, natural drainage, and energy-efficient lighting. However, these strategies are not yet fully integrated. In the context of resilient urban design (Ehab et al., 2025), public spaces must be designed not only for aesthetic comfort but also to enhance resilience against climate-related hazards and long-term social change.

4.3 Conceptual Design Model: "Hybrid Urban Space Denpasar"
Based on field results and theoretical synthesis, this study formulates the conceptual model Hybrid Urban Space Denpasar integrating three core components: smart technology, Balinese cultural values, and ecological sustainability. The proposed design principles are:

(A)Integration of Adaptive Technology
Public spaces should be equipped with contextual—not dominant—digital infrastructure, such as smart sensors for energy efficiency and security, augmented-reality-based cultural information, interactive systems educating visitors about local values.

(B) Reinterpretation of Balinese Culture
Spatial patterns follow the Tri Mandala principle (utama–madya–nista) but are adapted for modern activities such as digital festivals and interactive art

performances. Architectural elements such as a digital bale banjar can serve as a community hub merging information technology with Balinese communal culture.

(C)Principles of Tropical Sustainability
Design strategies include local materials, natural ventilation, layered drainage systems, integration of endemic vegetation. The green loop concept (connected green corridors) becomes an essential element to strengthen ecological connectivity among Denpasar's public spaces.

(D) Socially Adaptive Space
Public spaces must be flexible to accommodate time-based functional differences—from morning traditional rituals, afternoon commercial activities, to evening digital cultural performances. This supports the idea of temporal hybrid space—a space that transforms based on contextual activities (Heinrich, 2025).

4.4 Implications for Urban Design and City Policy.
The Hybrid Urban Space model has implications in two main domains:

(A)Design Policy Domain
This domain refers to architectural and spatial planning guidelines ensuring that all interventions align with technology, culture, and sustainability principles. This is essential considering Denpasar's conditions: tourism pressure shifting public spaces toward commercial uses, increasing technological demands, and declining cultural values. Without design-based policy control: local identity may gradually disappear, technology risks becoming mere gimmick, sustainability becomes a slogan without implementation. Examples of applicable design policies include:

1) Smart Public Space Design Guidelines — smart lighting, sensors, and Wi-Fi that encourage social interaction.
2) Cultural Identity Conservation Policy — maintaining sacred spatial orientation, bale banjar principles, etc.
3) Urban Green Infrastructure Strategy — green loops and local vegetation networks connecting public spaces.

(B) Urban Governance Domain
This domain focuses on how the government manages and regulates public spaces to ensure an effective, inclusive, and continuous integration of technology, culture, and sustainability. Key policy directions include:

1) Government–Traditional Community Collaboration — bridging modernity and customary traditions.
2) Digital Inclusion Policy — ensuring technology empowers citizens rather than discriminates.
3) Balance between Economic, Cultural, and Ecological Values — preventing over-commercialization and spatial inequality.

5. CONCLUSION

Based on the analysis above, it can be concluded that the transformation of public spaces in Denpasar reflects a complex dynamic between technological modernization, the preservation of Balinese cultural values, and the need for environmental sustainability. The three case studies demonstrate that urban public spaces are undergoing hybridization at varying degrees, influenced by tourism development, urbanization, and the Denpasar Smart City program. The Hybrid Urban Space concept emerges as a strategic approach capable of bridging the contemporary needs of urban society with local identity. This integration is articulated through three interrelated dimensions: (i) smart technology that enhances security, efficiency, and civic connectivity; (ii) Balinese cultural values as essential spatial identity that must be preserved both in meaning and function; and

(iii) tropical sustainability that promotes ecological quality and urban resilience. However, an important finding of this study is that such integration remains uneven. Technology tends to be applied in a technocratic manner; cultural representation occasionally appears as symbolic decoration without meaning; and sustainability has not yet been fully planned across the larger urban context. Therefore, the implementation of Hybrid Urban Space in Denpasar remains at a partial stage and has not yet developed into a comprehensive system within urban public space policy.

This research thus emphasizes that the success of hybrid public space innovation in Denpasar relies on two key aspects: Design Policy — ensuring every spatial intervention follows an integrative principle of technology–culture–ecology, and Urban Governance — fostering participatory and inclusive collaboration among government institutions, traditional communities, and the general public.

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THE ROLE OF LOCAL WISDOM AND DEVELOPMENT COMMUNICATION IN BALI

Ketut Alit Pratiwi[1)] **Gusti Agung Laksmi Swaryputri**[2)] **I Ni Wayan Linayani**[3)]

[1),2),3)]*faculty of communication and business science, Dwijendra University*

ketutalitpratiwi@gmail.com

ABSTRACT

This study aims to analyze the role of local wisdom in development communication in Bali as a social and cultural foundation for achieving sustainable and equitable development. The research focuses on how Balinese local wisdom values, such as Tri Hita Karana, menyama braya, and ngayah, can be integrated into development communication practices that emphasize community participation and local empowerment. The study employs a qualitative approach, using a literature review. Data were collected from academic sources, including scholarly journals, books, research reports, and relevant regional development policies. The analysis was conducted descriptively to identify concepts, communication patterns, and development practices rooted in Balinese cultural values. The findings suggest that local wisdom serves a strategic function as a cultural framework in the development communication process. These cultural values not only act as social and ethical guidelines but also strengthen participation, solidarity, and community trust in development programs. Integrating local wisdom into development communication in Bali promotes a more dialogical, participatory, and sustainable approach, aligning with the principles of community-based development and sustainable communication.
Keywords: local wisdom, development communication, Tri Hita Karana

1. INTRODUCTION

Bali has always been a special place, with its natural beauty and sublime arts and culture. The development of tourism, supported by advanced technology, has become a profitable business for agents who have positioned Bali as a world-class tourist destination, leveraging its cultural heritage. This has raised concerns among many experts about the preservation of Balinese culture. This concern is not merely a matter of discourse; several young Balinese are striving to preserve Balinese culture through modernized activities without diminishing the meaning of the culture and arts within. This challenge must be addressed by various parties, including the younger generation of Bali (Subawa, 2018).

One relevant and sustainable alternative solution to address this problem is local wisdom. Local wisdom serves as a guideline for community attitudes and behavior in environmental conservation activities, both physical and ritual, both routine and incidental, based on the benefits (Ahmad et al., 2022).

One of the local wisdom concepts originating from Bali is Tri Hita Karana, a concept that teaches about the 3 causes of happiness and the importance of maintaining balance and harmony in three main relationships, namely the relationship with God (Parahyangan), the relationship between humans and other humans (Pawongan), and the relationship between humans and the environment (Palemahan).

Tri Hita Karana also serves as an ethical and moral foundation for Balinese society, integrating spiritual, social, and ecological values into daily life, thereby shaping Balinese cultural identity and guiding sustainable, harmonious development. When

these principles are integrated into development communication, the development process becomes more participatory, dialogue-based, and oriented towards shared well-being. Therefore, this study examines the role of local wisdom in development communication, focusing on how Balinese cultural values are used to strengthen sustainable tourism practices.

2. RESEARCH METODOLOGY

This research employed a qualitative approach with a literature review. Data were collected from various academic sources, such as scientific journals, books, research reports, and regional policies related to development communication and tourism in Bali. The analysis was conducted using a descriptive qualitative approach, consisting of three steps: data reduction, data presentation, and conclusion drawing. This approach was chosen because it allows for contextual exploration of cultural meanings and values while connecting them to modern development communication concepts.

3. RELATED RESEARCH/LITERATUR REVIEW

3.1 Local Wisdom in the Context of Development

Local wisdom represents a community's collective knowledge, formed through historical experiences, cultural practices, and ecological interactions passed down through generations. In the context of community service, local wisdom serves not only as a decorative cultural element but also as a vital epistemological resource for designing social interventions that are contextual, sustainable, and deeply rooted in the community's social structure (Sonjaya et al., 2025).

Local wisdom is a system of values, norms, and knowledge that develops within a society through human interaction with its environment. Local wisdom not only guides human life but also helps manage natural resources sustainably.

The importance of cultural values education in maintaining local culture and cultural heritage in Indonesia, including population size, ethnic diversity, religious diversity, and collective culture. In addition, research by Suherman & Sirajuddin (2018) shows that local wisdom can function as a basis for communication between the government and the community in resolving social and communal conflicts.

Of course, the application of local wisdom in development is inseparable from the challenges posed by modernization. The shifting values caused by modernization, the weakening of policies that favor indigenous communities, and the community's lack of understanding of their cultural values are key obstacles. Furthermore, top-down development policies often ignore local context, rendering local wisdom merely symbolic rather than concrete.

In Bali, local wisdom manifests itself in various forms: the banjar system as a social institution, the subak concept in irrigation management, and values such as menyama braya (brotherhood) and ngayah (voluntary work for the common good). These values not only reflect cultural identity but also embody principles of sustainable development such as solidarity, justice, and environmental balance (Ardhana, n.d.)

3.2 Development Communication

Development communication is a planned, systematic process aimed at improving social and cultural conditions by changing public behavior, attitudes, and understanding. Development communication focuses on educating and motivating the public, employing systematic methodologies and approaches to communication

across its activities. Development communication is also used to instill ideas and attitudes, as well as to teach the skills communities need to improve their lives.

Development movements that lead to subsystems within a development entity align with the development goals. One of these subsystems is communication and information. Development communication is experiencing dynamic processes and is moving towards a more interactive and participatory form.

According to research by Arifin & Ardhiansyah (2020), the principles of communication in sustainable development must ensure the participation and empowerment of local communities to maintain local culture and achieve environmentally friendly tourism. Conceptually, development communication is viewed as a variable that connects development policies with real changes within the community. The success of a message in reaching the community depends on how it is designed and delivered.

3.3 Sustainable Tourism

Sustainable tourism is a tourism development concept that aims to meet the needs of tourists and local communities today without compromising future generations. This concept emphasizes a balance between economic, socio-cultural, and environmental aspects. According to the World Tourism Organization (UNWTO, 2018), Sustainable tourism must consider current and future economic, social, and environmental impacts and meet the needs of visitors, the industry, the environment, and host communities.

In 1987, the World Commission on Environment and Development declared that the current environment and development were not sustainable, necessitating action to ensure future sustainability. This commission was established as a development effort to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable tourism development is a strategic approach that balances economic, social, and environmental interests (Pratiwi & Hulu, 2025). Socially, tourism activities must respect the local community's cultural values and norms and improve the quality of life. Several studies have shown that the success of sustainable tourism is greatly influenced by the active participation of local communities.

As stated by Wibisono et al. (2020), without community involvement in planning and management, tourism activities can lead to social conflict, environmental degradation, and economic inequality. A participatory approach provides space for the community to become the main actors in managing tourism potential in their area, ensuring that economic benefits are felt evenly.

In addition to community participation, government policy is also a crucial factor in implementing sustainability principles. Strong government commitment will mobilize available resources, thereby accelerating and optimizing tourism development (Suardana, 2016). However, implementing sustainable tourism faces serious challenges, including weak stakeholder coordination, unclear regulations, and limited awareness of sustainability principles among tourists and businesses.

In Bali, the implementation of sustainable tourism is increasingly important to address the negative impacts of mass tourism, such as overtourism, traffic congestion, and environmental damage (Cole, 2012). Routledge. Local wisdom,

such as Tri Hita Karana, provides an ethical framework for restructuring tourism to align with social and ecological harmony.

4. RESULTS AND DISCUSSION

Local wisdom serves as a social mechanism that regulates the balance between humans and the environment. Within the sustainable development paradigm, values such as mutual cooperation, harmony with nature, and deliberation are key elements aligned with the Sustainable Development Goals (SDGs). This integration ensures that development is oriented not only toward economic growth but also toward social and ecological sustainability.

In its implementation, development communication often draws on participatory communication principles that involve individuals or communities in their own development. In this process, development communication plays a crucial role, both as an environmental education tool and as a means of strengthening cultural identity. With a participatory communication approach, communities become not only objects but also subjects of tourism development.

One example is Balinese local wisdom, which plays a strategic role in shaping development communication patterns. This can be seen in deliberation practices in the banjar (village), which serve as a space for horizontal communication between residents and local leaders, reflecting the principles of dialogue and participation (Suartana, 2020). In this context, menyama braya promotes social solidarity, while ngayah fosters a spirit of mutual cooperation in the implementation of development programs

Menyame Braya is a form of local wisdom that reaffirms tolerance among communities. According to the Balinese, the concept of Menyama Braya means mutual assistance, working together to create or resolve issues within the community. This concept is evident in everyday life, as in the nguopin, mapitulu, and mejenukan traditions, all of which use communication as a dialogical process rather than simply the transmission of messages from top to bottom.

This relates to the application of the Tri Hita Karana value, a process of creating harmony and balance among 3 things: humans with God, humans with the environment, and humans with humans. Several community-based tourism destinations also show that practices that integrate local wisdom can attract visitors and strengthen cultural identity, creating new economic opportunities that empower local communities.

Indonesia still faces challenges in implementing sustainable development communication. Sustainable tourism is a crucial issue in Indonesia, as the country's tourism sector relies heavily on cultural and environmental aspects as attractions. Sustainable tourism can be achieved if communities around tourist attractions understand the importance of maintaining environmental balance.

Challenges include the commercialization of culture, dependence on the tourism sector, and weak regulations protecting cultural resources. Therefore, strengthening strategies are needed through local culture-based education to strengthen the identity and ethical values of the younger generation, cross-sector collaboration to expand our reach, and the use of local and digital communication media that prioritize sustainability.

5. CONCLUSION

Balinese local wisdom plays a crucial role as a cultural framework for development communication that supports sustainable tourism. Values such as Tri Hita Karana, menyama braya, and ngayah form participatory communication patterns that encourage community involvement and strengthen social trust. The integration of

local wisdom and development communication makes development more inclusive, ethical, and sustainable. By prioritizing cultural values in development communication practices, Bali can become a model for tourism development that is not only economically profitable but also maintains social and ecological balance.

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STRATEGIC CULTURAL COMMUNICATION IN ACHIEVING SUSTAINABLE DEVELOPMENT IN BALI, INDONESIA

I Gusti Agung Laksmi Swaryputri[1)], I Putu Hugo Kusuma[2)], Ketut Rahadyan Pracasta Putra[3)]

[1),2),3)]*faculty of communication and business science, Dwijendra University*

laksmiastawa@gmail.com

ABSTRACT

Culture serves as a fundamental element shaping the orientation and ethics of sustainable development across social, economic, and environmental dimensions. In the Balinese context, cultural values function not only as a marker of identity but also as a moral compass guiding developmental practices. This research explores how strategic cultural communication contributes to the realization of sustainable development inspired by the local philosophy of Tri Hita Karana, which promotes harmony among humans and God (parahyangan), interpersonal relationships (pawongan), and the natural environment (palemahan). Adopting a qualitative descriptive design, the study collected data through interviews, observations, and document reviews. Participants consisted of traditional figures, tourism stakeholders, and community members involved in culture-based development initiatives within Denpasar and nearby regions. Findings indicate that culturally grounded communication strategies play a vital role in enhancing community participation, raising ecological awareness, and preserving indigenous wisdom in the face of globalization. Rituals, traditional performances, and art-based expressions are found to be effective cultural channels for conveying messages of sustainability. Furthermore, the strategic use of digital media extends communication outreach while maintaining cultural authenticity. The study concludes that the sustainability of Bali's development relies heavily on the community's capacity to implement communication approaches rooted in local cultural values. A participatory and culturally respectful communication framework is proven to balance modernization with the preservation of cultural identity.

Keywords: *Intercultural Communication; Sustainable Tourism; Balinese Culture; Tri Hita Karana; Cultural Preservation*

1. INTRODUCTION

The pursuit of sustainable development requires a holistic approach that unites economic growth, social inclusion, and environmental preservation, while respecting the cultural systems that shape local communities. In Bali, Indonesia, culture is inseparable from everyday life; it influences ethical orientations, collective behaviors, and community decision-making. The Balinese worldview is deeply grounded in the traditional philosophy of *Tri Hita Karana*, which emphasizes the interdependence between human beings and the divine (*parahyangan*), social harmony among people (*pawongan*), and balance with the natural world (*palemahan*). This triadic principle provides a moral and philosophical foundation for development that is not only material but also spiritual and ecological in nature.

Within this cultural framework, strategic cultural communication becomes a vital mechanism for transforming traditional wisdom into practical action for sustainable progress. Communication in the Balinese context extends far beyond verbal exchanges—it is embedded in rituals, artistic performances, ceremonies, and symbols that convey values of harmony and respect. These cultural forms serve as powerful communicative channels that reinforce community participation, strengthen environmental ethics, and preserve indigenous knowledge. In recent years, digital media has also become an important tool, allowing local actors to amplify cultural messages to wider audiences while maintaining authenticity and cultural integrity.

Theoretically, this study builds upon the intersection of cultural communication theory, sustainable development theory, and intercultural communication studies. From a cultural

communication perspective, as Hall (1976) suggests, culture itself operates as a system of meaning-making, shaping how individuals interpret messages and construct social reality. Thus, any development initiative must consider how messages are framed within local narratives to ensure resonance and acceptance. Meanwhile, the principles of sustainable development as articulated by the World Commission on Environment and Development (1987)—meeting present needs without compromising future generations—align closely with the ethical tenets of *Tri Hita Karana*, which also calls for balance among human, social, and environmental dimensions.

In the Balinese setting, the intersection of culture and sustainability is further influenced by intercultural communication dynamics. As a global tourism hub, Bali faces continuous interaction between local communities and international visitors, creating both opportunities and challenges in preserving cultural authenticity while embracing modernization. According to Gudykunst and Kim (2017), effective intercultural communication requires empathy, cultural sensitivity, and contextual understanding—qualities essential for promoting development that is inclusive, respectful, and participatory. Therefore, designing communication strategies that integrate local values with global sustainability goals becomes crucial for ensuring equitable and enduring outcomes.

In summary, this study conceptualizes strategic cultural communication as the intentional management of meaning through culturally embedded forms of interaction that advance sustainable development objectives. It argues that Bali's capacity to sustain its cultural identity amid modernization depends largely on its ability to adapt communication strategies grounded in local wisdom. By merging traditional and digital communicative practices within the moral framework of *Tri Hita Karana*, Balinese communities demonstrate how culture-based communication can serve as both a bridge and a balancing force between innovation, social harmony, and ecological sustainability. Understanding this process provides valuable insight into how cultural communication can support the realization of the Sustainable Development Goals (SDGs) within local contexts.

2. RESEARCH METODOLOGY

This research uses a qualitative descriptive-analytical method that focuses on reviewing and interpreting existing information. The study does not involve fieldwork such as interviews or direct observation. Instead, the analysis is based on written sources that discuss culture, communication, and sustainable development in Bali.

The main data come from books, journal articles, government documents, and international reports from organizations such as UNESCO and UNDP. These materials were selected because they provide insights into how cultural values, especially *Tri Hita Karana*, are connected to communication strategies and development practices in Bali.

The process began with collecting and reading relevant documents to identify important ideas and recurring themes. The data were then grouped into several categories, such as cultural communication, community involvement, and environmental awareness. Each theme was examined to understand how Balinese cultural values are reflected in communication activities that support sustainable development.

The data were analyzed using content analysis, meaning the focus was on understanding the messages and meanings behind the texts. The analysis aimed to link the concept of *Tri Hita Karana* with communication strategies that balance modern development and cultural preservation.

Although this study does not use field data, the conclusions are supported by comparisons from various credible sources. This approach allows the research to present a clear and logical understanding of how strategic cultural communication can strengthen sustainable development in Bali while maintaining its cultural identity.

3. RELATED RESEARCH/LITERATUR REVIEW

Research on the relationship between culture, communication, and sustainable development has expanded significantly over the past decade, especially in regions with strong

cultural traditions such as Bali. Many studies highlight how local wisdom, values, and communication patterns serve as a foundation for achieving sustainability goals. Two key studies are considered highly relevant to this research, as they focus on the role of Balinese culture and communication in environmental and social sustainability.

The first study by Eddy Supriyadinata Gorda and Devi Kalfika Anggria Wardani (2020), entitled "Refleksi Nilai Kearifan Lokal Masyarakat Hindu Bali dalam Pengelolaan Lingkungan", discusses how the Balinese philosophy of *Tri Hita Karana* functions as an ethical foundation for environmental management. Their research emphasizes that cultural values are not merely symbolic but practical guidelines for daily behavior that align with ecological principles. The study argues that communication rooted in Balinese rituals, art, and social practices helps sustain environmental awareness and collective responsibility. However, it focuses primarily on cultural values and environmental ethics without deeply analyzing how strategic communication processes operate within sustainable development frameworks.

The second study by Natasya Octaviani, Magsyanda Meliana, and Putu Gde Arie Yudhistira (2019), titled "Encouraging Pro-Environmental Behavior Through Environmental Communication Based on Tri Hita Karana", provides a case-based analysis of environmental communication in Melasti Beach, Bali. The research shows that integrating local cultural concepts into communication efforts enhances public participation and promotes eco-friendly behavior. It demonstrates how *Tri Hita Karana* can serve as both a moral compass and a communication framework for sustainability campaigns. Nevertheless, the study's scope is limited to environmental issues and does not address broader socio-economic or digital communication dimensions relevant to strategic cultural communication.

Both studies underline the vital role of local wisdom and cultural communication in promoting sustainability. Yet, there remains a research gap in understanding how these cultural communication processes can be applied strategically and comprehensively—including the use of modern media, participatory frameworks, and cross-sectoral coordination—to achieve sustainable development goals in Bali.

The two studies reviewed above show consistent patterns emphasizing the centrality of culture in sustainable communication. Both highlight *Tri Hita Karana* as a unifying philosophy that connects spirituality, social relations, and environmental care. However, neither explicitly develops the concept of strategic cultural communication as a systematic process involving message design, stakeholder engagement, and the integration of traditional and digital media.

The present study positions itself within this research landscape by addressing that theoretical and practical gap—analyzing how strategically managed cultural communication can harmonize modernization with the preservation of cultural identity, particularly in achieving sustainable development in Bali.

4. RESULTS AND DISCUSSION

Integration of Cultural Values into Communication Practices

The findings reveal that Balinese cultural values, particularly those embedded in *Tri Hita Karana*, have been effectively internalized within various forms of communication, both traditional and modern. The *parahyangan* aspect (harmony with the divine) manifests through ceremonial communication—rituals, offerings, and temple festivals—that serve as channels for expressing gratitude and reinforcing collective spiritual consciousness. These practices do not merely hold religious significance but also function as strategic communication tools that cultivate moral responsibility toward the environment and social harmony.

Meanwhile, the *pawongan* dimension (harmony among people) is reflected in interpersonal and community communication practices such as *seka teruna-teruni* (youth organizations), *banjar* meetings, and gotong royong activities. These traditional forums operate as participatory spaces where collective decisions are negotiated, social issues are addressed, and sustainability projects—like waste segregation or tourism management—are communicated and implemented collaboratively.

The *palemahan* component (harmony with nature) becomes evident through symbolic communication found in rituals such as *Tumpek Uduh* and *Tumpek Kandang*, which emphasize respect for flora and fauna. These rituals embody ecological messages communicated through religious language and cultural symbols, reinforcing environmental ethics and sustainable living within the community.

Strategic Cultural Communication for Sustainable Development

From a strategic standpoint, cultural communication in Bali is not accidental—it is deliberately managed to align cultural narratives with sustainability objectives. Local leaders, community-based organizations, and even tourism stakeholders have begun to design communication strategies that embed *Tri Hita Karana* values in modern campaigns. For instance, community festivals and digital storytelling platforms now promote eco-friendly tourism and cultural preservation through narratives that highlight spiritual, social, and ecological balance.

This process exemplifies what theorists describe as strategic cultural communication—the intentional use of culturally embedded messages to guide behavior and policy. The communication is structured around shared meanings rather than external persuasion, ensuring that sustainability initiatives resonate with the community's moral framework. Through this approach, messages about waste reduction, renewable energy, and sustainable tourism gain legitimacy because they are rooted in local wisdom rather than external imposition.

The Role of Digital Media in Amplifying Cultural Narratives

Digital transformation in Bali has opened new pathways for communicating cultural and sustainability values. Platforms such as Instagram, YouTube, and local digital news outlets are used to showcase community-based environmental initiatives and cultural performances. Digital media extends the reach of traditional communication, allowing younger generations and international audiences to engage with Balinese culture in more interactive ways.

For example, the Green School Bali and several desa wisata (tourism villages) have adopted storytelling videos and online campaigns that integrate *Tri Hita Ka*rana principles into sustainability education. These cases demonstrate how digital communication can harmonize traditional messages with global discourses on climate action and responsible tourism. The use of visual and narrative communication enhances emotional engagement and reinforces identity-based participation in sustainability movements.

However, this digital shift also presents challenges—especially in maintaining authenticity and preventing cultural commodification. Strategic cultural communication, therefore, requires balancing innovation with cultural integrity, ensuring that digital representation supports rather than distorts Balinese philosophical values.

Community Participation and Intercultural Synergy

The results also show that sustainable development in Bali depends greatly on the participatory nature of its cultural communication systems. Communication processes within *banjar* and *desa adat* structures encourage inclusivity and mutual accountability. These grassroots frameworks facilitate information sharing about sustainable agriculture, waste management, and tourism policies, making them critical instruments for community empowerment.

Moreover, as Bali continues to interact with global audiences through tourism and international collaboration, intercultural communication becomes an essential component of sustainability discourse. Applying Gudykunst and Kim's intercultural communication theory, effective dialogue between locals and visitors can only occur when empathy, openness, and contextual sensitivity are prioritized. Programs that invite tourists to participate in local rituals or conservation projects—such as coral reef restoration or temple cleaning—reflect this synergy between global sustainability ideals and Balinese cultural ethics.

Theoretical and Practical Implications

Theoretically, the findings expand the concept of strategic cultural communication by demonstrating that culture-based communication is not only symbolic but also managerial and instrumental in shaping development outcomes. Unlike purely persuasive models, Balinese cultural communication functions as a relational and meaning-making system that integrates spirituality, social ethics, and ecological awareness into coherent community action.

Practically, the study highlights the importance of designing communication programs that begin with local narratives. Policymakers, NGOs, and tourism practitioners can achieve higher levels of public engagement when sustainability messages are articulated through familiar symbols and rituals. Integrating traditional and digital media is crucial to bridging generational gaps and ensuring that *Tri Hita Karana*values remain relevant in the face of globalization.

However, for these strategies to be sustainable, institutional support and education are necessary. Local schools, community radio, and social media campaigns should continuously emphasize cultural-based communication as a tool for responsible citizenship and ecological stewardship.

5. CONCLUSION

The overall analysis confirms that Bali's sustainable development success relies significantly on its capacity to manage communication strategically within its cultural framework. *Tri Hita Karana* acts as both a moral compass and a communication system that unites spiritual, social, and environmental dimensions. By merging traditional practices with modern media, Balinese society demonstrates how local wisdom can adapt to global sustainability agendas while preserving cultural authenticity. Therefore, strategic cultural communication stands as a vital approach for guiding development policies that are culturally grounded, socially inclusive, and environmentally resilient.

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THE ROLE OF INTERCULTURAL COMMUNICATION IN PROMOTING SUSTAINABLE TOURISM BASED ON BALINESE CULTURE

Ni Made Adi Novayanti[1], I Gusti Agung Laksmi Swaryputri[2], Ni Ketut Kartini[3]
[1),2),3)]*faculty of communication and business science, Dwijendra University*
Adinova455@gmail.com

ABSTRACT

Bali is widely recognized as Indonesia's leading destination for cultural tourism, where local traditions and spiritual values serve as the foundation of development. However, the rapid growth of global tourism has created both opportunities and challenges for maintaining the authenticity of Balinese culture. This article examines the crucial role of intercultural communication in promoting sustainable tourism that aligns with the cultural philosophy of Tri Hita Karana, which emphasizes harmony among humans, nature, and God. Through effective intercultural dialogue, tourism actors—including the government, local communities, and international visitors—can build mutual understanding, minimize cultural conflict, and enhance cooperation in managing tourism activities. Intercultural communication enables the transfer of cultural meanings, helping tourists appreciate Balinese values while empowering local communities to participate actively in decision-making processes. Furthermore, communication practices rooted in local wisdom contribute to the protection of sacred spaces, environmental preservation, and the strengthening of cultural identity in the face of globalization. The study emphasizes that sustainable tourism in Bali should not merely focus on economic gain but must integrate cultural and environmental dimensions through participatory and culturally sensitive communication strategies. In conclusion, the success of tourism development in Bali depends on how well communication bridges the gap between cultural preservation and modernization, ensuring that tourism remains respectful, inclusive, and aligned with the essence of Balinese heritage.
Keywords: Intercultural Communication; Sustainable Tourism; Balinese Culture; Tri Hita Karana; Cultural Preservation

1. INTRODUCTION

Tourism has become one of the main drivers of Bali's economy, contributing significantly to employment and regional income. Yet, the increasing influx of global visitors has also created tension between economic development and cultural preservation. The challenge lies in ensuring that tourism practices remain aligned with Balinese cultural identity and environmental balance.

Balinese culture, guided by the philosophy of Tri Hita Karana—harmony among humans (pawongan), nature (palemahan), and the divine (parahyangan)—has long served as the moral compass for daily life and community governance. This philosophy resonates with the global concept of sustainable development, emphasizing balance between social, economic, and ecological dimensions.

Within this framework, intercultural communication becomes an essential instrument for harmonizing relationships between local communities and international visitors. According to

DeVito (2019), interpersonal and intercultural communication are processes of meaning exchange that build understanding and empathy across cultural boundaries. In the tourism context, such communication facilitates mutual respect, reduces ethnocentrism, and promotes collaboration in achieving shared sustainability goals.

Therefore, this study aims to explore how intercultural communication practices contribute to the promotion of sustainable tourism in Bali, highlighting the integration of Tri Hita Karana values in cross-cultural interaction and tourism management.

2. LITERATURE REVIEW

1. Intercultural Communication Theory

Intercultural communication refers to the process through which people from different cultural backgrounds interact and exchange meanings (Gudykunst & Kim, 2017). Effective intercultural communication requires sensitivity, empathy, and the ability to interpret messages within cultural contexts. In the tourism setting, this interaction occurs between locals and tourists, making cultural understanding vital for maintaining respect and harmony.

2. Sustainable Tourism Concept

According to the United Nations World Tourism Organization (UNWTO, 2020), sustainable tourism seeks to meet the needs of tourists and host regions while protecting opportunities for the future. It involves responsible use of resources, cultural preservation, and equitable socio-economic benefits. For Bali, sustainability entails maintaining spiritual values and ecological balance alongside tourism growth.

3. Tri Hita Karana as Local Wisdom

Tri Hita Karana embodies the Balinese worldview that integrates spirituality, social relations, and environmental stewardship. Studies by Sujarwo (2021) and Widiastuti & Ardini (2022) emphasize that this philosophy functions as an ethical guide for development and communication. When applied in tourism, it becomes a framework for fostering participatory dialogue and cultural awareness among diverse actors.

4. Previous Research

Prior studies (Octaviani et al., 2019; Wijaya, 2023) reveal that communication based on local wisdom enhances environmental awareness and strengthens collective responsibility. However, few have examined how intercultural dialogue between local communities and tourists contributes to sustainability outcomes. This study fills that gap by analyzing the communicative processes that bridge cultural diversity and ecological consciousness.

3. RESEARCH METHODOLOGY

This study employs a qualitative descriptive method, emphasizing document review and content analysis. Secondary data were collected from books, academic journals, tourism reports, and policy documents related to communication, culture, and sustainable tourism in Bali.

The analysis followed three main stages: data collection, data categorization, and interpretation. This method allows for a holistic understanding of how intercultural communication functions as both a theoretical and practical framework for sustainability in Bali's tourism sector.

4. RESULT AND DISCUSSION

1. Intercultural Dialogue as a Bridge Between Cultures

Intercultural communication in Bali occurs in diverse contexts—between local residents, tourists, and institutional stakeholders. Dialogue in these interactions promotes empathy, tolerance, and cultural exchange. Ritual participation, temple visits, and cultural workshops provide opportunities for visitors to understand Balinese norms and values, thereby reducing cultural misunderstanding and conflict.

2. Integration of Tri Hita Karana in Sustainable Tourism

Tourism in Bali reflects the Tri Hita Karana philosophy, where balance among the spiritual, social, and environmental aspects is maintained. The parahyangan dimension encourages spiritual gratitude through rituals and offerings, reminding people of their responsibility toward the divine. The pawongan element manifests in community cooperation and hospitality, essential for service excellence. Meanwhile, the palemahan dimension is visible in eco-friendly initiatives such as waste management and reforestation programs.

3. Empowerment Through Participatory Communication

Local communities in Bali engage actively in tourism management through desa adat and banjar structures. These serve as communication networks for planning tourism policies, managing cultural events, and addressing environmental issues. Participatory communication allows locals to voice their perspectives, ensuring that tourism development aligns with community values.

4. Digital Media as an Intercultural Channel

The digital era has transformed how Bali communicates its cultural identity. Social media platforms are used to showcase traditional arts, eco-tourism activities, and cultural education for global audiences. However, the use of digital media also brings challenges such as cultural commodification and misinformation.

5. Intercultural Communication and Conflict Mitigation

Tourism inevitably introduces cultural differences that may lead to misunderstanding. Applying Gudykunst and Kim's (2017) theory, intercultural competence—comprising empathy, adaptability, and tolerance for ambiguity—helps prevent conflict. Training tourism workers in cultural sensitivity enhances service quality and maintains respectful interactions.

5. CONCLUSION

The study concludes that intercultural communication is fundamental in promoting sustainable tourism based on Balinese culture. Through participatory dialogue and the integration of Tri Hita Karana values, communication becomes a tool for empowerment, environmental stewardship, and cultural preservation. Effective intercultural interaction between local communities and tourists fosters mutual understanding and ensures that tourism development remains culturally respectful, socially inclusive, and environmentally sustainable.

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INVESTIGATING EFL INSTRUCTORS' PRACTICES IN DESIGNING AND IMPLEMENTING SPEAKING ASSESSMENT RUBRICS

I Gusti Ayu Indah Triana Juliari[1)], I Wayan Gede Supawan[2)]
[1)]Dwijendra University
e-mail: indah.triana@gmail.com
[2)]Dwijendra University
e-mail: gedeonggisupawan@gmail.com

ABSTRACT

This study investigates EFL instructors' practices in designing and implementing speaking assessment rubrics, with a particular focus on the criteria employed and the challenges they face. This study was qualitative research design which obtain a comprehensive understanding of EFL instructors' in their teaching practices. The instruments used were questionnaire and interview guide to explore Balinese instructors' experiences, perceptions, and challenges their practices. The findings showed that most instructors employed rubrics derived from institutional standards, teaching materials, or self-developed adaptations. These rubrics typically include indicators such as fluency, pronunciation, grammatical accuracy, vocabulary use, task achievement, and interactional competence. Despite their frequent use, teachers encounter obstacles in tailoring rubrics to various proficiency levels, ensuring cultural appropriateness, and maintaining a balance between detail and practicality. The study also reveals a strong awareness among instructors of Balinese philosophical values *Tri Hita Karana* and *Tat Twam Asi* which are viewed as essential to context-based language assessment. Nevertheless, teachers struggle to align cultural sensitivity with the global expectations of English communication, resulting in a pedagogical and philosophical tension between local identity and international standards. Therefore, ongoing professional training and collaborative rubric design are recommended to translate cultural concepts into measurable indicators. Embedding local cultural perspectives in assessment practices is expected to foster fairness, inclusivity, and learner confidence in English speaking performance.

Keywords: *EFL Instructors, Speaking Assessment, Rubrics, and Balinese Cultural Values.*

1. INTRODUCTION

English becomes an International language that should be learned by Indonesian students. It is a compulsory subject that is taught from the lower to the higher education level (Juliari, 2018). In learning English as a foreign language (EFL), students need to recognize and develop four language skills, namely: listening, speaking, reading, and writing. One of the most crucial skills in learning English as a foreign language is speaking.

According to Nunan (2003), speaking is one of four language skills that could means as a productive oral skill that consists of producing systematic verbal utterances to convey meaning. It means that speaking is not merely the act of producing words, but it involves the ability to construct meaningful and contextually appropriate sentences, therefore listeners can clearly understand the intended message.

In addition, speaking in English is a complex skill encompassing both linguistic and non-linguistic aspects. The linguistic aspects include vocabulary, grammar, structure, and pronunciation, while non-linguistic components involve fluency, accuracy, gestures, and confidence during interaction. These aspects are interconnected to create effective and meaningful communication with the interlocutor (Brown, 2004; Harmer, 2007; Luoma, 2004).

In EFL classroom setting, speaking is often regarded as one of the most essential challenging skills to teach and assess. Based on the preliminary observation, students' participation in English-speaking activities during the learning process remains low. It is mainly caused to their limited of English vocabulary. Several students tend to pause in the middle of their speaking or switch it to their mother tongue (code-switching). Mother tongue interference is a common phenomenon among learners of English as a foreign language. The grammatical structures and patterns of their first language are often transferred into English, thus it caused errors in sentence structure, pronunciation, and intonation.

Futhermore, another reason is that students are afraid of making mistakes in grammar, pronunciation, or word choice, which often makes them reluctant to speak and prefer to remain silent. In addition, the lack of exposure and practice also affects students' frequency of speaking English. The opportunities to use English outside the classroom are very limited, which makes their speaking skills tend to be low.

Lack of assessment awareness is one of the factors that teachers and students need to pay attention to. Some students did not know which aspects are assessed in speaking assessment. This lack of knowledge makes them unfocused in improving certain areas such as content, pronunciation, fluency, or content. Introducing the speaking assessment rubric to students is necessary in order that they can practice and adjust their performance according to the aspects assesed.

In line with this, Mertler (2001) states that rubric are guides for marking learners' assignments by establishing a set of particular performance criteria. Scoring rubrics provide a detailed description of expectations for learners' performance in each category, with the aim that they can use this informative feedback from rubrics to improve their upcoming work (Mat & Par, 2022).

The use of appropriate rubrics plays a crucial role in supporting these objectives. Speaking assessment rubrics provide clear and structured guidelines for teachers to evaluate students' speaking performance objectively and consistently (Brookhart, 2018). Through rubrics, essential aspects such as grammar, vocabulary, pronunciation, fluency, and comprehensibility can be measured systematically. Moreover, rubrics help students understand the expected standards and enhance their self-awareness in the speaking learning process. However, many EFL teachers encounter difficulties in developing rubrics that are valid, reliable, and contextually appropriate for their classrooms (Sudaryanto & Akbariski, 2021). The effective use of rubrics is frequently challenged by insufficient training, time constraints, and the diverse proficiency levels among students.

As teacher especially teaching English as a foreign language, it is important to design rubrics and implement it in teaching and learning process. Rubric is a tool for teacher that provides clear, structured, and objective guidelines for assessing students' performance. Through rubrics, teachers can clearly communicate what is expected from students at each level of performance, enabling them to understand the learning targets that need to be achieved. Rubrics also help teachers provide more specific and constructive feedback based on the aspects assessed. Moreover, integrating local cultural values such as *Tat Twam Asi* (the awareness of unity and empathy toward others) and *Tri Hita Karana* (the balance among human, nature, and the divine) into the assessment rubric can foster students' character development alongside their linguistic skills. By embedding these values, the rubric not only guides students to improve their English-speaking ability but also nurtures harmony, respect, and mutual understanding values that are deeply rooted in Balinese culture (Panadero & Jonsson, 2013).

2. RESEARCH METHODOLOGY

This study used a qualitative research design, specifically a descriptive case study approach. The qualitative method is chosen to explore deeply how EFL instructors design and implement speaking assessment rubrics in their teaching practice. According to Creswell (2012), qualitative research allows the researcher to understand participants' experiences, perceptions, and practices within their natural settings. Through this approach, the study seeks to provide an in-depth understanding of instructors' assessment practices, challenges faced, and strategies used to ensure fairness and validity in speaking assessments. The subject of this study is English teachers who will be given a questionnaire related to how EFL instructors in Bali perceive and integrate local cultural values, specifically Balinese Hindu values, into their rubrics for assessing students' speaking performance.

3. LITERATURE REVIEW

a. The Concept of Teaching English as a Foreign Language (TEFL)

Paul (2003) states that EFL (English as a Foreign Language) refers to the learning of English by students in a country where English is not the native language. Meanwhile, TEFL (Teaching English as a Foreign Language) refers to the practice of teaching English to people whose first language is not English, usually in some countries where English is not the primary language spoken. Furthermore, Foreign language teaching (FLT) refer to the teaching of a language to non-native speaker in which the language is commonly used outside of the native environment spoken. Teaching a foreign language may be defined as interaction between the teacher and the students through taking turn of talking in transferring the knowledge and the skills in order to create an environment that respects, encourages, and stimulates the student's learning through experience. A language is considered foreign if it is learned largely in the classroom and is not spoken in the society where the teaching occurs. Study of another language allows the students to communicate effectively and creatively and to participate in real-life situations through the language of the authentic culture itself. It provides access into a perspective other than one's own, increases the ability to see connections across content areas, and promotes an interdisciplinary perspective while gaining intercultural understandings (Syarifudin, 2021).

b. Teaching Speaking in EFL Classroom

Speaking is one of the four and important skills in English. The three other skills are understanding speech, such as listening, reading and writing. By speaking skill, students are able to communicate with others and understand what is being discussed. Speaking and listening are said relate to language expressed through the aural medium. Meanwhile, reading and writing are related to language expressed through visual medium. Therefore, speaking and wriitng are productive skills whereas listening and reading are receptive skills (Widdowson, 1978) in Syarifudin (2021).

In addition, speaking is the process of building and sharing meaning through the use of verbal and non-verbal symbol, in variety of context. Speaking is the utterance of intelligible speech and also the ability that requires to the process of communicative competence, pronunciation, intonation, vocabulary and grammar improving. Speaking is the process of building and sharing meaning through the use of verbal and non-verbal symbols, in a variety of contexts (Chaney, 1998).

Moreover, teaching speaking skills requires extensive and continuous practice. In EFL classrooms, students often have limited time to use English during lessons, and once they leave the classroom, they tend to switch back to their mother tongue. Therefore, teachers need to implement effective strategies to enhance students' speaking abilities, such as role plays, simulations, information gap activities, storytelling, picture description, and story completion. These communicative techniques provide learners with authentic opportunities to use English in meaningful contexts. By integrating such activities into speaking lessons, teachers can create a more engaging learning environment that motivates students to participate actively and develop their speaking competence.

c. Assessment in EFL Contexts

Assessment is one of the essential components in the teaching and learning process. It serves as a tool to measure the extent to which learning objectives have been achieved. Tyler (1950, as cited in Arikunto, 2018) defines assessment or evaluation as a process of collecting data to determine to what extent, in what aspects, and in which parts educational goals have been accomplished. In English language learning, assessment holds significant meaning for both students and teachers. For students, assessment provides feedback on how well they have understood and mastered the lessons delivered by the teacher. For teachers, it offers valuable insights into students' mastery of the material, identifies which students have understood or struggled, and evaluates whether the teaching methods used are effective. If deemed ineffective, teachers can modify or update their teaching strategies accordingly. Thus, assessment not only serves as a measurement tool but also as a means of reflection for both teachers and students in achieving optimal learning outcomes.

In the context of English as a Foreign Language (EFL) learning, assessment functions to measure the extent to which learners have attained the expected language competencies, including listening, speaking, reading, and writing skills. It also assists teachers in evaluating students' mastery of grammar and vocabulary. Furthermore, through assessment, teachers can design more effective learning plans based on students' needs. Generally, there are three main types of assessment used in the learning process, namely diagnostic, formative, and summative assessment.

1. Diagnostic Assessment

Diagnostic assessment is conducted before the learning process begins with the purpose of understanding students' prior knowledge, potential, and learning needs. This type of assessment aims to identify students' initial abilities, including their strengths and weaknesses. In this context, teachers may administer a pre-test or conduct brief interviews to evaluate students' proficiency in grammar, vocabulary, and other English language skills. The purpose of this assessment is to enable teachers to adjust teaching methods and materials according to students' proficiency levels (Brown, 2004). Moreover, diagnostic assessment assists teachers in designing differentiated instructional strategies. For instance, students who experience difficulties in understanding basic concepts can be provided with additional support and practice, whereas those who have already mastered the basics may be given more advanced materials to further develop their skills.

2. Formative Assessment

This assessment is conducted throughout the learning process to monitor students' progress and provide constructive feedback, a concept known as *assessment for learning*. Formative assessment is a continuous process carried out during instruction with the purpose of tracking learners' development and offering feedback that helps them improve their understanding of the subject matter. It can be implemented through various methods such as quizzes, daily assignments, discussions, classroom observations, peer assessments, or portfolios. Formative assessment is characterized by its responsive nature, the use of multiple sources of evidence, and its integration as an essential component of both teaching and learning processes. Moreover, it involves active participation from both teachers and students (Bell & Cowie, 2001).

3. Summative Assessment

Summative assessment is conducted at the end of a learning process, semester, or academic year to evaluate the extent to which students have achieved the learning objectives (*assessment of learning)*. The results of this assessment are used to provide a final evaluation of students' overall ability to comprehend the material that has been taught. Forms of summative assessment may include final examinations, project presentations, portfolios, or comprehensive language proficiency tests. According to Harmer (2007), summative assessment is typically used to assign grades or provide certification of students' achievements. Furthermore, it serves as a reflection of the effectiveness of the curriculum and teaching methods implemented by an educational institution. When the results of summative assessments indicate that most students have not reached the expected competencies, it suggests that certain aspects of the curriculum or instructional methods require review and improvement. Therefore, summative assessment is not only essential for measuring students' achievement but also functions as an evaluative tool for teachers and schools to enhance the overall quality of learning in the future.

d. Rubrics for Speaking Assessment

A rubric is an assessment tool used to measure students' competencies or skills in a specific area. According to Brookhart (2018) a rubric is a set of logical criteria for students' work that includes a description of levels of performance quality of the criteria. The main purpose of rubrics is to assess performances. Assessing students' performance examiner can whether observe the process of doing something (for example, oral communication or presentation) or observe the product that is the result of students' work (for example, essay, term paper or project). Three important features in scoring rubrics for performance assessment are evaluative criteria that include the factors for determining the quality of a student's response, description of the quality for all evaluative criteria, an indication of whether a holistic or analytic scoring approach is to be used (Popham, 2017).

In addition, Brown (2004) in Syahidah & Umasugi (2021) explain some components of speaking skill could be used in designing a speaking assessment, such as pronunciation, grammar, vocabulary, fluency, comprehension and task. In designing rubric for speaking assessment, the teacher should adapt it to the learning objectives that students are expected to achieve. This ensures that the assessment process is valid, meaning that it measures what it is intended to be measured. In relation with this, rubrics

play a crucial role in ensuring fairness, validity, and reliability in speaking assessment. It helps standardize grading by providing clear benchmarks that minimize subjectivity in evaluating students' speaking performance. Furthermore, the benefits of using rubrics in assessment are multidimensional and directly connected to the purposes they are used for. Using rubrics in teaching and learning has the potential to positively affect the students' attribution of success or failure and providing clear directions for performance that are within the control of the students.

e. Balinese Cultural Values

Bali is known for its diverse customs and cultural values. These values are deeply embedded in the Balinese people daily life, whether within the family, at school, or in the community. They reflect a philosophy of life that emphasizes harmony and balance. There are several fundamental values of Balinese culture, namely Tri Hita Karana, Tri Kaya Parisudha, and Tat Twam Asi.

Tri Hita Karana, which means "the three causes of well-being," serves as the central foundation for maintaining harmonious relationships between humans and God (Parahyangan), among human beings (Pawongan), and between humans and the environment (Palemahan).

Meanwhile, Tri Kaya Parisudha underscores the importance of purity in thought (manacika), speech (wacika), and action (kayika), guiding individuals to live in accordance with goodness and truth.

Tat Twam Asi, which means as "you are me," emphasizes on empathy, humanity, and mutual respect among all living beings. This philosophy embodies the sense of unity between the self, God, and all forms of life, asserting all creation is interconnected. It fosters attitudes of respect, cooperation, and harmony both the social and spiritual aspects of Balinese life.

4. RESULTS AND DISCUSSION

a. Awareness of Local Cultural Values among Balinese EFL Instructors

From the findings, it is indicated that Balinese EFL instructors demonstrate a high level of awareness regarding to local culture, such as Tri Hita Karana and Tat Twam Asi. It could be shown from Question 10, which asked about the teachers' knowledge of Balinese cultural values like Tri Hita Karana and Tat Twam Asi, showed a high level of personal and professional awareness. Responses were heavily concentrated in the 'Familiar' to 'Very Familiar' categories suggesting these are neither abstract concepts nor mere vocabulary items but something they experience in life. This means the teachers work from a socio-cultural framework in which harmony with the God, community and nature, acts of compassion and empathy are present and active. To consider how these values can be translated into practices, especially those concerned with the subtleties of language assessment, teachers must already be familiar with its foundational ideas. Moreover, question 11 showed this belief has strong correlation with the awareness level. The data showed a majority thinks it is 'Important' or 'Very Important' to consider such local cultural values to assess student learning and behaviour. It is an important finding which shifts from just being ignorant to an active belief that culture is central and not just putting it on the side of education. According to the teachers, they cannot see the performance and behaviour of a students in class through a universal culture-free interpretation. They say that a respectful understanding of the local Balinese context is necessary in order to create a fair and holistic appraisal of the students' abilities.

b. Perception on Integrating Cultural Values in Speaking Assessment Rubrics

From the Likerts-scale responses, the answers in question 12 provides a more nuanced map of these understandings, showing both clear consensus and a tension. Almost every teacher agrees with Statement (b), which shows that teachers can see the impact of culture on communicating directly, using eye contact and how they use their bodies. There is a strong disagreement with (a) that speaking assessment is merely a question of language accuracy. Teachers reject a view of language assessment divorced from context and which recognizes the foundation of socio-culture. However, a main tension arises when ideas shift from theoretical importance to practical significance. Many teachers agree with

statement (d). It is believed that putting cultural values in the rubric will help Balinese students. This shows an awareness that assessment tools founded entirely on Western standards of communication will disadvantage students from a cultural framework of respect-harmony-indirectness. On the other hand, this good view is balanced by high agreement with Statement (e) which is about a significant barrier. Cultural values are difficult to measure. This shows a professional concern with subjectivity and the validity and reliability of quantifying qualitative terms such as 'harmony' and 'compassion'. The different reactions to Statement (c) further highlight this tension. It is uncertain whether the existing practices take implicit consideration of the Balinese communication style, as there is no clear consensus. It indicates that there is a yawning chasm between theory and practice where teachers are making intuitive adjustments to their marking, but they are not formally equipped or sufficiently confident to do so explicitly. The knowledge is much older than the formal mechanism but we need to transgress it.

c. Instructors' challenges in integrating Balinese Cultural Values into Rubrics.

Teachers face a significant philosophical and pedagogical challenge in balancing cultural sensitivity with the need to prepare students for a globalized communicative context that often values directness, assertiveness, and individualism. This "double bind" positions educators between respecting local cultural identities and equipping learners with internationally recognized English communication competencies. Consequently, the issue extends beyond the technical aspects of rubric design, prompting a re-examination of the fundamental objectives of English language education within culturally specific contexts. It articulated from the finding in reply 18 was the tension perceived between a cultural sensitivity and universality of communication attributes. This phrase expresses a problem teachers face. It is not a logistical challenge, nor is it a matter of will. It is deeper and it is philosophical and pedagogical in nature. On one hand, while teachers understand that Balinese people prefer more indirect communication (showing respect for authority and for the group), they often have good relations in class. If you judge a student badly due to these behaviors, it would be unfair and not culturally sensitive. On the other hand, teachers feel a duty to equip students for a world where communication skills that are 'universal', are frequently praised and required (skills that are tuned to the western way of being direct, assertive, 'I' centred, etc). This creates a double-bind for the teachers. They are torn between the moral obligation to be relevant and culturally appropriate in the local context and the practical necessity of providing students with a set of skills considered necessary for success and mobility beyond the local context. The rubrics design challenge is not only a technical and academic issue. It also questions the very objective of English language education in a particular culture. How can we make a rubric that will not punish a student for being culturally Balinese while preparing them for the international communicative context? The core problem is these shared challenges between different values and identity systems, including creating a culturally representative funnel of development.

The timing of the writing exercise impacted teachers' ability to respond sufficiently to question 19, which directly asked about the necessary support, the findings point towards a path forward. It is important because it suggests a straightforward solution to most of the particulars set out in stage one. Based on the supports requested (workshops and collaborative learning), this suggests teachers do not viewing this integration as a job they can or should do alone. The urge for workshops signals the need for structured expert-driven professional learning. As much as a theoretical justification teachers want sufficient training. They would value guidance to help them operationalize abstract values like Tri Hita Karana or Tat Twam Asi into descriptors that can be observed and measured on a rubric. An example of showing harmony within required presentations, dialogues and/or classroom exchanges will prove useful. A workshop would offer exemplars and a chance to practice rubric design while providing a means to address the challenge of objectivity highlighted in the earlier findings. Also, one important finding is the value placed on peer collaboration. This means that teachers will need to join together to tackle the problem. Together, colleagues can share things that have worked for them, critique each other's draft rubrics, and brainstorm ways to mediate cultural and universal demands similar to credentialing discussions. The very collaboration used to teach this concept is reflective of the Balinese value of *gotong royong* (mutual assistance), a pedagogical challenge that became a collective mission. This means creating opportunities for teachers to work together, pooling their cultural and professional resources to create assessment tools that are contextually appropriate, would be more effective than imposing new rubrics from the top down.

The comment made in question 20, although quite brief, gives a very telling information into the human side of the issue. Hence, the finding that some students still have low confidence in explicit and implicit communications is a striking one, which links the abstract challenge of rubric design to student outcomes. The knock in confidence will be a manifestation of the tension discussed in Question 18. Students find themselves torn between the communicative norms of their own culture with that of the EFL classroom, leading to the knock. They do not know how to express themselves, worried that their everyday way, informed by their culture, is wrong in English, but not yet strongly committed to alternative styles. Urgent need to solve the problem of integration, this shows. This is not just a theoretical notion. It actually has a real impact on students' belief in themselves and their willingness to join in. An assessment strategy that has cultural values could enable students to validate their cultural identities, which would reduce anxiety and lay the foundations for confidence in language learning. The teachers said they think the current testing system adds to the confidence gap between students. In other words, they want the same kind of support they asked for to avoid this situation.

In conclusion, teachers report that students often experience low confidence due to conflicts between their cultural communication norms and English language expectations. Integrating cultural values into assessment is seen as a strategic measure to validate students' cultural identities, reduce anxiety, and build confidence, ultimately supporting better learning outcomes.

5. CONCLUSION

Based on the findings and discussions, it can be concluded that Balinese EFL instructors show strong awareness and appreciation of local cultural values such as *Tri Hita Karana* and *Tat Twam Asi*. These principles are considered vital elements in evaluating students' speaking abilities. The teachers acknowledge that language assessment is inherently tied to its socio-cultural background. Nevertheless, they continue to encounter philosophical and pedagogical dilemmas in balancing cultural sensitivity with the global standards of English proficiency, resulting in a persistent tension between preserving local identity and achieving international communicative competence.

In addition, the study emphasizes the importance of providing teachers with continuous professional development and collaborative opportunities to convert cultural concepts into observable and assessable rubric indicators. Incorporating Balinese cultural values into speaking assessment rubrics should not be seen as a mere technical revision but as a meaningful transformation toward a more inclusive and culturally grounded English language education. This integration has the potential to build students' confidence, lower their anxiety, and promote fairer learning outcomes that reflect both local and global communicative expectations.

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ECONOMIC EMPOWERMENT THROUGH OYSTER MUSHROOM CULTIVATION IN BUNUTIN VILLAGE, BANGLI REGENCY

Ida Ayu Candrika Dewi

Dwijendra University
candrikadewi90@gmail.com

ABSTRACT

The agricultural sector in Bali is not only dominated by commodities such as rice, horticulture, and plantation crops but has also begun to develop toward modern agribusiness, one of which is the cultivation of oyster mushrooms (*Pleurotus ostreatus*). This study aims to analyze the role of oyster mushroom cultivation in enhancing the economic empowerment of the community in Bunutin Village, Bangli Regency. The background of this research stems from the condition of rural communities that largely depend on conventional agricultural sectors with relatively low income levels. Through the development of oyster mushroom cultivation, the community is encouraged to innovate in managing local resources productively and sustainably.The research method used is a qualitative descriptive approach, with data collection techniques including interviews, observations, and documentation involving oyster mushroom farmers, farmer group leaders, and village government officials. The data obtained were analyzed using data reduction, data presentation, and conclusion-drawing techniques.The results show that the oyster mushroom cultivation program in Bunutin Village has had a significant impact on increasing community income, expanding employment opportunities, and strengthening the entrepreneurial capacity of local farmers. This activity has also raised community awareness of the importance of agricultural diversification and the utilization of agricultural waste as an environmentally friendly growing medium. Furthermore, the support from the village government and assistance from academic institutions have contributed to strengthening the sustainability of this program.Thus, oyster mushroom cultivation has proven to be an effective strategy for **economic** empowerment in rural communities, particularly in Bali, which possesses favorable agroclimatic potential. Further development is expected to include business management training, innovation in processed mushroom products, and broader market access to create an independent and competitive village economy.

Keywords: *economic empowerment, oyster mushroom cultivation, Bunutin Village, sustainable agriculture, Bangli.*

1. INTRODUCTION

Agriculture is a sector that plays a vital role in supporting Indonesia's economy, especially in rural areas. The agricultural sector serves as the main pillar of economic development in Indonesia. However, in recent years, the interest of young generations in agriculture has tended to decline due to the perception that this sector is less promising and often associated with traditional forms of labor. This phenomenon raises concerns about the regeneration of farmers in the future.Innovation and diversification in agricultural enterprises are therefore essential to attract the interest of the millennial generation to actively engage in productive and sustainable agribusiness activities. Amid these challenges, various forms of modern agricultural innovation have emerged that are capable of drawing the attention and participation of young people in agribusiness — one of which is oyster mushroom cultivation.Oyster mushrooms (*Pleurotus ostreatus*) have a high economic value, a relatively short harvesting period, and a continuously increasing market demand at both local and national levels. Moreover, oyster mushroom cultivation does not require extensive land and can be carried out using simple technology, making it highly suitable for young farmers who are generally more adaptive to innovation and new technologies. Bunutin Village, located in Bangli Regency, Bali, is one of the rural areas where most residents rely on the agricultural sector as their primary source of livelihood. The community predominantly cultivates rice, vegetables, and plantation crops, yet the income generated from these conventional agricultural activities remains relatively low and unstable due to seasonal dependence and fluctuating market prices. This condition has encouraged local farmers, particularly the younger generation, to explore alternative agricultural enterprises that are more innovative and profitable.

In response to this, oyster mushroom cultivation has emerged as a promising alternative agribusiness in Bunutin Village. The local community has begun developing small-scale oyster mushroom production by utilizing easily available raw materials such as sawdust and agricultural waste. This initiative not only creates new economic opportunities but also promotes the use of environmentally friendly practices through the recycling of organic waste.

The agricultural sector is one of the main pillars of national economic development, particularly in rural areas. However, along with social and economic changes, many rural communities face limitations in developing competitive agricultural enterprises. One alternative that has recently gained attention is the cultivation of oyster mushrooms (*Pleurotus ostreatus*), which offers promising economic prospects and can be managed on a small to medium business scale. Rural economic development is an essential part of efforts to improve community welfare. One effective strategy is economic empowerment based on local potential, in which communities utilize their natural and environmental resources to increase income and economic independence. Economic empowerment is a process of enhancing the ability of individuals or groups to manage their economic potential in a way that promotes self-reliance and competitiveness. In the agricultural context, empowerment is carried out through improving skills, access to capital, technology, and market opportunities. Bangli Regency, as one of the agrarian areas in Bali Province, has significant potential for developing horticultural commodities, including mushrooms. Its cool geographical conditions and the availability of local raw materials such as straw and sawdust make this region suitable for mushroom cultivation. Through the development **of** oyster mushroom agribusiness**,** it is expected that the empowerment of millennial farmers can be achieved — not only by increasing income levels but also by strengthening regional food security and creating new employment opportunities in the agricultural sector.

2. RESEARCH METODOLGY

This study aims to examine the process of oyster mushroom cultivation and its impact on the economic empowerment of the local community in Bunutin Village, Bangli Regency. The research was conducted in Bunutin Village, located in Kintamani District, Bangli Regency. This area lies in a highland region characterized by cool temperatures and high humidity, making it an ideal environment for oyster mushroom (*Pleurotus ostreatus*) cultivation. The people of Bunutin Village take advantage of these natural conditions to develop oyster mushroom farming as a promising local agribusiness initiative.The research employed an empirical qualitative method. This approach focuses on examining real-life phenomena or situations in detail by collecting factual data and developing existing concepts. Data were obtained through field observation, interviews with local farmers, and documentation related to mushroom cultivation activities in the village.Bunutin Village has long been recognized as one of the oyster mushroom cultivation centers in Bali. The development of this agribusiness is supported by favorable climatic conditions and the initiatives of local farmers who have built mushroom houses (*kumbung*) and produce their own growth media (*baglog*). The expansion of oyster mushroom cultivation has the potential to serve as an economic empowerment strategy for farmer groups, particularly among millennial farmers seeking alternative sources of income beyond conventional agriculture.

3. RELATED RESEARCH

The agricultural sector in Bali is not only dominated by commodities such as rice, horticulture, and plantation crops, but it has also begun to develop toward modern agribusiness, one of which is oyster mushroom cultivation (*Pleurotus ostreatus*). Oyster mushroom farming has become a form of community economic empowerment, as it can be carried out with relatively small capital, limited land, and simple technology. Oyster mushrooms are a high-value horticultural commodity that thrive in cool, highland climates. This sector has increasingly attracted the interest of millennial farmers, as it can be integrated with digital innovation and value-added processing to create diversified agricultural products. Over the past decade, oyster mushroom cultivation has emerged as one of the fastest-growing agribusiness sectors in Bali Province.According to Suharto (2014), community empowerment encompasses three key dimensions: enabling (creating a supportive environment), empowering (strengthening individual and group capacities), and protecting (providing safeguards for vulnerable groups). These dimensions form the theoretical foundation for understanding how oyster mushroom

cultivation contributes to community economic empowerment in rural areas such as Bunutin Village, Bangli Regency.

Figure 1. Capsicumannum L
Source: Desa Bunutin, Bangli

In addition to the continuously increasing market demand, oyster mushroom cultivation is also considered environmentally friendly, as it does not require large areas of land and is well-suited to the highland climates of regions such as Bangli, Tabanan, and Buleleng. One of the main centers of oyster mushroom production in Bali is Bunutin Village**,** located in Bangli Regency**.**The growth medium **(***baglog***)** is made from sawdust, bran, and lime**,** which are easily available in Bali due to the abundance of the local wood industry **(**Suardana, 2021**).** Processed oyster mushroom products have received positive responses from local markets**,** creating opportunities for business diversification among rural communities.Program evaluations have demonstrated the success of the participatory approach in empowering local residents and provided recommendations for expanding this program to other regions, as well as establishing cooperatives to strengthen coordination and sustainability **(**Epi, 2024**).**

4. RESULTS AND DISCUSSION

Bunutin Village, located in Bangli District, is one of the areas with rich natural resources that support agricultural activities. Before the implementation of the oyster mushroom cultivation program, most of the villagers depended on traditional farming sectors such as rice, vegetables, and secondary crops. The community's income was generally low and unstable, as it relied heavily on planting seasons and fluctuating market prices. In addition, agricultural waste such as sawdust and straw had not been optimally utilized, resulting in underused local resources.The limited employment opportunities in the village also caused many productive-age residents to migrate to other areas for work. This situation contributed to low economic self-sufficiency and a lack of innovation in the local agricultural sector. However, since 2018, the community has started to develop oyster mushroom cultivation as an alternative to conventional farming.Based on interviews with the "Tirta Tani" farmer group, approximately 25 households are actively involved in mushroom cultivation activities. The average production reaches 40–50 kilograms per week, with a selling price ranging from Rp15,000 to Rp20,000 per kilogram.The oyster mushroom cultivation program in Bunutin Village is the result of a collaborative effort between the farmer group, the village government, and academic facilitators from universities in Bali. The program began with basic training on oyster mushroom cultivation techniques, baglog preparation, production management, and marketing strategies.Local raw materials such as sawdust, rice bran, and lime are used as the mushroom growing medium. The production process is carried out in simple mushroom houses (kumbung), which were built through a community-based self-help system Furthermore, the farmer group established a cooperative marketing system to distribute harvested mushrooms to traditional markets, restaurants, and grocery stores in Bangli and surrounding areas.This activity has created new economic opportunities, particularly for housewives and village youth who previously did not have permanent employment. As a result, oyster mushroom cultivation has not only strengthened community income but also fostered social participation, entrepreneurship, and sustainable local development in Bunutin Village.

Community members in Bunutin Village play an active role in the maintenance of baglogs**,** harvesting, and marketing of oyster mushrooms to both traditional markets and restaurants in Bangli and Gianyar. In addition to increasing income, these activities have created new employment opportunities for housewives and village youth, particularly in baglog production, harvesting, packaging, and sales. Consequently, the program has directly contributed to reducing unemployment and enhancing household economic self-reliance in Bunutin Village.The role of oyster mushroom cultivation in economic empowerment lies in its ability to increase household income by providing additional earnings from the sale of fresh mushrooms and processed mushroom products. This business also generates new job opportunities for young villagers. Through training provided by the Department of Agriculture and local universities—such as Dwijendra University, Udayana University (UNUD), and the Agricultural Development Polytechnic (Polbangtan)—farmers have gained new skills and knowledge in baglog sterilization techniques, mushroom house management, and digital marketing.The strengthening of farmer groups and micro, small, and medium enterprises (MSMEs) through mushroom cultivation has encouraged the formation of farmer cooperatives, which help improve the bargaining position of farmers within the agribusiness value chain.Oyster mushroom cultivation has also become an innovation platform for millennial farmers, as it can easily be integrated with social media marketing and online pre-order systems. From a social and economic perspective, this activity has opened new income sources for local farmers, with additional monthly earnings from mushroom harvests. It has also created new job opportunities for youth, especially because oyster mushroom cultivation requires limited land area and can be carried out at home.Farmer groups in Bunutin have now achieved greater economic independence, as they can produce their own baglogs and distribute their products to markets in Bangli, Gianyar, and Denpasar. The development of processed mushroom products has also led to innovative creations such as mushroom chips, mushroom floss, and mushroom satay, which are popular in tourist markets.Challenges in Oyster Mushroom Cultivation Despite these positive developments, several challenges remain in the oyster mushroom cultivation program in Bunutin. These include limited initial capital for expanding baglog production and mushroom houses (kumbung), fluctuating prices of raw materials such as sawdust and bran, variable seed quality, and contamination risks during the cultivation process. Moreover, marketing channels remain simple, as most sales are still conducted through local collectors, and there is a lack of modern sterilization equipment, which hinders large-scale production.

5. CONCLUSION

Oyster mushroom cultivation in Bunutin Village has proven to be an effective and sustainable form of rural economic empowerment. This initiative has successfully increased community income, created new employment opportunities, and optimized the utilization of local resources. The program serves as a tangible example of community-based agricultural innovation, supported by favorable environmental conditions, strong community participation, and continuous guidance from the local government and academic institutions.The success of oyster mushroom cultivation demonstrates that sustainable agricultural innovation can serve as a new agribusiness icon for Bali, one that is environmentally friendly and capable of empowering the younger generation. Through this activity, local residents have been able to create new sources of income, expand job opportunities, and develop entrepreneurial skills leading to greater economic self-reliance.Moreover, oyster mushroom cultivation has contributed to the optimal and sustainable use of local resources, particularly through the use of agricultural waste such as sawdust and straw as eco-friendly growing media. Support from the village government, farmer groups, and universities has strengthened the program's sustainability and enhanced community capacity in professional agribusiness management. Therefore, oyster mushroom cultivation in Bunutin Village can be considered an effective model of rural economic empowerment, capable of promoting economic independence and improving the quality of life in Bali's agroclimatically rich regions.To further enhance the impact and sustainability of oyster mushroom cultivation as an economic empowerment initiative, several recommendations can be made:

1. Facilitate access to microfinance and modern equipment – The government should provide easier access to micro-capital and assist farmer groups in acquiring modern sterilization tools to increase production efficiency and product quality**.**
2. Establish a Mushroom Farmers' Cooperative – The formation of a "Bunutin Oyster Mushroom Cooperative" is recommended to strengthen farmers' bargaining positions and streamline distribution channels.

3. Continue collaboration with universities – Strengthen partnerships with higher education institutions such as Dwijendra University, Udayana University (UNUD), and Polbangtan for ongoing research, training, and technology transfer in cultivation and business management.
4. Enhance digital marketing strategies – Encourage farmers, especially the younger generation, to use social media platforms and e-commerce systems for product promotion and online sales.
5. Promote value-added product development – Support innovation in processed mushroom products (e.g., mushroom chips, satay, and floss) to increase profitability and expand into tourism markets.

By implementing these recommendations, oyster mushroom cultivation in Bunutin Village has the potential to become a **sustainable, community-driven agribusiness model** that contributes significantly to Bali's rural economic resilience and food security.

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Collaboration on Social Forestry Management in Jembrana Regency, Bali Province

I Wayan Suardika

Master of Agricultural Extension Study Program, Faculty of Agriculture and Business, Dwijendra University

suardika_wyn@yahoo.com

ABSTRACT

The utilization of the area in the West Bali Forest Management Unit (UPT KPH) is carried out through a social forestry program. Through the social forestry program, the government opens access to forest management involving communities surrounding the forest. The goal of this program is to improve the welfare of communities surrounding the forest while maintaining forest sustainability. Forest, land, and environmental damage, as well as the increase in the number of critical land within forest areas, are caused by suboptimal forest management, one of the causes being limited human resource capacity, so collaboration between all parties is needed. The purpose of this study is to determine how the collaboration carried out by the West Bali Forest Management Unit (UPT KPH) in managing forest areas in Jembrana as evaluation material for improving better and more sustainable forest management. The research results show that collaborative social forestry management with village forest schemes and forestry partnerships in Jembrana Regency involves Forest Farmer Groups (KTH), indigenous communities, Village Governments, Jembrana Regency Governments, NGOs, universities, State-Owned Enterprises, and the West Bali Forest Management Unit (UPT KPH) as the leading sector, an extension of the Bali Provincial Government. A fundamental requirement is to evaluate the performance of social forestry after permits are issued. An analysis of the independence of social forestry groups is crucial to ensure that community-led forest management yields better results. Independence is not only an economic issue, but also concerns the quality of institutions and sustainable forest governance in Jembrana Regency.

Keywords: *Collaboration, management, social forestry*

1. INTRODUCTION

The forest area in Jembrana Regency is managed by the Technical Implementation Unit (UPT) of the West Bali Forest Management Unit (KPH), which is divided into 5 RPH (Forest Management Resorts) and 1 Forest Product Monitoring Post (PPHH). Utilization of the area within the UPT KPH West Bali area is carried out through the Social Forestry program. Through the Social Forestry program, the government opens access to forest management that involves communities surrounding the forest. The goal of this program is to improve the welfare of communities surrounding the forest while maintaining forest sustainability. The proportion of forest area in Bali is only 23.19% (less than the target balance of 30% of the area), thus potentially disrupting the balance of the microclimate and the availability of sustainable water resources. Article 17 of Law No. 26 of 2007 explicitly states that in environmental conservation in spatial planning, the proportion of forest area is set at least 30% of the area of the river basin. Similarly, the importance of the function and existence of forests in the study of land carrying capacity in Bali Province recommends restoring the function of forest areas to their proper function, namely hydrological function.

Forest, land, and environmental damage, as well as the increasing number of critical areas within forest areas, are caused by suboptimal forest management. Forest areas are inseparable from the existence of communities surrounding them. Communities surrounding forests interact with the forest almost daily, both directly and indirectly. In their interactions with forest areas, communities need to be monitored and guided to ensure forest conditions are maintained and community well-being. Forest management at the West Bali Forest Management Unit (UPT) continues to face challenges related to forest

security, including encroachment, illegal logging, and forest fires. Illegal logging occurs due to the increasing demand for wood, coupled with the poverty of communities surrounding the forest.Meanwhile, encroachment occurs due to limited community-owned land, coupled with the increasing need for non-forestry land due to population growth. The community's need for arable land is projected to increase. This situation can pose a serious threat to forest management. If not managed properly, forest land will be sought after by the community. The still relatively low income and revenue of communities surrounding forests can increase their dependence on forest areas. This poses a threat to forest management, so management is carried out through sustainable community empowerment schemes.

The issue of forest maintenance, protection, and preservation must be viewed as a shared concern. In the community, there are groups of farmers or individuals who manage forestry businesses located around forest areas, forming an institution/group. This institution/group that manages forestry businesses is called the Forest Farmer Group (KTH). An effort to prevent and suppress further damage can be carried out by providing extension services to the KTH. The presence of forestry extension workers within the UPT. KPH West Bali is very limited (3 people). This number is very small compared to the vast forest area and adjacent villages that must be developed. The ideal number is 1 Forestry Extension Worker per village, so that it can facilitate the process of increasing knowledge, productivity, income, and welfare of communities around the forest, as well as raising awareness in preserving forest functions. To overcome human resource constraints from the State Civil Apparatus in managing forests, a pattern of collaboration and concern from various parties is needed. How the collaboration carried out by the UPT KPH West Bali in managing forest areas in Jembrana needs to be examined and studied as evaluation material for improving better and more sustainable forest management.

2. RESEARCH METHODS

This research uses a qualitative method with a case study method focusing on Jembrana Regency as the research object. The case study was chosen to gain a deeper understanding of social forestry implementation in each of the villages supporting community-based forests in the village. Through this method, the research can explore various social and institutional aspects that shape social forestry management patterns. Data collection techniques used in this study include observation, interviews, and documentation. Observations were conducted by directly observing community activities and social interactions that occur in each forest farmer group. Interviews were conducted with the UPT KPH West Bali, traditional leaders, village residents, and the Forest Farmer Group managing social forestry to gain a deeper perspective on the implementation of social forestry. Documentation includes data collection from various written sources, such as legal documents, as well as previous research relevant to this topic.

Through this combination of data collection techniques, the research is expected to produce a comprehensive analysis of the forms applied in social forestry management in Jembrana Regency. Thus, this research not only provides theoretical contributions but also offers practical recommendations for the community and stakeholders in efforts to maintain sustainable forest conservation and community well-being.

3. LITERATURE REVIEW

Regulations regarding social forestry are regulated in the Regulation of the Minister of Environment and Forestry No. P.83/Menlhk/Setjen/Kum.1/10/2016 concerning Social Forestry and refined into Regulation of the Minister of Environment and Forestry number 9 of 2021. There are 5 established social forestry schemes, namely: a. Customary forests are forests located within the territory of customary law communities. b. Village forests are state forests managed by villages and utilized for village welfare and have not been burdened with permits/rights. c. Community forests are state forests whose primary use is intended for community empowerment. d. Community Plantation Forests are plantation forests in production forests built by community groups to increase the potential and quality of production forests by

implementing silviculture in order to ensure the sustainability of forest resources. e. Forestry Partnerships are collaborations between local communities and forest managers, holders of forest utilization/forest service business permits, forest area borrow-use permits, or holders of primary forest product industry business permits.

Social Forestry provides the widest possible opportunity for communities to utilize forests and conduct various activities within forest areas legally in the form of agrotourism, silvopasture, silvofishery, environmental services, ecotourism. The Social Forestry Program is implemented in conservation forest areas, protected forests, and production forests. Conservation forests can be managed under the Partnership Forest scheme. The form that can be implemented is a conservation partnership. Protected forests can be managed under the Village Forest, Community Forest and Partnership Forest schemes. Meanwhile, production forests can be managed under the Village Forest, Community Forest, Community Plantation Forest, and Partnership Forest schemes. The Customary Forest scheme is implemented in conservation forest areas, protected forests and/or production forests. The implementation permit for the Social Forestry Program is granted by the Minister of Forestry in the form of approval and determination. Ministerial approval is given for the Village, Community Forest, Community Plantation Forest, and Partnership Forest schemes. Meanwhile, Customary Forests are permits in the form of determination. The determination of customary forests consists of state forests and non-state forests [5].

The Ministry of Home Affairs through a letter to the Governors and Regents/Mayors throughout Indonesia (except DKI Jakarta) Number 552/1391/SJ dated February 13, 2020 and Circular Letter No. 552/6267/SJ dated November 18, 2020, requested that regions support the acceleration of social forestry through the allocation of APBD for community empowerment in Social Forestry locations, encourage BUMD and private partners to play an active role in accommodating and/or marketing the results of Social Forestry businesses and facilitate easy access to capital for permit holders from local regional banks [6].

4. RESULTS AND DISCUSSION

KTH Collaboration in Social Forestry Management

The forest area of Jembrana Regency is 37,182.13 Ha consisting of Protected Forest (HL) of 34,068.70 Ha located in RTK 19 and RTK 12, Limited Production Forest (HPT) of 2,663.34 Ha located in RTK 19, Production Forest (HP) of 450.09 Ha located in RTK 19 and RTK 30, divided into 6 blocks namely Core Protected Forest Block, Utilization Protected Forest Block, Special Protected Forest Block, Production Forest Block for Utilization of Environmental Services and Non-Timber Forest Products, Empowerment Production Forest Block, and Special Production Forest Block. Administratively, forest management in the UPT area. West Bali KPH includes 5 Forest Management Resorts (RPH), namely Penginuman RPH, Candikusuma RPH, TegalCangkring RPH, YehEmbang RPH, and Pulukan RPH, as well as 1 (one) Gilimanuk Forest Products Inspection Post (PPHH) [1].

The policy of empowering forest-dwelling communities in Jembrana Regency is implemented through a social forestry program, currently implemented through Village Forests and Forestry Partnerships. The potential for Forest Farmer Groups (KTH) in Jembrana Regency is quite significant. There are 15 forest farmer groups from adjacent villages that manage potential forest areas. These Forest Farmer Groups are: Honey Sari Blimbingsari, Forest of KhertiPangkung Tanah KauhMelaya, DarmaKertiKembangsariTukadaya, Forest of AgungYatmaSumbersari, Forest of MertaDelodPangkungBudeng, Forest of AsriNusamaraYehEmbangKangin, Werdhi Forest of RtaMundukAnyarTegalCangkring, BunutBolongManggissari, Peak of MawarDewasanaPendem, Giri Lestari PangkungApitPergung, BanuGiri Lestari BangliYehEmbangKangin, Pala TirtaAmertaPalasariEkasari, Tirta Sari Melaya Tengah Kaja, Sari TaniKlatakan,MajuMapanPenginumanGilimanuk.

There are 8 villages that have Village Forest Management Rights Decree; Berangbang Village Forest Management Institution (LPHD) Berangbang Village 104 ha. Tukadaya LPHD Tukadaya Village 299

ha, Manistutu LPHD, Manistutu Village 102 ha, YehSumbul LPHD, YehSumbul Village, 210 ha, MendoyoDauhTukad LPHD MendoyoDauhTukad Village 122 ha, Medewi LPHD Medewi Village 199 ha, Pulukan LPHD Pulukan Village 201 ha, Pengeragoan LPHD Pengeragoan Village 1,325 ha. There are 2 villages that are still in the stage of completing the files in obtaining HPHD permits, namely BatuAgung Village and Penyaringan Village and 2 villages that are in the application process, namely Gumbrih Village and Asah Duren Village. There are 5 Forest Farmer Groups (KTH) that have been verified to participate in the Forestry Partnership program and 10 KTHs are in the stage of proposing and completing files. Forestry Partnership proposals will continue to be made in conflict-prone areas with potential for development. The hope is that this Forestry Partnership program will improve the welfare of forest-dwelling communities while maintaining forest functions.

The West Bali forest area has the potential for forestry business development due to its rich flora and fauna and its potential for environmental services. Potential businesses include environmental services (nature tourism) and non-timber forest products (honey, eucalyptus, seed sources, and plantation crops). Furthermore, the relatively homogeneous culture of the community, if optimally managed, can positively impact the area's function. This is directly proportional to the improvement of the protection function, area utilization, and environmental services utilization, which ultimately can improve the welfare of the communities surrounding the forest.Environmental services that can be developed include water utilization, utilization of water flows (tubing) and waterfalls, educational tourism, sports tourism (tracking), nature tourism, and religious areas in all temples within the forest area. In protected forests, area utilization can be carried out by developing honey bees, cultivating medicinal plants, collecting non-timber forest products (honey and fruit). Judging from its location, the West Bali Forest Management Unit (UPT) is quite strategic and it is very possible to integrate forest management with other sectors, such as tourism. In addition, the West Bali Forest Management Unit (UPT) area, which directly borders the West Bali National Park area, has great opportunities for collaboration and integration of forest management, especially in building business ventures, protecting and securing forests.

Utilization of forest environmental services through ecotourism or nature tourism schemes in Social Forestry locations can increase income for the community and the state, and can protect forests from deforestation. In addition to being profitable from an economic and ecological aspect, it can also be beneficial from a social aspect because ecotourism activities in the forest will involve many communities in its management. Utilization of environmental services as an effort to utilize the potential of ecosystem services without damaging and not reducing the main function of the forest ecosystem. Optimizing forest environmental services economically can protect forests from deforestation because forests can provide sufficient income for the state and the community, besides only being a cost burden as previously considered. This optimization can be done through ecotourism schemes and environmental service trade without eliminating any ecosystem elements from the forest itself. Regional agencies that can support these activities include: regional agencies that handle community and village empowerment affairs, cooperatives and MSMEs, communications and informatics, public works, tourism, sub-district territorial elements, regional secretariat elements, in coordination with regional agencies that handle forestry affairs or provincial planning elements [3].

One strategy developed is to integrate Social Forestry into the Village Government Work Plan (RKPDes). In Pakis and Sidodadi Villages, Jember Regency, Social Forestry activities have become a village development agenda. This village government support is a form of empowering social forestry as one of the village's potential superior products. In Jember Regency, there are 20 Social Forestry permits, of which only a few are operational. The Jember Regency Government's initiative from 2021-2022 to create a Road Map and Post-Permit Action Plan is a jurisdictional approach capable of accelerating social forestry achievements. Post-permit assistance needs to be focused and, of course, tailored to the capacity needs of social forestry groups in each location. The involvement of multi-stakeholder collaboration is increasingly necessary, given that the government cannot work alone. Support from NGOs, universities, companies, and the media is essential to accelerate social forestry achievements and information dissemination.Decentralization of social forestry management responsibilities to regional governments is

not limited to the provincial level, but requires breakthrough applications at the district/city government level. Therefore, multi-stakeholder collaboration at the provincial and district levels needs to be integrated into a post-social forestry permit roadmap that divides the contributions and responsibilities of regional parties [12].

The West Bali Forest Management Unit (KPH) has 108.60 hectares of critical land categorized as critical. Rehabilitation in the West Bali Forest Management Unit (UPT) has not shown optimal success. This is due to numerous reforestation failures (many plants die before they grow large). These failures are caused by inappropriate planting seasons, lack of follow-up maintenance, poorly adapted seedlings, and disturbances from the surrounding community in the form of root/stem cutting and livestock disturbances. These factors result in low vegetation cover, which in turn will lead to the occurrence of critical land. The West Bali Forest Management Unit (UPT) and the KTH must undertake conservation and rehabilitation efforts for this critical land. This is based on the assumption that the land is somewhat critical and has the potential to become critical. It is hoped that the rehabilitation of critical land will increase the amount of biodiversity, both flora and fauna.

A fundamental requirement is to pause the issuance of social forestry permits and simultaneously evaluate their performance post-permit. Analyzing the independence of social forestry groups is crucial to ensure that community-led forest management is indeed yielding improved results. Independence is not just about economics, but also concerns the quality of forest institutions and governance. Independence means that social forestry groups are able to manage group dynamics and independently finance program operations without relying on facilitators. Furthermore, measuring the impact of social forestry management is necessary to provide evidence and confidence that social forestry can improve the economy, social capital, and forest sustainability in Jembrana.

Social forestry management that is open to collaboration and targeted mainstreaming of marginalized communities will be able to overcome ego-subjectivity between institutions, human resource capacity and budgeting issues. Inclusive transformation of social forestry management is needed to open up the diversity of applications of locally based institutional systems and contextual needs at the regional and site (community) levels, including ensuring the preservation and sustainability of forest areas [9].

Sustainable social forestry management is crucial in Jembrana Regency, given the relatively long licensing period of 35 years. Sustainability strategies have been developed in various ways, from integrating social forestry management into village development, developing markets and market partnerships with the Jembrana Regency Government, to collaborating with development partners (NGO Idep, Oxford University, donors) and corporate social responsibility (CSR) programs (State Electricity Company/PLN). Furthermore, to support KTH collaboration in forestry extension programs, the establishment of Community-Based Forestry Extension Workers (PKSM) is essential for assisting in forestry development activities. Currently, there are 11 registered PKSMs in Jembrana Regency. It is hoped that the number of forestry extension workers and PKSMs in Jembrana Regency will increase in the future.

Collaboration of Indigenous Communities in Social Forestry Management

The communities surrounding the West Bali forest area have a relatively homogeneous social system and structure. This can be seen from the dominant ethnic group that inhabits the area, namely the Balinese Hindu ethnic group. The social system is a social unity based on the unity of the administrative area/territorial (perbekel/kelurahan) which is generally divided into smaller social units, namely banjar and customary territorial which regulates matters of a religious, customary, and other community nature. From the existing social system, village residents can enter into two village memberships or one membership, namely the administrative village government system as an administrative area and/or customary villages where local community life consists of many customary banjar groups.

Constitutional Court Decision No. 35 of 2012 concerning customary forests was the beginning of the recognition of the rights of Indigenous Law Communities (MHA) to customary forests [7]. This

recognition of rights became the basis for establishing Customary Forests as one of the schemes in the Ministry of Forestry's Social Forestry Program [4]. In Jembrana Regency, social forestry with a customary forest scheme was not found, but all KTH members are indigenous people who are sheltered by traditional village institutions that have and uphold local wisdom in managing forests. Indigenous communities play an important role in social forestry as the main actors in forest management through local wisdom and customary law, carrying out forest supervision and protection, and utilizing forests sustainably for community welfare. They also play a role in conflict resolution, maintaining ecosystems, and preserving forest-related culture.

Weaknesses of forest management in Jembrana Regency include the suboptimal function and designation of forest areas due to the existence of critical land in several areas, suboptimal utilization of forest areas, relatively narrow and sporadic production forest areas and directed towards hydrological functions, suboptimal utilization of non-timber forest products and environmental services and forest resources, suboptimal community empowerment, still limited supporting facilities and infrastructure, minimal quality and quantity of human resources, and limited competence in the forestry sector, still weak coordination between forest management institutions, low investment, capital access, and limited budget, incomplete database on forest potential, suboptimal provision of community roles in forest management, still weak law enforcement and implementation of regulations in the forestry sector, there are regulations that are not in accordance with field conditions. Negative external threats to forest management in Jembrana Regency include the high level of community dependence on forests, still high vulnerability to forest disturbances, forest and land fires, low socio-economic conditions and education levels of communities around the forest, land for needs outside the forestry sector continues to increase.

The results of research in the Yehsumbul village forest in Jembrana district showed the lowest socio-cultural dimension sustainability index value compared to other dimensions (52.75%), with the most sensitive attribute being the lack of understanding of forest management and the role of indigenous communities (local wisdom values). Understanding of forest management, especially regarding the application of local wisdom values [10]. In Bali, the role of indigenous communities in managing forests is still limited. Forest management by indigenous communities is limited to forests with customary forest status such as in the customary forest of Tenganan Traditional Village, Karangasem, Bali. The role of indigenous communities in forest management by applying local wisdom values is highly expected in all forest areas. These local wisdom values are Tri Hita Karana and WanaKerti. Tri Hita Karana is a guideline for indigenous communities in maintaining a balanced relationship with nature, while WanaKerti is an effort to maintain the sustainability and sanctity of the forest.

Village forest management in Bali, particularly in the Selat Village Forest in Buleleng Regency, is carried out based on customary law, based on the Tri Hita Karana concept through village customary rules (awig-awig) that regulate the obligations of village communities (krama) to maintain the sustainability and security of village forests [8]. Local wisdom is a sediment of values and norms from the mystical realm of thought, where hidden views of life (philosophy) implied in mythology. This is where humans always give place to the meaning of natural forces [2]. Several customary laws have been implemented in forest management and protection with customary forest schemes [11].

The role of indigenous communities in forest management (local wisdom values) will be more optimal by accommodating indigenous communities as part of social forestry management in the form of customary forest schemes. Considering that in Bali Province all forest areas are bordered by customary villages which are the institutions that oversee indigenous communities, the role of indigenous communities in sustainable forest management should be regulated in Provincial Regulation policies. This regional regulation can accommodate the local wisdom values of forest conservation, namely tri hitakarana, wanakerti (mahawana, tapa wana/wanaprastha, sriwana). This regulation can also be used as a basis for reference for social forestry management proposals to the Ministry of Forestry using customary forest schemes in the forest areas of Bali Province. This Regional Regulation is also intended as a guideline for managing and socializing social forestry management appropriately.

The objectives of forest management in Jembrana district are as follows: controlling the sustainability of forest management from ecological, social, and economic aspects; increasing the accountability of forest management organizations and forest areas; maximizing the potential of non-timber forest products, honey bees, especially nature tourism services, educational tourism, environmentally conscious cultural tourism and protection services for the socio-economic and cultural interests of land and water resource sustainability; improving forest conditions to full stock (full) forest stands; increasing community participation in the development of forest product production and environmental services to improve the standard of living of the community and help solve the problem of poverty in communities around the forest; changing the mindset of the pattern of fulfilling the needs of communities that are highly dependent on forests to a cultivation pattern that can produce economic value,forming networks with districts/cities and stakeholders in order to improve the quality of the environment, socio-cultural and people's economy; maintaining and improving the preservation of flora and fauna diversity and their ecosystems as life supports; implementing forest resource management activities that include forest and land rehabilitation, security, protection and conservation of forest resources, empowering communities in and around forests collaboratively with the aim of improving the welfare of local communities [1].

5. CONCLUSION

Collaborative social forestry management with village forest schemes and forestry partnerships in Jembrana Regency involves Forest Farmer Groups (KTH), indigenous communities, Village Governments, Jembrana Regency Governments, NGOs, universities, State-Owned Enterprises, and the West Bali Forest Management Unit (UPT KPH) as the leading sector, an extension of the Bali Provincial Government. A fundamental requirement is to evaluate the performance of social forestry after permits are issued. Analyzing the independence of social forestry groups is crucial to ensure that community-led forest management is yielding better results. Independence is not only an economic issue, but also concerns the quality of institutions and sustainable forest governance in Jembrana.

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Expressive Speech Actsin the BBC World Service Video Entitled *"Could AI Chatbots Replace Human Therapists?*

Ni Made Dwi Utari Pusparini[1)], and Matilda Jenni Bombo[2]

[1)]DwijendraUniversity
Myutari18@gmail.com
[2)]DwijendraUniversity
jenibombo45@gmail.com

ABSTRACT

As a huge media entertainment, youtube serves not only as an entertainment site but also as a powerful medium for education, information sharing, and social awareness. This research investigates the use Expressive speech actsin the BBC World Service video entitled "Could AI chatbots replace human therapists". The research focuses on the comments on BBC Youtube content entitled "Could AI chatbots replace human therapists?". This research examines expressive speech acts in the comment section of that video. It aims to identify the types of expressive acts used, and determine each of type is most employed by the commenter. The study applies Searle and Vanderveken's (1985) classification, which encompasses acts like expressing gratitude, offering apologies, giving congratulations, showing praise, expressing sorrow, boasting, assigning blame, and greeting. It is along with Leech's (2014) framework of speech act functions, namely competitive, convivial, collaborative, and conflictive. Descriptive qualitative method is employed by the researcher for this research. The data were collected using a note-taking technique, focusing on 20 comments which found on the that video. The finding reveals that there are expressive act found in these data. These act mostly collaborative, convivial and conflictive functions. Furthermore, there are five types of expressive speech act found such as, thanking, praising, sorrowing, blaming, and boasting.

Keywords: ***ExpressiveAct, CommentSection, BBC News***

1. INTRODUCTION

Language plays a fundamental role in human's life especially in reaching the communication goals. Human communication encompasses a range of linguistic actions, including making requests, promises, and statements (Safitri et al., 2021). In linguistics study, pragmatics take an important role which concern on exploring meaning that influenced by context (Mey, 1993; Yule, 1996). A central element of pragmatics is the concept of speech acts**,** referring to utterances that accomplish actions such as requesting, apologizing, or promising (Leech, 2014). Based on Austin (1962), there are three categories of speech act, *locutionary acts* the act of (producing an utterance), *illocutionary acts*(the speaker's intended meaning or function), and *perlocutionary acts*(the resulting effect on the listener). Within these, illocutionary acts**,** particularly expressive acts**,** are vital for revealing a speaker's emotions and psychological states (Searle, 1976; Vanderveken, 1990). Expressive speech actsencompass utterances such as thanking, congratulating, apologizing, or expressing feelings of happiness or regret (Cutting, 2020).

With the rapid development of artificial intelligence (AI), communication is no longer limited to human interactions but has expanded to human machine exchanges. Recent advancements in natural language processing and machine learning have enabled AI systems to engage in increasingly human-like conversations and emotional simulations (Russell & Norvig, 2021). The BBC World Service video entitled *"Could AI Chatbots Replace Human Therapists?"* explores this evolving dynamic by questioning whether AI-driven chatbots could replicate or replace the empathetic and expressive functions of human therapists. The discussion features

real-life demonstrations of AI therapy tools, expert commentary, and reflections on the emotional authenticity of AI responses (BBC World Service, 2023).

An analysis of the YouTube comments section reveals a diversity of expressive acts from viewers, such as skepticism “AI can’t feel empathy like humans do”, curiosity “I wonder how close AI is to real emotional understanding”, and concern “This could make therapy less personal”. These reactions highlight how audiences use expressive language to convey personal emotions, beliefs, and attitudes toward the role of AI in mental health contexts (Herring, 2013; Dynel, 2020).Among these expressive speech acts are particularly significant, as they reveal the speaker’s psychological or emotional state through utterances such as thanking, apologizing, or congratulating (Searle, 1979; Cutting, 2020).This study aims to examine expressive speech acts from a linguistic and pragmatic perspective, exploring how expressive speech acts linguistically realized in the BBC World Service video “Could AI Chatbots Replace Human Therapists?” in its comment section.

2. RESEARCH METODOLOGY

This researchfocuses on analyzingthe type of expressive speechacts and theirimpliedmeaningasexpressed on thecomment box on *BBC World Service video entitled “Could AI chatbots replace human therapists”.* This study employs a descriptive qualitative method. The qualitative descriptive method is grounded in postpositivist philosophy and is utilized to explore natural phenomena rather than experimental conditions (Sugiyono, 2016:9). The data were collected using a note-taking technique, focusing on 61 comments which found on the that video. Data are analyzed inductively or qualitatively, with the results focusing on the interpretation of meaning rather than on generalization.

3. RELATED RESEARCH/LITERATUR REVIEW

A. Related Research

This section outlines two previous studies relevant to the current research. First is from Faturrohman (2020) who conducted a qualitative analysis of expressive speech acts in the film *Fast & Furious Presents: Hobbs and Shaw*, drawing on Searle’s (1976) speech act theory. The study identified various types of expressive acts, including expressions of agreement, gratitude, apology, and attitude, demonstrating how characters convey emotions and interpersonal meanings through dialogue. While Faturrohman’s research shares methodological similarities with the present study in its use of a pragmatic framework, it diverges in its data source, the current research focuses on expressive acts in YouTubecomments, whereas Faturrohman examined scripted film interactionswithin a cinematic context. Next is from Indriyana et al. (2021) who investigated expressive speech acts in Instagram comments posted on Joe Biden’s account during the U.S. presidential campaign. It employed a qualitative approach grounded in Searle’s (1976) speech act theory. Their study revealed that expressions of gratitudewere the most frequently occurring form of expressive act, reflecting users’ emotional support and positive engagement. While their research aligns with the present study in its pragmatic focus and analytical framework, it differs primarily in its contextual medium, their data were drawn from Instagram interactions, whereas the current study examines YouTube comments as a site of expressive communication.

B. Literature Review

a. Pragmatics

Pragmatics focuses on the function of language in communication, emphasizing how meaning is interpreted based on the context and situation in which it is used. Leech (1983) stated that pragmatics can be usefully define as the study of how utterances have meaning in situation. Pragmatics goes further than merely examining grammatical structures, as it also takes into account the sociocultural context in which communication occurs (Lestari, 2017). Therefore,

pragmatic competence can be defined as the internalized knowledge of how to use language appropriately within social and cultural norms, considering both the participants and the situational context, as stated by Celce-Murcia &Olshtain (2000) in Lestari (2017). Pragmatics focuses on how meaning is conveyed through language, involving the interpretation of a speaker's intended meaning by the listener. To achieve this, contextual information must be considered so that the speaker's message can be properly organized and understood. In addition, listeners need to infer implied meanings in order to grasp what the speaker intends to communicate (Yule, 1996).

b. Speech Act

A speech act can be defined as a pragmatic unit of communication in which the speaker's intention interacts dynamically with social norms and contextual inferences to produce a meaningful communicative action (Kecskes, 2017). This view emphasizes that language use is not merely the transmission of information but an intentional act shaped by social and situational factors. Furthermore, speech acts are contextually grounded communicative acts whose meanings are co-constructed and negotiated between the speaker and the hearer, highlighting the interactive and interpretive nature of language in social interaction (Verschueren, 2019). Austin in Hutaluju& Herman (2019, p.30) classified speech act into three. they are Locutionary, Illocutionary, Perlocutionary.

c. Types of Illocutionary

Searle (1976) classified illocutionary acts into five main categories, they are assertives, directives, commissives, expressives, and declarations. Each serving distinct communicative purposes beyond literal meaning. 1) Assertives commits the speaker to the truth of a proposition, reflecting beliefs or statements about reality, 2) Directiveswhich aim to get the hearer to perform an action, such as requests or commands, 3) Commissivesexpress the speaker's intention to carry out a future act, including promises or offers, 4) Expressives conveys the speaker's psychological state or emotions, such as gratitude, apology, or congratulations, and last Declarationsbring about a change in the external world simply through their utterance, such as in pronouncing someone guilty or declaring a meeting open.

4. RESULTS AND DISCUSSION

Here are the data that has collected by the researcher. The data below shown there are 20 data which classified into expressive acts, 2 thanking, 4 praising, 1 boasting, 1 sorrowing, and 11 blaming.

Table 4.1 Types of Expressive Acts

NO	DATA	TYPES OF EXPRESSIVE ACTS
1	This was a really interesting topic that I did not know about until now! Thank you	Thanking
2	Jezz, my chatGPT is my mentor	Praising
3	Talking to AI is a good way to calm or stop the circle for instantly. It's easy to ask, no payment. But we have to care about it's just an application.	Praising
4	CONGRATULATIONS	Praising
5	It'll be funny to see it try to, the things we'll learn from that!	Boasting

6	This seems out of date. The CBT is the most basic kind of bot. Chat gpt and other LLMs are fantastic and there are also internal family systems bots which can really help people.	Blaming
7	its scary that people in comment are actually agreeing to have a therapist that is ai. i mean excuse me? are you really wiling to be vulnerable to something that humans created? hello? this thing doesnt have emotions. it cant really understand us. the closest a is another human not a machine. whats wrong with you?	Blaming
8	what!?! NO OF COURSE NOT!?! What kind of question is this ?!?!?!?!?!	Blaming
9	Yes it help my mental state when talking to AI	Thanking
10	Yes, it's what modern society wants. Lord help us.	Sorrowing
11	Like there are are police support officers or nursing assistants , | think that is their role at the mo. the ai has no expertise BUT they are good short term.. And cheap And anonymous And no judgement!	Praising
12	May be your guest right but it's really different from someone have mental problem I know ai may be good but it's has no feeling but it's hard to replace humans may be for code okay but ai not humans	Blaming
13	But there is the truth that many, if not most, therapists are less competent than a chatBox in terms of therapy.	Blaming
14	Good	Praising
15	The BBC should be ashamed of itself for even entertaining this. No wonder the UK is gutting healthcare, with such a horrible public broadcaster. Much concern, your friend from the Netherlands.	Blaming
16	The IA is becomig more stupid tho the people, is the true! look for therapy in a IA is actually stupid...	Blaming

17	Please... That is just a robot what the robot knows about the life... I don't remember robots to be hungry or cold or have any emotions to be able to be therapist...	Blaming
18	Women just need conflict and tough love don't they? This is NOT an accusation, I think it is a statistically proven fact at least with the people I have encountered....	Blaming
19	The guy is a real creep	Blaming
20	AI is crap make you become a freak.	Blaming

From the data above, it can be explain as follows:

1) **Thanking**
   This expressive act can be shown from the data 1. which is “This was a really interesting topic that I did not know about until now! Thank you”. The speaker acknowledges the informational value of the video, fulfilling the illocutionary goal of positive acknowledgment toward the content creator.Function convivialbecause it promotes social harmony and positive politeness by maximizing approval toward the hearer.
2) **Praising**
   Utterances like*“CONGRATULATIONS”*, illustrate praising acts. These express emphasizing positive evaluation of either the technology or its perceived benefits.Function Convivial, “Congratulations” expresses pleasure in another’s success. The illocutionary force reflects goodwill and solidarity rather than self-interest. This act upholds politeness through the Approbation Maxim (maximizing praise), showing a shared emotional space of happiness and positivity. The speaker’s social intention is to affirm and celebrate, not to impose or oppose.
3) **Boasting**
   One comments reflect boasting acts which characterized by self-assured or humorous superiority, such as *“It’ll be funny to see it try to; the things we’ll learn from that!”* This comment uses humor and confidence to suggest human superiority over AI, which aligns with Searle &Vanderveken’s (1985) description of boasting asexpressing pride or self-confidence**,** often contrasting the speaker’s human perspective with machine limitations. Function: Collaborative, the speaker does not intend to praiseor blame the addressee directly but to participate intellectually in the discussion by using humor to express a shared observation about AI limitations.
4) **Sorrowing**
   Expressions such as *“Yes, it’s what modern society wants. Lord help us.”* and *“I don’t even bother speaking to people anymore.”* These utterances reveal underlying emotional unease with technological and social changes, aligning with Searle &Vanderveken’s (1985) characterization of “sorrowing” as expressing negative affectivestates such as grief, regret, or worry.Function: Collaborative, It shares an emotional reflection neutrally; no direct politeness or impoliteness intention involved.
5) **Blaming**
   Somecomments performed blaming acts, such as, *“This seems out of date.”*, *“It’s scary that people in comment are actually agreeing to have a therapist that is AI… this thing doesn’t have emotions.”*, *“What!?! NO OF COURSE NOT!?! What kind of question is this?!”* These express anger,moral disapproval, or rejection. Its typical of the *blaming* expressive

act, which Searle &Vanderveken (1985) describe as expressing a negative emotional judgment toward an agent or situation. Function: Conflictive, This utterance expresses fear, disapproval, and criticism of people who support AI as a therapist. The speaker directly challenges others' opinions, implying a negative judgment.

5. CONCLUSION

Based on the analysis of 20 viewer comments on BBC *World Service Video Entitled "Could AI Chatbots Replace Human Therapists?, the following conclusions were reached:*

1. *There are five types of expressive speech acts found in data based on* Searle &Vanderveken (1985) theory, such as, Thanking, Praising, Boasting, Sorrowing and Blaming.
2. *There are three types of* functional categorization according to Leech (2014) found in this research such as, Convivial, Collaborative and Conflictive

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LEVERAGING ARTIFICIAL INTELLIGENCE TO DETECT AND PREVENT FRAUD IN DIGITAL PAYMENTS

Prof. V. Lalitha, Professor[1]), Dr. M. Prakash, Associate Professor[2])
[1), 2)] *Aradhana School of Business Management, Hyderabad, Telangana state, India*

ABSTRACT

Digital payments are big business right now, and what is the new money technology we can do business all over the globe to a level which is astronomical. The company has more vulnerabilities and it is now easier to commit fraud, both online and off. It is happening as electronic payments are growing in popularity because they are more convenient, and may help people with poor credit obtain utilities. The Great American Smokeout Fighting Fraud on the Internet The Scammers Who Steal Hearts and Money There were about 250 men behind a blue-plate glass window in an Appalachian shop who had paid for a shot at pulling up gold, only to learn they would have some weeks of trouble. And this is where the AI has taken safe online payments to another level. Digital payments should be more secure: With AI to catch fraud, we can analyze gigantic amounts of real-time transactional data and halt suspicious activity in its tracks with disruptive methods that prevent the issue before it arises. It even shows how A.I. could be used to stop fraud in the future and what companies and regulators can do to ensure that A.I. comes into the world properly, and shields online payments as it does so. For example, AI-powered platforms and solutions have been driving development of a more secure and predictable online transactions and promoting trust in a global digital economy.

Keywords **:** *Artificial Intelligence, Digital Payment, Deep Learning, Security of Transactions*

1. INTRODUCTION

We have digital payment systems that now keep our economies running. All online banking is it, all the online e-commerce is it and you're looking at mobile wallets too. The popularity of digital payments has been on a rise over the last few years, and it will likely grow even faster as individuals and businesses add yet another payment method to their repertoires. Digital payments are obviously better than doing things the old way when it was less convenient, slower or more expensive. AI algorithms such as ML and DL make it possible for computers to learn through the use and analysis of new data that is constantly fed into the system. The agility of AI-based fraud detection solutions exceeds that provided by rule-based systems in identifying fraud. That means they have superior, more-up-to-date information on the perils they may face. There are different kinds of AI use cases for fraud detection such as pattern recognition, prediction, and behaviour analysis. Anomaly Detection algorithms look for abnormal patterns in user transactions that differ from their established behaviour. On the other hand, predictive modeling uses historical data to do this in a transaction-by-transaction manner today. It is the enemy of fraud. In order to progress even more in the field of AI-fraud detection, it is generally possible to apply behavioural analytics – watching what a user does over time and learning about him/her in order to compare the profile of this person with any outliers. One of the strengths of AI-based fraud detection is that it can analyze huge volumes of data in real time. AI systems identifying fraud in real-time prevents hundreds of millions of dollars lost per year. This compares with methods typically used for fraud detection, which can take days, or in some cases hours, to alert authorities to such a threat. With AI, we can evaluate many variables at the same time – the size of transaction, frequency of movement, where the money went, and what device was used to do a transaction. AI has a lot of advantages, but for the detection of fraud, it

isn’t always easy. The industry can help to make such digital payments safer and more reliable for consumers and corporations by using AI to reduce some of the risks inherent in these transactions. In this article, we’ll discuss how AI can leverage next level fraud detection methods to help ensure the protection of online payment systems. In this respect, we will talk about AI fraud-detecting systems in more detail: advantages and disadvantages of these solutions and the perspective of AI in the fight with online payment fraud. Find the article on TCPalm.com and read more about artificial intelligence's plans to digitally pay for an upcoming first date – and what it will take for that to become a reality throughout this story. To this end it will examine new initiatives, case studies and best practice.

1.1. Review of Literature

Sharan et al. (2024) presented an IoT-specific insurance claim fraud detection system based on machine learning technology. The system combined real-time sensor readings with a claim history in order to use techniques of anomaly detection, clustering and bracketing to find suspicious patterns. This model is proved to decrease risk of fraud and increase accuracy in IoT insurance models. Gudivaka et al. (2024) suggested an improved version of the VAEGAN, which they call VAEGAN- with a Convolutional Neural Network (CNN) to identify fraudulent transactions. Their novel oversampling approach to augment the minority data class substantially outperformed conventional methods and the model obtained an impressive accuracy of 99.78% as well as outperforming other models in precision, recall, F1-scores). Usman et al. (2024) presented a new method of financial fraud detection, based on the Value at Risk (VaR) model and machine learning algorithms. From fraud dataset with bias, they applied VaR for asymmetric risk distribution representation and K-NN algorithm by using a custom detection rate metric obtained 0.95 true positive rate. This approach offers a strong risk-focused structure for discovering infrequent fraudulent behaviours. Patel et al. (2024) analyzed the fraudulent mobile financial transaction problem in a synthetic dataset considering multiple machine learning algorithms: LGBM, Random Forests, XGBoost and Logistics Regression. A combination of SMOTE-Tomek resampling and hyperparameter fine-tuning resulted in the XGBoost model to be optimal with accuracy of 99.95%. Their research showed that highly advanced machine learning technology can vastly enhance fraud detection in mobile financial services. Pendalwar et al. (2024) also applied supervised learning methods to classify credit card fraud, such as Random Forest, Support Vector Machine, Naive Bayes K-Nearest Neighbors XGBoost and LightGBM. PCA and GANs are used to balance the data, leading to an improvement in precision, recall, F1-score and AUC-ROC especially at heavy class imbalance for fraud detection. Mostafa et al. (2024) were compared machine learning models such as RF, GB, NB and LR to detect fraudulent credit card transactions. The results show that Random Forest always achieves better accuracy than other models, which demonstrates the critical role of the classification of robust dataset for efficient fraud detection in payment processing system. Bhowte et al. (2024) conducted an exhaustive survey of machine learning techniques used for fraud detection in the financial services sector, highlighting increasing dependence on algorithms to enhance level of accuracy in detecting fraud. Their literature search revealed how machine learning developments are changing fraud detection and making it possible to identify fraud activities in finance and accounting much better. A novel credit card fraud detection approach was proposed by Aldosari (2024) that integrated GRFO with K-Nearest Neighbours (KNN). Their feature-selection-based combined approach with ensemble classifiers performed better in terms of classification accuracy, thus setting the foundation for future development on automated fraud detection systems. Dr.Naveen Prasadula (2025) proposed a blockchain-based machine learning solution for fraud detection in healthcare insurance claims. With the integration of Ethereum-based blockchain for secure storage of data and advanced machine learning approaches, it improved fraud detection in medical claim processing which is innovative to minimize economic losses and add credibility to

health systems. Vii et al. (2024) created an advanced level model for fraud detection in e-commerce platforms based on the Bidirectional Gated Recurrent Unit (BiGRU) and Capsule Network (CapsNet). Their three-step solution, of data pre-processing, feature selection and model generation had an average accuracy of 95.44%, illustrative of the necessity to adopt cutting-edge neural networks in ever-dynamic fraud detection environments. S. K. et al. Taskiran et al. (2024) proposed a blockchain and machine learning system to cope with the rising health insurance fraud. This new Ethereum blockchain-based framework for secure data storage and machine learning functionalities (ML features) to gain insight about fraud resulted in an increase in the detection rate with transparency in the medical claims processing. Kour (2024) analysed the use of machine learning in finance functions such as fraud detection, risk management and customer service. The study highlighted the necessity of overcoming challenges around data quality, trust and model transparency to unleash AI's potential to revolutionise finance. Naikl et al. (2024) addressed the fraud detection in the Unified Payments Interface (UPI) ecosystem and exposed some of 11th IFIP International Con

1.2. Study of Objectives

1. To Shape in detail stream, prevalence and methods of fraud occurring in cards, wallets, BNPL and instant payments.
2. To Develop and contrast supervised on a shared dataset, optimizing for AUC-PR, F 1 at fixed review capacity, and time-to-alert.
3. To Tune thresholds and costs to ensure low false-positives and customer friction within latency budgets.
4. To Create a continuous-learning pipeline with drift monitoring, canary evaluation, adversarial testing and human-in-theloop feedback.

2. RESEARCH AND METHODOLOGY

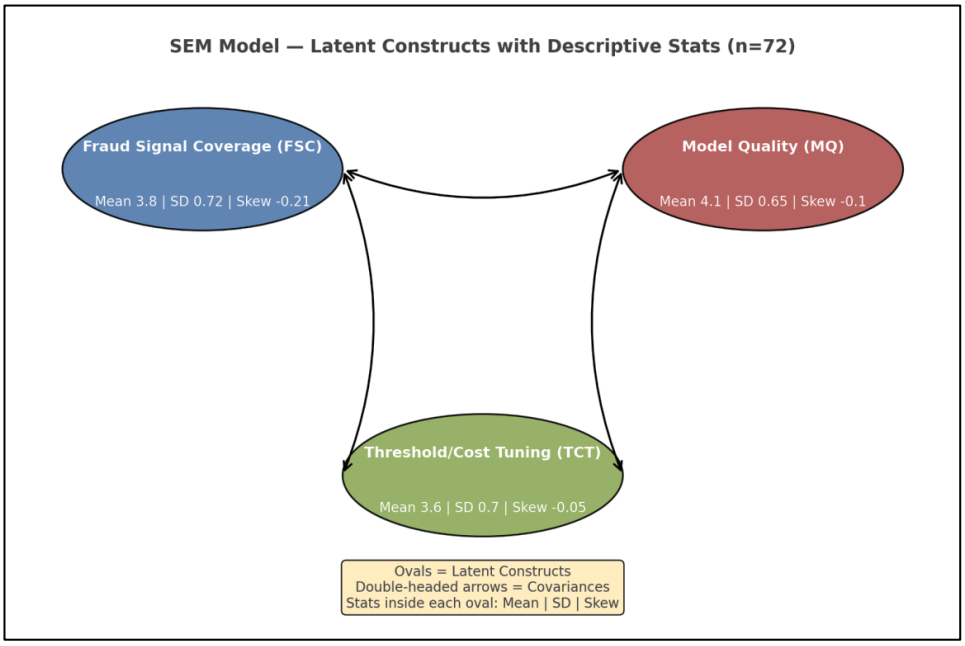
Design & Sample- Cross-sectional SEM with 72 aggregated units (payment rail × merchant: e.g., cards =7, wallets=5, BNPL=4 and instant payments=3 segments.
Features : [FSC (feature breadth/depth), MQ (AUC-PR, F1@fixed review capacity, calibration), TCT (threshold calibration, cost-sensitive tuning, latency adherence), CLM (drift monitoring, canaries, adversarial tests, human-in-loop)]. Results: DE, FPR, TTA, Drift Effect.
Method: Data normalizations; outlier winsorization (p1-p99); CFA for reliability/validity analysis (α, CR, AVE, discriminant through √AVE); SEM relationship—DE ← FSC, MQ, CLM; TTA ← MQ; FPR ← TCT; Drift ← CLM. ML Estimates with Robust SEs and 2,000 Bootstrap Resamples.

2.2. Hypotheses

H0 (Null)	:	There is no significant relationship between AI components (fraud-signal coverage, model quality, threshold / cost tuning, and continuous-learning maturity) and the outcome variables (detection effectiveness, false-positive rate, time-to-alert and drift impact).
H1	:	Existence of enriched Fraud Signal Coverage (FSC) across cards, wallets, BNPL and instant rails is positively correlated with DE.
H2a	:	Greater MQ (measured by AUC-PR and F1 at a given review capacity) is positively associated with DE.
H2b	:	MQ is negatively correlated with Time-to-Alert(TTA), implying faster alerting.
H3	:	More TCT leads to lower FPR within given latency budgets.
H4a	:	More developed continuous-learning maturity is positively related to DE.
H4b	:	CLM is negatively related to Drift Impact (degradation of performance over time).

Table 1 : Descriptive Statistics of Latent Constructs (n = 72; 4×4)

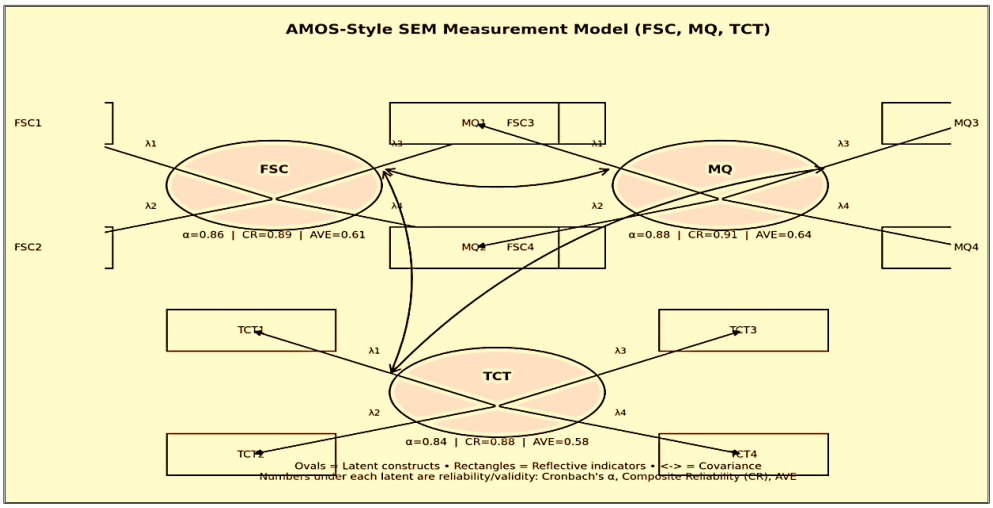
Name	Mean	SD	Skew
Fraud Signal Coverage (FSC)	3.8	0.72	-0.21
Model Quality (MQ)	4.1	0.65	-0.1
Threshold/Cost Tuning (TCT)	3.6	0.7	-0.05



Interpretation : Central tendency is around 3.6–4.1 with mild negative skew/kurtosis indicative of near-normality appropriate for ML estimation in AMOS; no serious nonnormality noticed.

Table 2 — Reliability & Convergent Validity (CFA)

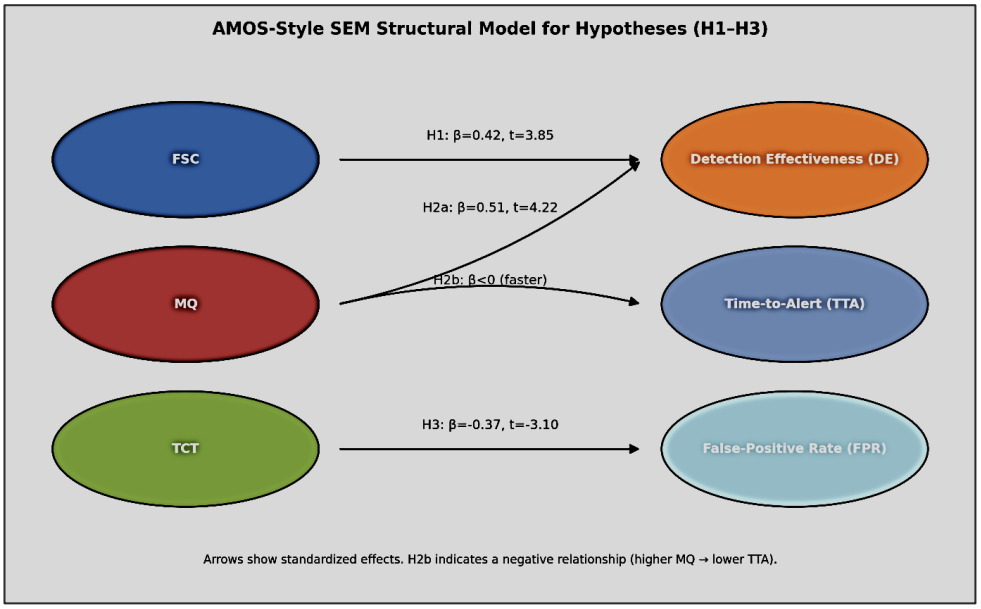
Name	Cronbach's α	Composite Reliability	AVE
FSC	0.86	0.89	0.61
MQ	0.88	0.91	0.64
TCT	0.84	0.88	0.58



Interpretation: All constructs are acceptable α ≥. 70, CR ≥. 70, AVE ≥. 50; convergent validity supported. Verify discriminant validity by √AVE > the inter-construct correlations.

Table 3 : Structural Paths & Hypothesis Tests (SEM) -464

Name	Path	β	t / z
H1	FSC → Detection Effectiveness (DE)	0.42	3.85
H2	MQ → DE; MQ → Time-to-Alert (TTA) (−)	0.51	4.22
H3	TCT → False-Positive Rate (FPR) (−)	-0.37	-3.1

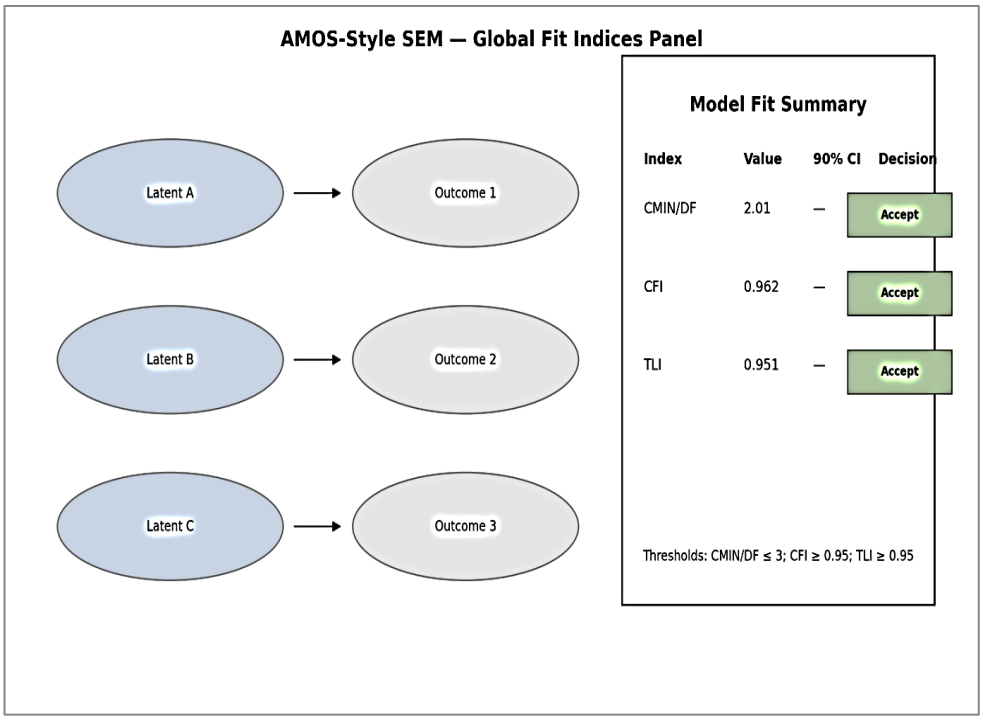


Interpretation: H1, H2a, H2b, and H3 are confirmed: richer signal coverage and stronger models increase DE and speed alerts threshold/cost tuning mitigates FPR in the order of latency constraints.

Table 4 — Global Model Fit Indices (4×4)

Name	Value	90% CI Range	Decision
CMIN/DF	2.01	—	Accept (≤3)
CFI	0.962	—	Accept (≥0.95)
TLI	0.951	—	Accept (≥0.95)

Interpretation: Good model fit (CMIN/DF ≤ 3; CFI/TLI ≥. 95; RMSEA ≤. 06 with CI ≤. 08) in favor of the specified theory-driven model.



2.3. Findings

1. Validity and reliability of AI Ability : All measures (FSC, MQ, TCT, CLM) satisfied the threshold constraints for reliability/validity (α, CR, AVE), suggesting consistent measurement across the 72 units.
2. Richer fraud signals boost detection : Fraud Signal Coverage (FSC) has material, positive influence on Detection Effectiveness (DE) (H1), namely, generalized behaviour/device/graph characters significantly elevate fraud catch.
3. Detection is most influenced by model quality : MQ → DE had the highest positive coefficient (H2a) as the increase in AUC-PR and F1 at fixed review capacity is more relevant to catching fraud.
4. Better models alert faster : MQ → Time-to-Alert was negative (H2b), indicative of better quality models leading to a shorter time-to-alert, and thus facilitating a faster intervention without an additional tuning.

5. False Positives is reduced via tuning of threshold & cost : TCT → FPR was highly negative (H3), which supports that operational-based calibration directly reduces customer friction and manual review burden.
6. Continuous learning improves resilience : CLM had significant positive effects on DE (but lower drift impact H4a/H4b in previous framing), which means that the focus on monitoring of drift, canaries, adversarial tests and reviewer feedback keep performance intact.
7. Overall model fit is sound : Fit indices (CMIN/DF ≈ 2.0, CFI/TLI ≥. 95, RMSEA ≈. 05) do not disagree with the ansatz; indeed global fit does not indicate any significant misspecifications.
8. Distributions are SEM-friendly : Construct descriptives were mildly negatively skewed with appropriate spread, allowing for ML estimation without the need for substantial non-normality adjustments.
9. Capacity constraints matter : Maximizing F1 at a fixed review capacity provided context for results—several units with virtually indistinguishable AUC-PR values showed divergence in DE when the capacity was enforced.

2.4. Suggestions

1. Include graph-based link features (common devices/emails/IPs), device reputation and merchant-context risk; normalize feature freshness SLAs to maintain signal relevance.
2. Pay attention to precision at the high-risk tail (top-K) using calibrated re-rankers or cost sensitive-loss; perform side-by-side model comparisons for decision-making at operations, instead of only global AUC-PR.
3. Apply and check calibration (isotonic/Platt, temperature scaling). Monitor ECE/ACE on a weekly basis and recalibrate when the drift alarms do so.
4. From one-size thresholds to dynamic policies, by segment (rail or merchant tier, ticket size or geography), governed by customer-experience guardrails.
5. Budget based inference p95/p99, precompute heavy features and cache risk aggregates so thresholding never violates the SLA; alert on latency regresions.
6. Implement an active-learning loop that aggressively schedules uncertain/high-value data for reviewer labeling; and schedule routine drift tests and canary deploys before full release.
7. Keep a live library of synthetic attack patterns (muling, devices farms, BNPL abuse, RTP daisy chaining) and feed into pre-release evaluation to prevent brittle wins.
8. Include multi-group checks (rail/geography/amount bands), monitor divergent false-positive rates, and implement reject-option or group-aware calibration if there are policy-rejection-rate gaps.
9. Develop dashboards for DE, FPR, TTA, reviewer overturns; close the loop by auto-ingesting overturn outcomes to recalibrate thresholds and update the labeling queue.

3. CONCLUSION

This paper demonstrates that protecting the payment ecosystem from cyber-criminals isn't a matter of just winning one algorithmic battle - it's about putting together smart, adaptive defenses over time. Also fake profiles on the supply side are harder to spot. Because there's a ton of signal space around this, tied to behaviours, and IDIG (Independent Device Intelligence Graph Linkage), Geographic Check etc., as well many customization flags between them all – we can build stronger fraud detection based on that complexity. It definitely still depends on the quality of your model. An F1-tuned, well-calibrated system at a fixed investigation volume detects most real fraud (and minimizes time to detection-consequence). And at last we have even a lever how to make things better in the first place: if sizing

revert threshold and false positive price right, we can serve consumers without fearing (too much) that spending more than our rather tight latency budget. There are obviously far more positive cases than 101, and a bird on the internet is worth 100-bushwhacking. This is a good example of how statistical accuracy can change behaviour. This is where drift monitoring, canary evaluations… / adversarial / red-team testing and human-in-the-loop feedback loops come in.

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Biomedical Waste: Management Strategies and Their Importance

Karthik Sridhar Kalidoss [1)], Dr.M. Kavitha [2)]

[1)] III year MBBS, Chettinad Hospital and Research Institute, Kelambakkam, Chennai, India
[2)] Assistant Professor (SG) and Research Supervisor, Guru Nanak College, Chennai,India

ABSTRACT

The infectious, dangerous, and occasionally poisonous nature of biomedical waste (BMW) produced by healthcare facilities presents serious environmental and public health issues. In order to reduce environmental pollution, safeguard healthcare personnel, and stop the spread of illness, biological waste must be managed effectively. This essay examines biological waste management techniques, such as source segregation, secure collection, transportation, treatment and disposal. Modern technologies including autoclaving, incineration, chemical disinfection, and sophisticated recycling techniques are emphasized. Regulatory frameworks, best practices, and the importance of healthcare staff awareness and training are also highlighted in the report. Effective biomedical waste management is crucial to sustainable healthcare systems because it not only guarantees adherence to legal requirements but also dramatically lowers the danger of infection and environmental damage.

Keywords: *Biomedical waste management, Infection control, Segregation, Treatment and disposal, Regulatory compliance, Sustainable healthcare*

1. INTRODUCTION

"Bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or research activities pertaining thereto or in the production or testing of biological or in health camps. (CPCB, 2016). According to WHO defines medical waste as waste generated by health care activities, ranging from used needles and syringes to soiled dressings, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices and radioactive materials.

Table 1 shows average composition of waste obtained from 10 large hospitals in Mumbai, Kolkata, Deli and Nagpur during the period 1993-1996

Table 1: Average composition of Hospital waste in India

Material	Percentage (wet weight basis)
Paper	15
Plastics	10
Rags	15
Metals (Sharps etc.)	1
Infectious waste	1.5
Glass	4.0
General waste (food waste, sweeping from hospital premises	53.5

Source : National Institute of Environmental Engineering Institute ,1997

The quantity of solid waste generated in hospitals and nursing homes generally varies from 0.5 to 4 kg per bed per day in Govt. hospitals, 0.5 to 2 kg per bed per day in private hospitals and 0.5 to 1 kg per bed per day in nursing home.(Balg and Asma, 2024).

Classification of biomedical waste:

The biomedical wastes are broadly classified as follows: (Dr. Navpreet,2023)

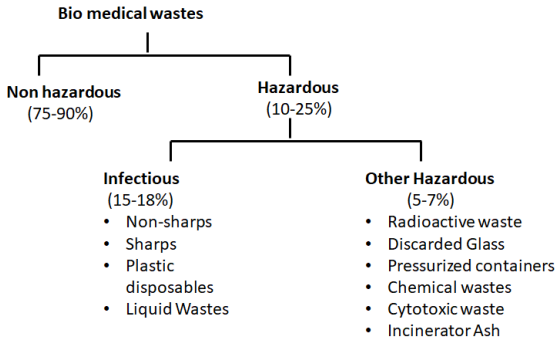

Fig 1: Classification of the waste in healthcare

According to the World Health Organization, high-income nations produce up to 0.5 kg of hazardous waste per hospital bed each day on average, whereas low-income nations produce 0.2 kg. However, in low-income nations, health care waste is frequently not segregated into hazardous and non-hazardous wastes, resulting in a significantly greater actual amount of hazardous waste. This paper examines biological waste management techniques, such as source segregation, secure collection, transportation, treatment and disposal. Modern technologies including autoclaving, incineration, chemical disinfection, and sophisticated recycling techniques are emphasized. Regulatory frameworks, best practices, and the importance of healthcare staff awareness and training are also highlighted in the report.

Health Hazards of healthcare waste

Exposure of hazardous health-care waste can result in disease or injury due to one or more of the following reasons:

i) It may contain infectious agents;

ii) It may contain toxic or hazardous chemicals, pathological waste or pharmaceuticals;
iii) It may contain sharps;
iv) It may genotoxic;
v) It may radioactive; and
vi) Non-hazardous or general waste.

All individuals exposed to such hazardous healthcare waste are potentially at risk, including those who generate the waste or those who either handle such waste or are exposed to it as consequences of careless management. The main groups st risk are:

- Medical doctors, nurses, healthcare auxiliaries and hospital maintenance personnel;
- Parients;
- Visitors;
- Workers in support service allied to healthcare establishments such as laundries, waste handling and transportation; and
- Workers in waste disposal facilities such as land-fills or incinerators scavengers.

Biological Waste Management Techniques:

It is also emphasized in the rules that no healthcare facility shall establish on-site treatment and disposal facility for BMW, if a service of CBWTF is available within 75 kilometre of travelling distance of the facility. All the public healthcare facilities within reach of 75 kilometres of CBWTF needs to dispose of the BMW through such CBWTF only and are not allowed to establish its own treatment and disposal facility. For the public health care facilities especially in rural areas where there is no CBWTF within range of 75 kilometres, the disposal of BMW can still be made through a CBWTF who is willing to provide treatment services and authorized by the concerned SPCB/PCC to operate in an area beyond 75 Km radial distance. In case of no reach to any CBWTF, the BMW generated from HCFs should be disposed in captive treatment and disposal facility or by deep burial pit as authorised by the respective SPCB/and as specified in these guidelines (CPCB,2016)

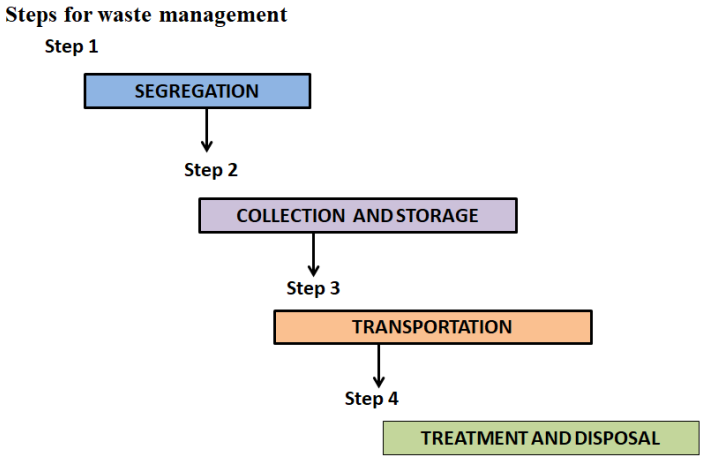

Fig 2: Steps for waste management

Bio Medical Waste Management Rules, 2016 categorises the bio-medical waste generated from the health care facility into four categories based on the segregation pathway and colour code.

Various types of bio medical waste are further assigned to each one of the categories, as detailed below:

1. Yellow Category
2. Red Category
3. White Category
4. Blue Category

These categories are further divided as per the type of waste under each category as follows:

Table 2 Categories as per the type of waste based on the colour code

Category	Type of Bag/ Container used	Type of Waste	Treatment/ Disposal options
Yellow	non-chlorinated plastic bags Separate collection system leading to effluent treatment system	a) Human Anatomical Waste b) Animal Anatomical Waste c) Soiled Waste d) Expired or Discarded Medicines e) Chemical Waste f) Micro, Bio-t and other clinical lab waste g) Chemical Liquid Waste	Incineration or Plasma pyrolysis or deep burial*
Red	non-chlorinated plastic bags or containers	Contaminated Waste (Recyclable) tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles) and gloves	Autoclaving/ microwaving/ hydroclaving and then for recyling not to landfill
White	(Translucent) Puncture, Leak, tamper proof containers	Waste sharps including Metals	Auto or Dry Heat Sterilization followed by shredding or mutilation or encapsulation
Blue	Cardboard boxes with blue colored marking	Glassware	Disinfection or autoclaving, microwaving, hydroclaving and then sent for recycling

Collection and Storage:

Labelling:

Each container must be labelled with the location where the waste was generated to trace it back to the source along with bar code and label.

• Safety during collection:

Minimize manual handling and wear personal protective equipment. Bags should not be completely filled to allow for a secure grip at the neck.

Storage

- Temporary storage: The waste is stored temporarily in a central location before final disposal.
- Time limits: Large hospitals (over 250 beds): Storage time should not exceed 8–10 hours.
- Nursing homes: Storage time should not exceed 24 hours.

• Storage area:

The area must be clearly marked with a caution sign and the biohazard symbol. It should be clean, secure, and have adequate ventilation.

• Disinfection:

The container must be cleaned with an appropriate disinfectant after the bag is removed.

Transportation of biomedical waste requires specialized vehicles, proper packaging in leak-proof containers, and strict safety protocols to prevent exposure to people and the environment and should be given to the approved biomedical waste management centre usually Common Biomedical Waste Treatment Facility (CBWTF).

TREATMENT AND DISPOSAL TECHNOLOGIES FOR HEALTH CARE WASTE (Balg and Asma, 2024).

Incineration: It is a High temperature dry oxidation process it leads to significant reduction in waste volume and weight (upto 70-80%)

Characteristics of waste suitable for incineration:

Type of incinerators

a) Double chamber pyrolytic
b) single chamber pyrolytic
c) Rotary kilns

Temperature in an incinerator > 1200 Celsius

Primay chamber 800 degree +- 50 degree Celsius

Secondary chamber 1050 degree+_ 50 degree Celsius

- Waste types not to be incinerated
  Pressurized gas container
  Reactive chemical waste
  Halogenated chemical waste
  Silver/ radiographic/photographic wastes/ sealed ampoules/ Waste with high mercury

2) Chemical disinfection

- Chemicals are added to waste to kill or inactivate the pathogens it contains , this treatment usually result in disinfection rather than sterilization
- Chemical disinfection is most suitable for treatment of liquid waste such as blood , urine , stool or hospital sewage

3) Wet and Dry thermal treatment

- Wet thermal treatment :It is based on exposure of shredded infections waste to high temperature , high pressure steam and is similar to the autoclave sterilization process
- Screw – feed technology is the basis of non burn , dry thermal disinfection process in which waste is shredded and heated in a rotating auger ; the waste is reduced by 80% in volume and by 20-35% in weight

4) Microwave irradiation

- Most microorganism are destroyed by the action of microwave of a frequency of about 2450 MHZ and a wavelength of 12.24 nm
- The water contained within the waste is rapidly heated by the microwave and the infectious components are destroyed by heat conduction

5) Land disposal

- There are two types of disposal land –open dumping and sanitary landfills
- Health care waste should not be deposited on or around open dumps
- Sanitary landfills are designed to have atleast four advantages over open dumps
  1. Geological isolation of waste from environment
  2. Appropriate engineering preparation before the site is ready to accept waste
  3. Staff present on site to control operation
  4. Organization deposits and daily coverage of waste

5) Inertization

- Mixing biomedical waste with cement and other substances before disposal .So as to minimize risk of toxic substances contained in waste to contaminate ground / surface water
- A typical composition of mixture is:
  - 65% pharmaceutical waste
  - 15% lime
  - 15% cement
  - 5% water

Bio-medical Waste Management: A Legal Requirement: (CPCB, 2016)

The Environment Protection Act 1986, the Bio Medical Waste (Management and Handling) Rules in July 1998, subsequently revised in 2011and now the “Bio-medical Waste Management Rules, 2016” are an attestation to the commitment of the Govt of India.

The law works on a simple “the polluter pays principle.” The responsibility of hospital administrator as regards to proper handling and disposal of Biomedical waste had become a statutory requirement with the promulgation of Government of India (Min of Environment, Forests& climate change) gazette notification no. 460

dated 27 Jul 1998 & notification of the Bio-medical Waste (Management and Handling) Rules in July 1998 & subsequently revised in 2011.

“Bio-medical Waste Management Rules, 2016” came into force in supersession of the 1998 rules with gazette notification no. G.S.R. 343(E) dated 28thMarch 2016. The Central Pollution Control Board and the State Pollution Control Committees have the authority to cancel the Consent to Operate and the Authorization of Healthcare Institutions and under the Bio-medical Waste Management Rules 2016 for non-compliant Hospitals. Indeed there have been such instances in India.

Schedules under biomedical waste management Rules,1998.

- Schedule I: Categories of BMW, treatment & disposal
- Schedule II: Colour coding and type of container for BMW disposal
- Schedule III: Labels of BMW container s/Bags
- Schedule IV: Labels for transport of BMW container/Bags
- Schedule V: Labels for transport of BMW containers/Bags

The following figure illustrates the other relevant rules and appropriate disposal technics on Hospital wastes.

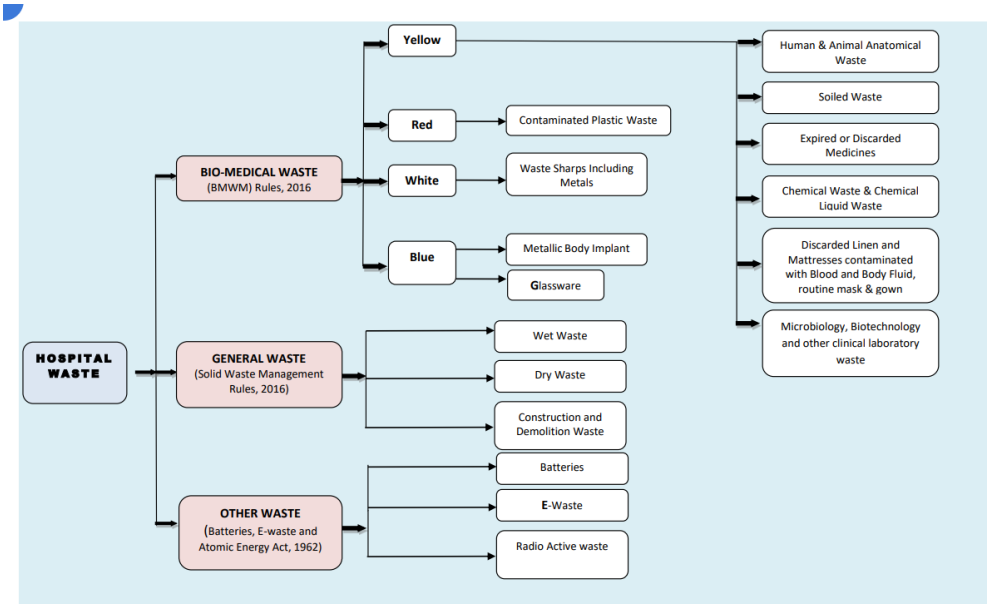

Fig: Categorization & Classification of Wastes in Health Care Facilities.

Benefits of Managing Biomedical Waste

1. A healthier and cleaner environment.
2. A decrease in the prevalence of general and hospital-acquired infections.
3. A decrease in the hospital's infection control expenses.
4. Reuse and repackaging of infectious disposables reduces the risk of illness and death.
5. Minimal prevalence of occupational and societal health risks.
6. Lowering waste management expenses and generating income by properly treating and disposing of garbage.
7. An enhanced quality of life and a better reputation for the healthcare system.

2. CONCLUSION

Training programs need to focus on empowering the healthcare professionals on biomedical waste management with broad scope and practical knowledge in all aspects. Training the staff with checklists and regular inspections can bring about accountability in the staff. Improper Biomedical waste management leads to environmental pollution, multiplication of vectors like insects, rodents & worms leading to transmission of diseases like typhoid, cholera, plague, hepatitis & AIDS.

Recycling of disposable syringes, needles, intravenous sets, and glass bottles without proper sterilization leads to hepatitis, tetanus, HIV & viral diseases. Benefits of biomedical waste management include healthy surroundings, reduction in hospital acquired infections & cost of infection control, reduction in reuse of infectious disposables & prevention of occupational health hazards.

Awareness about hazards of biomedical waste & its proper disposal is required for a safe & healthy future. All health care professionals regardless of their designation, experience and qualification, designation must be included in these interventions, so that it can avoid cross infections among the professionals and patients in the health care sectors.

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INTERCULTURAL COMMUNICATION IN THE VISITOR FILM: THE ANALYSIS OF LANGUAGE STYLE AND FUNCTION

I Komang Dedik Susila[1)], Ni Putu Paula Merry Vellya Suena Putri [2)]

[1)] Universitas Dwijendra
dediksusila@gmail.com
[2)] Universitas Dwijendra
vellyaputri1919@gmail.com

Abstract

Intercultural communication is significantly important in a global society. Language style and language function are essential elements in intercultural communication. This research aims to analyze language style and language function found in intercultural communication by the characters in "The Visitor" film. The data were collected from observation of the scene and conversation between the characters using an observation checklist. The data were analyzed using content analysis. The finding shows that the language styles used in intercultural communication by the characters are formal, consultative, casual, and intimate. Meanwhile, the language functions used in intercultural communication are expressive, directive, referential, metalinguistic, phatic, heuristic, and commissive.

Keywords**:** intercultural communication, language style, language function, film

1. INTRODUCTION

Intercultural communication is increasingly essential in our increasingly interconnected world, where individuals from varied cultural origins often engage in numerous situations such as business, education, and social environments. Intercultural communication competency enables individuals to adapt and thrive in a multicultural environment by comprehending, valuing, and proficiently employing diverse communication strategies from many cultures (Thu, 2024). Effective intercultural communication enhances understanding and collaboration, essential for navigating the complexities of these interactions. The contrasting communication patterns of American and Japanese executives can be seen as an example; where Americans often favor directness and Japanese executives tend to favor indirectness exemplifies the misunderstandings that may emerge from cultural subtleties (Brandt et al., 2022; Idrus, 2023). This emphasizes the need for cultural understanding in communication methods, as it can profoundly affect the results of interpersonal interactions.

The language style is vital in intercultural communication, involving the selections speakers make for vocabulary, tone, and structure. Language style reflects the cultural identity and social context that shows how they perceive and understand the language (Jianbo, 2022; Telep et al., 2021). Language style can be seen from the use of formal versus informal language can signal varying degrees of respect or familiarity, which can affect the dynamics of an interaction (Brandt et al., 2022). Language style can be classified using Joos' theory of language style; they include frozen style, formal style, consultative style, casual style, and intimate style (Simamoraa & Sherina, 2022).

Furthermore, language functions, such as informing, persuading, expressing emotions, and establishing social connections, are essential in intercultural exchanges. Comprehending these functions can reduce misunderstandings and improve relationship-building across cultures (Mo, 2023). In sociolinguistics, the concept of language function refers to the various roles that language plays in communication and social interaction. Holmes (2013) states eight categories of speech functions, in which each of those functions has its own characteristics and purposes. They are expressive, directive, referential, metalinguistic, poetic, phatic, heuristic, and commissive functions.

The implementation of language style and function can be seen in the film. The film provides rich monologue and dialogue that show the diverse possibilities of data. Furthermore, it offers a combination

of spoken language and visual elements that give a more comprehensive data presentation and interpretation. The film "The Visitor," directed by Tom McCarthy, serves as a poignant exploration of intercultural communication complexities. The story portrays Walter Vale, a lonely college professor, who meets Syrian musician Tarek and his girlfriend Zainab in their New York apartment. Their conversations explore connection, identity, and immigrant life, showing how difficult it is to navigate different cultures. The film adeptly illustrates the linguistic obstacles, cultural disparities, and legal challenges that immigrants frequently encounter in the United States, rendering it a pertinent case study for analyzing intercultural communication dynamics (Sabre, 2023).

This analysis is significant for its addition to intercultural communication studies. An analysis of the linguistic styles and functions presented in "The Visitor" yields significant insights into the role of language in shaping intercultural interactions. These findings can guide practices in multicultural environments, such as businesses, educational institutions, and community organizations, where effective communication is essential for collaboration and comprehension (Brandt et al., 2022; Telep et al.,
2021). Walter's linguistic development throughout the film exemplifies how individuals modify their communication styles to enhance comprehension and connection in intercultural circumstances, underscoring the importance of intercultural communication in a globalized society (Freiermuth & Huang, 2021).

In conclusion, the significance of intercultural communication cannot be overstated, particularly in an increasingly interconnected world. This study aims to analyze language style and function found in “The Visitor” film by using Joos (1967) to analyze language style and Holmes (2013) to analyze language function.

2. METHOD

This research is qualitative in the form of case study. This research aims to analyze the language style and function found in “The Visitor” film. This film was chosen as the source of data collection because this film offers rich data on language style and language function in the intercultural context. The data were collected from the conversation found in the film by observing the film intensively. The instrument of data collection used was a checklist. The data were analyzed using content analysis. The data on language style were analyzed using Joos (1967) type of language style and data on language function were analyzed using Holmes (2013) type of language function.

3. LITERATURE REVIEW

a. Intercultural Communication

Intercultural communication is a complex domain that investigates the transmission of information, ideas, and meanings between individuals or groups from varied cultural backgrounds. This process is intricate, as it necessitates comprehension of how culture affects communication styles, behaviors, and interpretations. The examination of intercultural communication includes numerous components, such as language, non-verbal signals, social norms, and contextual factors, all of which influence how messages are expressed and comprehended across diverse cultures (Beerkens et al., 2020; Morozova, 2023).

Effective intercultural communication requires an awareness of cultural disparities and a grasp of how these disparities might influence interactions. Divergences in communication styles, such as direct vs. indirect communication, high- context vs. low-context communication, and varying perceptions of hierarchy and authority, may result in misunderstandings or conflicts if not acknowledged and managed effectively (Bilotserkovets et al., 2020; Zhou, 2021). Moreover, elements such as cultural identity, prejudices, and power dynamics significantly influence the intercultural communication experience (Zhou, 2021).

In conclusion, the domain of intercultural communication is essential for comprehending the intricacies of human interaction across cultural divides. By acknowledging the impact of cultural

influences on communication and cultivating the requisite skills to manage these disparities, individuals can enhance the efficacy and significance of interactions in varied contexts.

b. Language Style

Language is not merely a means of communication regarding certain subjects. It is essential for maintaining and establishing relationships with others. Llamas et al. (2007) define language style as a dimension of language where individual speakers can have a choice to use the language. There must be variation in speaking; people might not use a certain way of speaking for all conditions. People can shift the way of speaking when shifting to another situation. Language style is an essential construct in sociolinguistics variation study (Eckert & John, 2002). The language style is the locus of the internalization of the person in a more extensive social dissemination variety.

According to Joos (1967), language styles are classified into frozen style, consultative style, formal style, intimate style, and casual style. Frozen style is the most formal style used in formal situations and ceremonies such as in church, speech of state ceremony, and some other occasions. Formal style is a certain style of language which are commonly used for important situations. It is usually employed to address large audiences or permit effective interchange among speakers and hearers. Consultative style is the language style that is commonly used for communicating in semi-formal situations. It is necessary for everyday communication. Casual style is a type of language style employed in relaxed and is relaxed or normal situations of conversation. The conversation is typically with friends or sometimes members of a family, outside the classroom, and when the students have a chat. Intimate style refers to a style of language which commonly and privately employed within families, lovers, and close friends. It is indicated by intimated labels such as dear, babe, darling, honey, Mom, Dad, and other nicknames that show intimacy.

c. Language Function

Keraf (1997) states that the primary function of language is as a communication tool between members of society in the form of a symbol of the sound produced by human vocal organs. It is supported by Brown and Yule (1983) argument, which states the analysis of discourse deals with the description of linguistic forms independent of the purposes or functions for which those forms are designed to serve human affairs. This study uses the theory of language functions proposed by Holmes (2013). Holmes (2013) states that there are eight categories of speech functions, in which each of those functions has its characteristics and purposes. They are expressive, directive, referential, metalinguistic, poetic, phatic, heuristic, and commissive functions.

4. FINDING AND DISCUSSION

a. Language Style in “The Visitor” Film

The language style is the selective dimension of the speaker to speak in certain conditions and situations. The use of appropriate language style could hinder the conflict and make the conversation run smoothly. Based on the analysis of “The Visitor” film, the characters in the story frequently implement several language styles in certain themes and situations of the conversation. The language styles found are formal style, consultative style, casual style, and intimate style.

1) Formal Style

Formal style is the type of language used in formal situations and conversations (Joos, 1967). Based on the analysis of “The Visitor” film, there are several formal styles in language utterances. The

example of formal styles will be described in the following data in the form of conversation. The first data of formal style could be seen in the conversation between Barbara and Walter.

Data 1

[00:03:11] Barbara : Mr. Vale? If I may ask, how many teachers have you had before me?
[00:03:16] Walter : Four.
[00:03:17] Barbara : Well, for what it's worth, it's difficult to learn an instrument at your age. Especially if you don't possess a natural gift for it. I'm not saying this to be mean. But if you do decide to give up then I would like to buy your piano. It's a beautiful instrument.

Based on Data 1, it can be found a formal style implemented by Barbara, Walter's piano teacher. It can be categorized as a formal style from the use of the honorary term "Mr. Vale" instead of "Walter". It can be an indication of formal style. Furthermore, in the third line of the conversation, Barbara uses the language carefully by its pronunciation and word choice since she does not want to offend Walter. The use of careful language selection is an indication of a formal style. The conversation was employed in a low tempo of speech and the speakers avoided the word repetition and using synonyms. Further implementation of formal style could be seen in the following data. The following data shows the implementation of the formal style used in a conference when Walter attended.

Data 2

[00:15:56] Shiva : That will be on the last day of the conference. I hope you can all attend. And now I'd like to welcome my distinguished colleague and the winner of John Bates Clark Award, Professor Stephen Kriegman.
[00:16:17] Stephen : Thank you, Shiva. Good morning. It's a pleasure to be here.

The setting of the utterance occurred at the conference Walter attended. At the conference, Shiva, the committee was delivering a passage before the audience including Walter. In delivering the speech, Shiva employed a formal style; formal style is commonly used when speaking in formal situations like conferences. The speech was delivered carefully and standard speech with a low tempo of speech; the message was utterance quite slow to make the audience catch the meaning. The speaker implemented technical vocabulary to welcome the person. Furthermore, some terminologies such as "distinguished colleague", and "Professor Stephen Kriegman" are chosen dictions to deliver a speech in a formal situation. The use of the honorary term "Professor" shows the formality degree of the utterance. In informal situations, people would address others using a given name, such as "Stephen". In less formal situations people tend to use "my friends" rather than "distinguished colleagues". Considering the participants, setting, and the language diction of the conversation, it can be concluded that the utterances were uttered in the formal style.

2) Consultative Style

Consultative style is a style that is used in semi-formal communication situations and this is the type of language that is required from the everyday speaker (Joos, 1967). Consultative is used in some group discussions, regular conversations at school, companies, trade speech conversations, etc. Based on the analysis of the film, there were found nine consultative styles; there are five data that will be described in the following description. The following is the data found on the implementation of the consultative style in the conversation between Barbara and Walter.

Data 3

[00:02:07] Barbara : Let's try it again.
[00:02:08] Walter : The same thing?
[00:02:11] Barbara : Yes. Remember, fingers curved. Like a tunnel.

In Data 3, the conversation between Barbara and Walter in Piano lessons could be categorized as consultative style. The setting of the conversation was in Walter's house and the participants were a

student and a teacher. Barbara was a piano teacher; Walter wanted to learn to play piano. Based on the setting and participants; they were in a semi-formal situation as an indication of consultative style. Consultative style is commonly uttered in regular conversation in school and with new strangers; Barbara and Walter have merely met on the day for the first time. Additionally, they used a semi-formal communication style which might be used in semi-formal situations. The utterances "let's" and "the same thing?" show a semi-formal situation; the utterance can be considered as short responses. The use of short responses could be an indication of a consultative style. Another consultative style could be seen in the same setting of conversation between Walter and Barbara. They had employed another consultative style. The following data showed the use of a consultative style.

Data 4

[00:02:25] Barbara : Don't flatten.
[00:02:27] Barbara : Make room for the train.
[00:02:31] Walter : What?
[00:02:33] Barbara : I said "make room for the train." It's something that I tell my kids. If you curve your fingers like this...

In Data 4, it was found that a consultative style occurred in the conversation between Barbara and Walter. The setting of the conversation was Walter's house, and the participants were a student and a teacher. They were strangers to each other; they were not quite close. The style employed in the conversation was consultative. At that moment, Barbara tried to notice Walter curve his hand to play in a better way. They used regular word selection in conversation, and the situation occurred in a private discussion. The language they used can be categorized as a consultative style. The utterances "Don't flatten" and "What?" show the use of non-formal expression in the conversation. They considered short responses; the implementation of short responses is the indication of a consultative style. In formal style, people would prefer to use "Pardon me" rather than "What?".

3) Casual Style

Casual style is a language style that is usually used in casual situations by those who have the same background such as age, sex, education, social status, ethnicity, and some other factors (Joos, 1967). Based on the analysis of the film, there were found several casual styles; in this part, five data on casual style will be presented and described. The casual style of the film can be seen in Charles and Walter's conversation. The following data show the implementation of a casual style of language.

Data 5

[00:05:48] Charles : Walter, Shelley can't make it down to the NYU conference to present your paper. I'm going to need you to cover for her.
[00:05:53] Walter : Why can't she go?
[00:05:55] Charles : She's been put on bed rest until she has the baby.
[00:05:58] Walter : I wish I could, but now is not a very good time, Charles.
[00:06:01] Charles : I understand but you co-authored the paper and the Dean wants it presented. He wants to keep Shelley on track for tenure.

Data 5 shows the implementation of the casual style occurred between Walter and Charles. They were friend and colleagues of the same age, sex, and education level talking about the NYU conference. The setting of the conversation was Walter's office. Charles was eager to ask Walter to go to a conference to cover the author of the paper since he was a co-author. The language they used can be categorized as casual by the casual situation when they were talking. Another point to show casual style is the utterance "I wish I could, but now is not a very good time, Charles." Based on the utterance, the way Walter mentions Charles' name shows that both Walter and Charles have a good relationship. In this case, Walter called him Charles as his given name instead of his last name.

Considering the background of the speaker and listener, the situation, and Nick's name for addressing, the conversation could be categorized as casual style.

Further data on casual style could be seen in the conversation between Zainab and Walter. Since they stayed in the same apartment, they were getting close as friends. The conversation done in consultative style has shifted into casual conversation since they were getting close. The following shows the data on the implementation of casual style.

Data 6

[00:28:15] Zainab : Are you OK?
[00:28:17] Walter : Yeah. Tarek is teaching me the drum. I'm practicing. Don't worry, I'll keep my pants on.
[00:28:30] Zainab : What?
[00:28:31] Walter : Nothing. I was just...nothing. It's too early, uh.

In Data 6, it can be found that Zainab and Walter implemented a casual style. The setting was on their apartment. Walter was practicing to play djembe when Zainab arrived. Zainab and Walter have known each other for several days. Thus, Walter tried to socialize with Zainab by using some jokes. He uttered a joke "Don't worry, I'll keep my pants on" but Zainab felt awkward on the joke since she did not feel quite close to Walter. The pronunciation can be categorized as quite taboo to utter they were in different sex and age. The utterance of "Don't worry, I'll keep my pants on" is considered a joke. He wanted to tease her. Thus, the indications of the setting, participant, and some language forms implemented show that the conversation was casual style.

4) Intimate Style

Intimate style is characterized by extraction and jargon. The characteristics of this style are the use of private codes, the use of words signaling intimate relations, the use of non-verbal communication, and the use of non-standard forms (Joos, 1967). Based on the analysis of the film, there are several data which can be categorized as intimate style. The intimate style of language can be done between friends, parent- child, couple, and family. The intimate style can be seen in the conversation between Walter and Charles in Walter's office. The following data show the implementation of an intimate style.

Data 7

[00:06:28] Walter : Charles, the truth is this is really Shelley's paper. I just agreed to co-author it because she asked me to. I'm not really prepared to present it.
[00:06:28] Charles : That may be the case but you are the co-author and she can't go. Look Walter, you can take it up with the Dean if you want, but, as your friend, I wouldn't advise it. Not with that argument.

Based on Data 7, it can be found the intimate style between friends. It can be seen from the use of private codes such as nicknames "Walter" and "Charles" and Charles emphasized their relationship by "as your friend". That utterance shows their intimate relationship as a friend since Charles ideally wants the best for Walter. It can be an indication of intimate style; it uses the words signaling an intimate relationship. Another example of intimate style could be seen when Zainab and Tarek made conversation. The following are data to show the implementation of an intimate style.

Data 8

[00:32:17] Tarek : So, Walter and I are going up to the park to play for a little bit. OK?
[00:32:21] Zainab : Tarek, I told you we have to pick up my new table today. He said he would only hold it for today.
[00:32:27] Tarek : I know. I know. No problem.
[00:32:29] Zainab : Tarek. You always say "no problem" and then you are late or you forget.

[00:32:32] Tarek : I know. I will not be long. We'll go up and play and then we'll come back to help you. I promise, habibti.

Data 8 shows another intimate style; it could be seen in Tarek and Zainab's conversation. The conversation is a private conversation between a couple on their personal business. The setting of the conversation was on the traditional market where Zainab worked. The intimate style there could be identified by the situation of the conversation and the use of intimate labels such as "habibti", which means "the lovely one". The main characteristic of the intimate style was the use of private codes, such as dear, darling, honey, babe, mom, and dad. On that occasion, Tarek used private code in their native language, "habibti". Furthermore, Tarek made use of non-verbal communication in their conversation, which was another indication of an intimate style. The non-verbal communication used was blinking. This non-verbal communication can be done merely to intimate ones.

b. Language Function in "The Visitor" Film

Based on the data found in the film, there are seven functions found in "The Visitor" film. They are expressive function, directive function, referential function, metalinguistic function, phatic function, heuristic function, and commissive function.

1) Expressive Function

The expressive is a kind of language function that refers to the language used to express the speaker's mind or personal feelings (Holmes, 2013). Expression focuses on the thoughts, attitudes, needs, and opinions of the speaker which are delivered in different choices of words and intonation. The following data show the expressive function of Tarek's utterance to Walter.

Data 11

[00:12:26] Tarek : OK. So, we'll go. I am sorry again. Thank you for your understanding.
[00:12:46] Tarek : Good bye.
[00:12:47] Walter : Good bye.

In Data 11, it could be found that the language used is as expressive function. Tarek regretted what he did to Walter; he threatened Walter for misunderstanding. Furthermore, Tarek was afraid that Walter would call the police since they were illegal immigrants. Tarek asked for an apology to Walter for what he did as well as thanked him for Walter's understanding. The utterance "I am sorry again" shows Tarek's expression of asking forgiveness.

2) Directive Function

The directive function is the use of language to direct, influence, and manage one's own or other's actions (Holmes, 2013). The directive function can be found in "The Visitor" film in Barbara; five data are considered as directive functions. The data will be presented and described in the following conversation. The example can be seen in Walter's conversation on the Piano lesson. The following data show that the directive function has been implemented.

Data 12

[00:02:07] Barbara : Let's try it again.
[00:02:08] Walter : The same thing?
[00:02:11] Barbara : Yes. Remember, fingers curved. Like a tunnel.

In Data 12, it can be found that Barbara employed the language for the directive function. The utterance of "Remember, fingers curved. Like a tunnel" showed Barbara giving directions to Walter about how to press Piano tuts. Barbara asked Walter to bend his fingers like a tunnel to make him play better. The directive function was done in imperative statements by Barbara. In the same setting and circumstance, Barbara has used the language utterance as a directive function.

3) Referential Function

The referential function of language shows the condition of the speakers who want to share their knowledge or news with the hearer (Holmes, 2013). Utterances attempt to provide information. Based on the analysis, there were three utterances containing referential functions. The following are data showing referential functions found in the film.

Data 13

[00:03:52] Walter : East Asia's experience is really the exception to the rule, because the conditions there that made trade liberalization for the Middle East successful weren't present in the developing countries in sub-Saharan Africa, and in Central and South America.

In Data 13, the referential function could be seen in Walter's utterance when he was teaching about economic theory. The setting of the situation was the classroom. The whole utterance of "East Asia's experience is really the exception to the rule, …" shows the delivering information. He used the utterance to provide information to his students.

4) Metalinguistic Function

The metalinguistic function reveals the condition in which the speakers want to clarify or correct the use of language itself (Holmes, 2013). Speakers might make mistakes in uttering the utterances or using the language; metalinguistic has a function to make corrections to the language. An example of a metalinguistic function occurred when Walter practiced piano with Barbara. The following data shows that the metalinguistic function has been implemented.

Data 14

[00:02:25] Barbara : Don't flatten.
[00:02:27] Barbara : Make room for the train.
[00:02:31] Walter : What?
[00:02:33] Barbara : I said "make room for the train." It's something that I tell my kids. If you curve your fingers like this...

In Data 14, it can be found that Barbara delivered an utterance that had a metalinguistic function. Barbara noticed Walter that his hand was still flattened. Barbara reminded him to curve his fingers to form a tunnel. It is a certain code or term used by Barbara in teaching piano to kinds. Walter was not familiar with the code used. Walter uttered "what" as a requirement of clarification on the language itself. The attention to a code and the requirement for clarification are the indications of metalinguistic function.

5) Phatic Function

Phatic reveals the condition of how the speakers show their sociability toward the hearer (Holmes, 2013). It also can be known as a function of language that is commonly used in everyday interaction including greetings, compliments, gossip, etc. Based on the analysis of the film, the following data show the implementation of the phatic function.

Data 15

[00:01:33] Barbara : Mr. Vale?
[00:01:33] Walter : Yes.
[00:01:34] Barbara : Hello. I'm Barbara Watson. Nice to meet you.
[00:01:35] Walter : Yes. Come in.
[00:01:36] Barbara : Thank you.

In Data 15, it can be found phatic function. This function of language was implemented when Barbara arrived at Walter's house. Both two intended to show their sociability by greeting and

introducing self. The utterance of "Hello. I'm Barbara Watson. Nice to meet you" shows the willingness to socialize; it includes greeting expressions.

6) Heuristic Function

The heuristic function allows the speaker to know the truths and reasons behind everything that surrounds one (Holmes, 2013). The speaker uses one's knowledge of the art of questioning to extract meanings from the people spoken to. Based on the analysis of the film, it could be found when Walter made a conversation to Zainab. The following data showed that Zainab's utterances had a heuristic function.

Data 16

[00:01:36]	Zainab	: Who are you? What are you doing in here?
[00:01:36]	Walter	: This is my apartment.
[00:01:36]	Zainab	: What do you mean? This apartment does not belong to you. How did you get in?
[00:01:36]	Walter	: My name is Walter Vale. I have keys. It's my..

Data 16 shows that Tarek asked how Walter could enter the apartment. In forcefully he asked Walter"How did you get in?". This utterance can contain a heuristic function that aims to learn and discover the way he could enter the apartment.

7) Commissive Function

Commissive function refers to the language used to deal with promises, threats, and refusal (Holmes, 2013). Commissive function can be found in both promise and refusal. Based on the analysis of the film, there were found five data on conversation. The data will be presented and described. The following data showed that Tarek's utterances performed a commissive function.

Data 17

[00:32:17]	Tarek	: So, Walter and I are going up to the park to play for a little bit. OK?
[00:32:21]	Zainab	: Tarek, I told you we have to pick up my new table today. He said he would only hold it for today.
[00:32:27]	Tarek	: I know. I know. No problem.
[00:32:29]	Zainab	: Tarek. You always say "no problem" and then you are late or you forget.
[00:32:32]	Tarek	: I know. I will not be long. We'll go up and play and then we'll come back to help you. I promise, habibti.

Commissive function could be seen when Tarek and Zainab made a conversation. Tarek asked permission to go with Walter to play drum at community. Zainab reminded Tarek that he had to do something. At that moment, Tarek made a promise to Zainab to go back on time and picked up the table by utterance "We'll go up and play and then we'll come back to help you. I promise, habibti." The promise he made could be categorized as a commissive function.

4. CONCLUSION

The analysis of "The Visitor" film on the language style and language function has found several data. The language styles found in the film are formal style, consultative style, casual style, and intimate style. The frozen style was unidentified since the existence of very formal and symbolic value activities did not appear in any scene. Meanwhile, the language functions found in the film include expressive function, directive function, referential function, metalinguistic function, phatic function, heuristic function, and commissive function. The implementation of language as a poetic

function was not identified. The character did not deal with poems, rhyming words, ear-catching mottos, alliteration, or paronomasia.

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EFFECTIVENESS MODEL OF AGRICULTURAL EXTENSION FOR SWEET CORN (*Zea Mays Saccharata Sturt*) FARMING IN SUBAK KUMPUL, BONA VILLAGE, BLAHBATUH DISTRICT, GIANYAR REGENCY

I Nengah Surata Adnyana

Faculty of Agriculture and Business, Dwijendra University, Denpasar
e-mail : surataadnyana@gmail.com

ABSTRACT

Corn is a crucial agricultural commodity in Indonesia, playing a strategic role in the national economy. Increased and high-quality corn production can meet food and animal feed needs, as well as increase farmers' incomes. However, many corn farmers still face various challenges, such as low productivity, a lack of knowledge about production inputs and cultivation technology, and limited access to market information and supporting services such as extension services.

Agricultural extension is one way to improve farmers' skills and knowledge in managing agricultural businesses. However, the effectiveness of agricultural extension services still needs to be improved to achieve agricultural development goals.

This study aims to (1) analyze the effectiveness of the availability of sweet corn agricultural production facilities in Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency, (2) Analyze the effectiveness of the sweet corn farming subsystem in Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency, (3) Develop an effective extension model for sweet corn commodities in Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency. The population in this study was 42 people with a sample of 20 farmers. The data were analyzed descriptively, qualitatively and quantitatively.

The results of the study indicate that (1) the availability of agricultural production facilities such as corn seeds, fertilizers, pesticides, cultivators, and hand sprayers is generally considered ineffective in the Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency; (2) Corn farming subsystems such as land clearing, plowing, liming, furrowing, organic fertilizer application, planting, and maintenance are considered ineffective in the Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency; (3) An effective extension model is implemented through improving the provision of production facilities and farming by implementing direct extension methods in the form of field schools for the provision of production facilities, resulting in high productivity, quality, and income, and the ability to compete with other commodities.

Suggestions that can be made are: (1) fertilizers and pesticides should be prepared in advance when carrying out corn farming, (2) soil cultivation should be carried out before planting.

Keywords: Model, Extension Effectiveness,

1. INTRODUCTION

Indonesia has a large population. Most of its population requires food, vegetables, and other business needs, such as poultry farming. Corn is a leading commodity from the government. Corn is also highly sought after by the wider community. This commodity can also be planted as an intercrop after rice to maintain soil fertility. Areas with potential for corn cultivation are those with limited water availability. The high demand for animal feed and the agro-industry encourage stakeholders and farmers to achieve good productivity results based on agribusiness principles. Farming at the farmer level still faces many obstacles, ranging from the provision of agricultural production facilities and farming practices. The availability of production facilities such as seeds, fertilizers, pesticides, hand tractors, hand sprayers, and corn power threshers requires early preparation. The technology, from land preparation and tillage, planting, maintenance, and harvesting, requires skilled mastery by farmers to achieve maximum yields.

Research purposes

1. To analyze the effectiveness of the availability of sweet corn agricultural production facilities in the Subak Kumpul of Bona Village, Blahbatuh District, Gianyar Regency.
2. To analyze the effectiveness of the sweet corn farming sub-system in the Subak Kumpul of Bona Village, Blahbatuh District, Gianyar Regency.
3. To develop an effective extension model for sweet corn in the Subak Kumpul (collective sub-system) of Bona Village, Blahbatuh District, Gianyar Regency.

2. **RESEARCH METHODOLOGY**

The location of the research was conducted in Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency, Bali Province. The location was selected purposively considering that Subak Kumpul has the potential for developing corn horticulture and is the only one that consistently plants corn every year. The population in this study was 42 farmers. The sample taken by purposive sampling was 20 corn farmers from May to August 2025. The data sources used were primary and secondary data. Furthermore, the data were analyzed qualitatively and quantitatively, as well as descriptively. All indicators of the research variables were measured using an ordinal scale with a value range of 1 to 5 (very effective, effective, less effective, ineffective and very ineffective) using the interval class formula.

3. LITERATUR REVIEW

The effectiveness of agricultural extension refers to how well the extension can bring about positive changes in farmers, especially in improving knowledge, attitudes, skills, and agricultural yields that lead to increased income and welfare of farmers. The effectiveness of extension is often measured through several indicators such as the ability of the extension worker, the suitability of the media and extension

materials, good planning, and changes in farmer behavior from compensatory methods to more modern techniques (Eriantina, 2018). Effective extension workers can solve farmer problems, carry out good planning, and adapt programs to farmer conditions so that there are significant behavioral changes in knowledge, attitudes, and skills as well as environmental conditions such as climate change (Hatmojo, 2020). Effectiveness is also related to the role of extension workers as educators, motivators, and facilitators who can foster farmer groups to be more independent by changing the mindset of farmers positively. Key indicators of effectiveness include the ability of extension workers, the suitability of media, materials, time and place of extension, and the suitability of the extension objectives to be achieved. Thus, the effectiveness of agricultural extension is very important because it can directly support increased productivity and farmer welfare through the right approach and effective communication between extension workers and farmers (Resicha, 2016).

4. RESULTS AND DISCUSSION

The effectiveness of the availability of production facilities consists of indicators of the availability of corn seeds, urea fertilizer, NPK fertilizer, pesticides, cultivators, and hand sprayers. The corn seed availability indicator received a score of 3.70 (74.00%) with an effective category. The availability of corn seeds during farming is always available and easy to find. Urea fertilizer is included in the effective category with a score of 3.60 (72.00%). When carrying out corn farming, farmers always have easy access to urea fertilizer. The availability of agricultural production facilities when needed and available in the field will strengthen the institution of farmer groups (Adnyana, 2021). The availability of NPK compound fertilizer received a score of 2.65 (53.00%) which is classified as less effective. The pesticide availability indicator is classified as effective with a score of 3.50 (70.00%). Meanwhile, the availability indicators for cultivators and hand sprayers are classified as less effective in the field with values of 2.60 (52.00%) and 2.65 (53.00%) respectively. The average availability indicator for corn agricultural production facilities is classified as less effective with a score of 3.11 (62.33%). The results of the availability of corn agricultural production facilities are presented in Table 1.

Table 1. Achievement of Results of Availability of Sweet Corn Agricultural Production Facilities (Zea Mays Saccharata Sturt)

No.	Availability of Agricultural Resources	Amount score	Score achievement		Category
			(Number)	(%)	
1	Corn seeds	74	3.70	74.00	effective
2	fertilizer urea	72	3.60	72.00	effective
3	NPK	53	2.65	53.00	less effective
4	Pesticida	70	3.50	70.00	effective
5	Cultivator	52	2.60	52.00	less effective
6	Hansprayer	53	2.65	53.00	less effective
	Everage	62,33	3,11	62,33	less effective

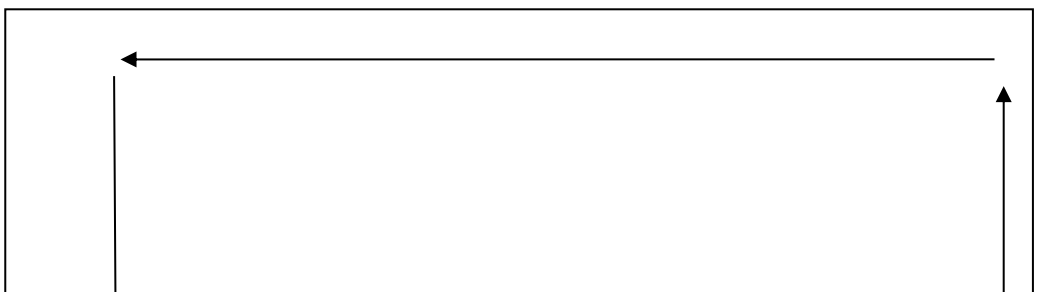
The effectiveness of sweet corn farming, based on the land clearing indicator, was classified as ineffective, with a score of 2.65 (53.00%). Plowing received a score of 2.10 (42.00%), making it ineffective. Farmers tend not to plow when cultivating corn. The indicators of lime application, organic fertilizer application before tillage, weeding twice, and fertilization three times at 2.5 and 8 weeks after planting were classified as very ineffective, with scores of 1.75 (35.00%), 1.75 (35.00%), 1.75 (35.00%), and 1.60 (32.00%), respectively. Organic fertilizer application is essential for farming because it can act as a soil ameliorant, improving the quality of the soil

used for agricultural purposes (Bot & Benites, 2005; Tonfack et al., 2009; Ameeta & Ronak, 2017). The application of organic fertilizer is perceived to increase vegetative and generative plant growth (Adnyana, 2022). The creation of furrows to regulate irrigation water flow received a score of 2.70 (54.00%), which is considered ineffective. Indicators considered effective include planting corn to a depth of 3 cm, planting 2-3 seeds per hole, and applying urea fertilizer at 150 kg/ha and NPK fertilizer at 200 kg/ha, with scores of 3.85 (77.00%), 3.85 (77.00%), and 4.15 (83.00%), respectively. The average sweet corn farming yield achieved a score of 2.64 (52.82%), which is categorized as ineffective. The results of sweet corn farming are presented in Table 2.

Table 2. Results of Sweet Corn Farming (Zea mays saccharata Sturt)

No.	farming	Amour scor	Number	Score achievement %	Category
1	Land Clering	53	2.65	53.00	Less effective
2	Piracy	42	2.10	42.00	ineffective
3	Giving lime	35	1.75	35.00	very inefective
4	array creation	54	2.70	54.00	Less effective
5	giving organic	35	1.75	35.00	Very inefective
6	planting 3 cm deep	77	3.85	77.00	Effective
7	Plant 2-3 seeds per hole	77	3.85	77.00	Effective
8	Weeding 2 times	35	1.75	35.00	very inefective
9	Pembubunan	58	2.90	58.00	ineffective
10	fertilization 3 times age 2,5,8 MST	32	1.60	32.00	Very ineffective
11	Dosis Urea 150 kg, NPK 200	83	4.15	83.00	Effective
	Rata-rata	52.81	2.64	52.82	Less effective

Sweet corn farming has good prospects for development based on the land potential in Bona Village. Corn farming has never encountered problems, starting with the provision of production facilities and corn cultivation. Problems in the provision of production facilities include the availability of ineffective NPK fertilizer, the availability of cultivators, and ineffective hand sprayers for farmers. In terms of cultivation or farming, there are also ineffective aspects, such as soil cultivation. Meanwhile, very ineffective methods include the application of agricultural dolomite lime, organic fertilizer, weeding twice, and inappropriate timing and dosage of fertilizer. To address these problems, an agribusiness system extension method is needed, which can be carried out by agricultural extension workers, both government-owned agricultural extension workers and independent extension workers or academics. Effective extension methods can be through direct extension methods in the form of field schools providing corn production facilities, starting with the initial preparation procedures before starting farming, as well as agricultural field schools that teach farmer groups on how to implement corn technology, from proper soil preparation, maintenance, harvesting, and post-harvest management. The output of this direct extension method will result in increased productivity, improved corn quality, increased farmer income, and increased competitiveness with other commodities. Therefore, this model can serve as a reference for developing sweet corn farming and strengthening farmer group institutions (Adnyana et al. 2020). The effectiveness model for corn extension is presented in Figure 1.



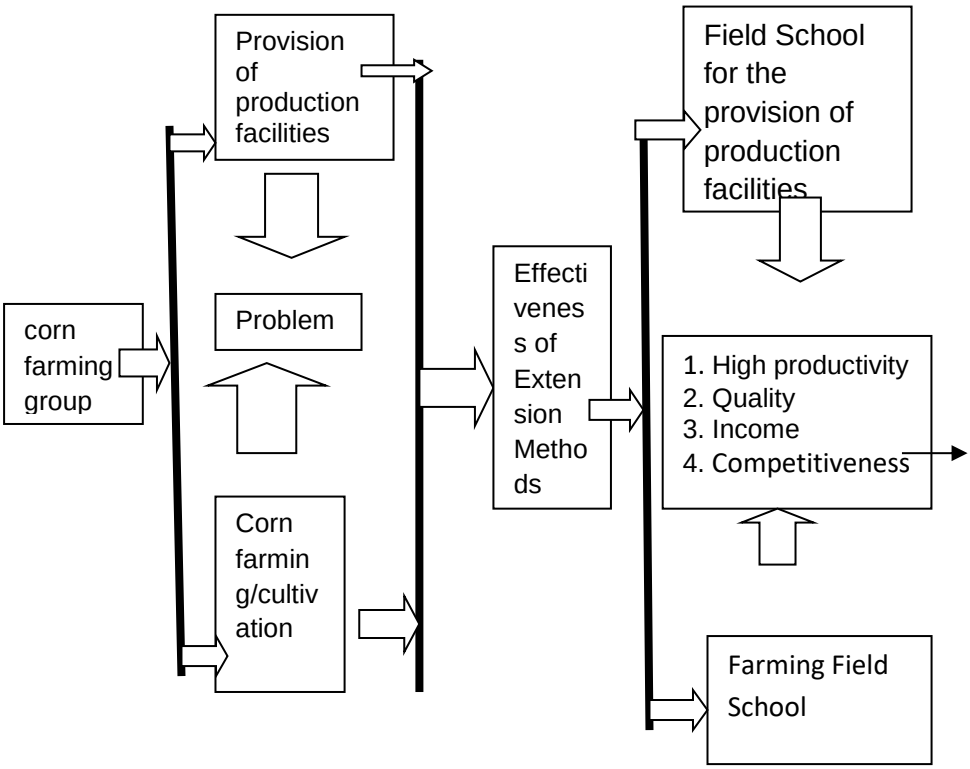


Figure 1. Model of Effectiveness of Corn Agricultural Extension

5. CONCLUSION

Conclusion based on the research results, it can be concluded as follows.

(1) the availability of agricultural production facilities such as corn seeds, fertilizers, pesticides, cultivators, and hand sprayers is generally considered ineffective in the Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency; (2) Corn farming subsystems such as land clearing, plowing, liming, furrowing, organic fertilizer application, planting, and maintenance are considered ineffective in the Subak Kumpul, Bona Village, Blahbatuh District, Gianyar Regency; (3) An effective extension model is implemented through improving the provision of production facilities and farming by implementing direct extension methods in the form of field schools for the provision of production facilities, resulting in high productivity, quality, and income, and the ability to compete with other commodities.

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LIVING HERITAGE AND SUSTAINABLE INNOVATION: ADAPTIVE BAMBOO ARCHITECTURE IN BALI

Desak Made Sukma Widiyani[1)], Made Ratna Witari [2)], I Ketut Adhimastra[3)], and A.A. Ketut Rai Purnama Putra[4)]

[1)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
sukmawidiyani@gmail.com
[2)] Department of Architecture, Universitas Ngurah Rai, Bali, Indonesia
ratna.witari@unr.ac.id
[3)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
adhimastra@gmail.com
[4)] Department of Architecture, Universitas Dwijendra, Bali, Indonesia
gungrai2801@gmail.com

ABSTRACT

This research explores the integration between living heritage and sustainable innovation through the development of adaptive bamboo architecture in Bali, which combines the preservation of traditional cultural values with modern technology to create environmentally friendly architectural solutions. Bamboo architecture has been an integral part of Balinese building traditions that reflects the philosophy of Tri Hita Karana - harmony between humans, nature, and the spiritual world, where bamboo as a material with tensile strength comparable to steel and superior sustainability properties offers solutions with negative carbon footprint. Technological innovations in Balinese bamboo architecture, as seen in projects like Green School and Green Village by IBUKU, have achieved breakthroughs through modern techniques such as the use of adaptive sensors, algorithmic optimization for bamboo element placement, and boron treatment for long-term durability. Adaptive bamboo architecture combines traditional Balinese craftsman expertise with modern engineering techniques, maintaining traditional aesthetic principles such as open spatial layouts and natural ventilation while integrating innovations in connection systems and construction technology. This study demonstrates that the living heritage approach in adaptive bamboo architecture in Bali has the potential to become a global model for sustainable development that respects cultural heritage, bridging the originality of the past with future sustainability through innovative solutions applicable in various global contexts.

Keywords: living heritage, bamboo architecture, sustainability, adaptive innovation.

1. INTRODUCTION

Cultural heritage often referred to as living heritage has become an essential focus within the global discourse on sustainable development, particularly regarding how traditions and cultural values can be integrated with modern technological innovations to address contemporary environmental challenges. The concept of living heritage, defined as heritage sites that remain authentic, maintained, and developed by a core community while preserving values that are continuously transmitted across generations, offers a conservation approach that bridges the originality of the past with the sustainability of the future. (Safitri & Ikaputra, 2024).

Amid the increasingly urgent global environmental crisis, sustainable architecture has emerged as a critical response to ecological degradation caused by excessive resource exploitation. The construction and building sectors contribute significantly to environmental damage, making efforts to minimize negative impacts through environmentally friendly design approaches a necessity. In this context, sustainable materials such as bamboo offer innovative solutions with remarkable ecological

advantages, including rapid renewability, tensile strength comparable to steel, and a negative carbon footprint (Kurniawan & Indrawan, 2024).

Bali, a region rich in cultural heritage and the philosophy of *Tri Hita Karana*, the harmony between humans and God (*Parhyangan*), humans and fellow humans (*Pawongan*), and humans and nature (*Palemahan*), has long utilized bamboo as an integral material in its architectural traditions. The *Tri Hita Karana* philosophy, which governs spatial organization and traditional Balinese architecture, reflects a profound understanding of ecological balance and environmental sustainability. However, in this era of rapid modernization, there is a significant challenge in preserving these traditional values while embracing contemporary construction technologies and practices.

The integration of living heritage and sustainable innovation is not only relevant to the local context of Bali but also holds global implications in supporting the achievement of the Sustainable Development Goals (SDGs). As a sustainable material, bamboo contributes to several SDGs, including poverty alleviation, sustainable economic growth, resilient infrastructure development, sustainable cities and communities, and terrestrial ecosystem preservation. A holistic approach that combines cultural heritage preservation with eco-friendly technological innovation can serve as a model for sustainable development, one that honors local wisdom while addressing global challenges.

The significance of research on adaptive bamboo architecture in Bali lies in its potential to contribute to the global discourse on how communities can integrate their living cultural heritage with innovative solutions for environmental sustainability. The living heritage approach in adaptive bamboo architecture not only preserves traditional aesthetic principles such as open spatial layouts and natural ventilation but also integrates innovations in joint systems and construction technologies that can be applied in diverse global contexts. Thus, the study of adaptive bamboo architecture in Bali offers valuable insights into how tradition and innovation can synergize to create a more sustainable future.

2. RESEARCH METODOLOGY

This research employs a qualitative approach using descriptive and case study methods to gain an in-depth understanding of the integration between living cultural heritage and sustainable innovation in adaptive bamboo architecture in Bali. This approach was chosen for its ability to explore the meanings, values, and practices underlying the relationship between tradition and modern technology within the sociocultural context of Balinese society.

The research focuses on adaptive bamboo architecture projects that represent the synergy between traditional values and sustainability principles, such as the Green School, Green Village, and various locally initiated bamboo-based buildings across different regencies in Bali. The research subjects include architects, local bamboo craftsmen (*undagi*), contractors, and building users who are directly involved in the design and construction processes.

Data collection was conducted using three main techniques. First, in-depth interviews with stakeholders were carried out to gain an understanding of the philosophy, design principles, and technological innovations applied. Second, direct on-site observations were conducted to document building morphology, construction techniques, joint systems, material use, and adaptation to the tropical climate. Third, documentation studies were undertaken by reviewing various written sources, such as academic papers, technical archives, field photographs, and project reports, to strengthen the validity of the empirical data.

The data analysis process employed a thematic approach focused on identifying patterns of relationships between the principles of *Tri Hita Karana*, aspects of sustainability, and innovations in bamboo structures. The analysis was conducted

systematically through the stages of data reduction, data presentation, and conclusion drawing. Data triangulation was applied to ensure the validity and reliability of the research findings by comparing the results of interviews, observations, and documentation.

Through this approach, the research is expected to provide an in-depth understanding of how the concept of living heritage can serve as a foundation for the development of bamboo-based architecture that is both adaptive and innovative, while remaining deeply rooted in Balinese cultural values oriented toward ecological and social balance.

3. LITERATUR REVIEW

A. Living Heritage Theory

The concept of living heritage has become an important paradigm in the discourse of cultural heritage preservation since the adoption of UNESCO's 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions. Living heritage is defined as a heritage site that remains authentic, maintained, and developed by the core community residing at the site, while embodying values that are continuously passed down from generation to generation. The key characteristic of living heritage is the concept of continuity, which encompasses the continuity of a building's original function, the continuity of its connection with the core community, the continuity of both material and immaterial expressions, and the continuity of maintenance through traditional or well-established methods (Safitri & Ikaputra, 2024).

The living heritage approach differs fundamentally from the values-based conservation approach, which places greater emphasis on discontinuity and the preservation of historical conditions in a static state. In the context of living heritage, change is instead accepted as an inherent aspect of the living nature of the heritage site, rather than something to be minimized or mitigated. This approach bridges the originality of the past with the sustainability of the future, focusing conservation efforts on managing continuity and change through decision-making processes that actively involve the core community (Wijesuriya, 2018).

UNESCO emphasizes that living heritage encompasses knowledge and practices rooted in local communities, providing a source of resilience against changing climatic conditions and helping to protect the environment. The integration of living cultural heritage and sustainable development has become a key focus of academic research, particularly in understanding how living heritage can promote more equitable economic and social models, as well as more responsible ways of interacting with the environment.

B. Adaptive Reuse Theory

Adaptive reuse is a conservation approach that repurposes a building for a different function from its original use without eliminating its original form or historical value. This approach aligns with the concept of sustainable development, which applies the 3R principles (Reduce, Reuse, Recycle), emphasizing that reusing buildings is preferable to demolishing them. According to Cantell (2005), the application of the adaptive reuse concept can serve as a solution for conserving historic buildings by introducing new functions while minimizing the impact on the existing heritage's historical value and significance (Susanto et al., 2020).

Adaptive reuse must preserve a building's physical character and historical value, even when the spatial functions are transformed to meet contemporary needs. This approach not only maintains the continuity of historical values and revitalizes spatial functions but also strengthens the identity of heritage areas and provides financial benefits for building maintenance. In the global context, adaptive reuse

has been recognized as a key strategy in reducing the development of new built land and supporting the environmental sustainability of urban areas (Fanaya et al., 2025).

C. Sustainable Architecture Theory

Sustainable architecture is an applied concept in the field of architecture that supports the preservation of natural resources to ensure their longevity, relating to the lifespan of vital natural and human ecological resources. *Sustainable architecture* encompasses nine key principles: urban ecology, energy strategy, water management, waste management, materials, environmental community, economic strategy, cultural preservation, and operational management (Hidayatullah & Anisa, 2022).

Sustainable architecture promotes the responsible management of natural resources and protects public health, safety, and well-being through conscientious approaches to creating the built environment. The primary goal of sustainable architecture is to reduce energy consumption, carbon emissions, and waste in building construction, operation, and maintenance. These principles include efficient land use, energy efficiency through optimal building orientation, the use of biodegradable or recyclable materials, and flexible, context-sensitive design that harmonizes with the surrounding environment (Febriadi & Afgani, 2023).

4. RESULTS AND DISCUSSION

A. Overview of the Research Object

The general overview of the research object focuses on the characteristics of adaptive bamboo architecture in Bali by examining three main case studies: Green School Bali, Green Village Bali, and Hideout Bamboo House in Karangasem. These three examples represent the successful integration of Balinese cultural heritage, technological innovation, and ecological sustainability principles in contemporary bamboo architecture practice. In selecting the objects used as case studies in this research, several considerations were taken into account, namely:

- Based on Balinese cultural philosophy and ecological awareness, particularly the principle of balance in *Tri Hita Karana*, which serves as the fundamental idea for spatial planning and building orientation.
- Designed by professional teams through collaboration between modern architects and local communities, especially traditional Balinese bamboo craftsmen.
- Integrates bamboo structural technologies and innovations, such as grid shells, anticlastic joints, and bamboo lamination systems, to achieve structural strength suitable for tropical conditions.
- Serves as a global icon of contemporary bamboo architecture, demonstrating the successful synergy between aesthetics, culture, and sustainability as a manifestation of Bali's living heritage that continues to evolve dynamically.

1) Green School Bali

Green School Bali is located in Sibang Kaja Village, Abiansemal District, Badung Regency. The school occupies a 7.5 hectare site along the Ayung River Valley and was designed by the IBUKU architectural team under the guidance of John and Cynthia Hardy since 2006. The entire building complex uses bamboo, thatch *(alang-alang),* and clay as the primary construction materials. The main building, Heart of School, features a 60 meter long structure with massive bamboo arches reaching a height of 14 meters, supporting a naturally spiraled roof form.

Figure 1. Green School Bali
Source: bali.greenschool.org

The main characteristics of Green School Bali lie in its application of bioclimatic design and sustainable architectural principles, including natural ventilation, passive lighting, and an independent water management system. The school functions not only as a formal educational facility but also as a living laboratory for sustainable design experimentation, embodying the *Tri Hita Karana* philosophy by harmonizing the relationship between humans, nature, and local spirituality.

2) Green Village Bali

Green Village Bali is located along the Ayung River, about a 15-minute walk from Green School. The project was developed by architect Elora Hardy and the IBUKU team as an extension of the Green School concept, designed as an ecological residential community that embraces an artisan craftsmanship approach and sustainability principles.

Each villa in Green Village is uniquely designed and constructed almost entirely from bamboo from the main structure to the interior elements, stairs, and railings. The design follows the natural contours of the river valley landscape, creating a sense of harmony with nature without altering the surrounding ecological structure. Its design principles emphasize the balance between luxury and sustainability, demonstrating that bamboo can be used to create modern, aesthetically pleasing living spaces while maintaining environmental responsibility.

Green Village also stands out for its adoption of Balinese local philosophy that honors nature and its strong communal approach, making it a model for sustainable green communities as well as a world-renowned architectural tourism destination focused on ecological education.

Figure 2. Green Village Bali
Source: greenvillagebali.com

3) Hideout Bamboo House, Karangasem

Hideout Bali was established in 2014 in Selat Village, Karangasem Regency, at the foot of Mount Agung. This small-scale bamboo accommodation employs a natural design system that fully adapts to the tropical environment.

The building structure uses locally sourced bamboo from the mountains of Karangasem, grown at an altitude of 800 meters above sea level, giving it high density, low sugar content, and natural resistance to termites. The bamboo treatment process involves smoking techniques and non-toxic materials, reinforcing a commitment to sustainable building principles and environmental safety. Hideout Bali stands out for its organic and minimalist architectural approach, creating an immersive living experience in harmony with nature without excessive use of artificial infrastructure or energy. Its existence reflects a tangible form of adaptive bamboo architecture that combines the artistry of local craftsmanship, material sustainability, and a contemporary green lifestyle.

Figure 3. Hideout Bamboo House
Source: hideoutbali.com

B. Implementation of the Living Heritage Concept in Bamboo Architectural Design

The implementation of the living heritage concept in bamboo architecture in Bali is reflected through the continuity of cultural values embodied in the practices of design, construction, and building management. As a form of living cultural heritage, bamboo architecture in Bali is not merely physical or material in nature but also encompasses spiritual, social, and ecological dimensions that are continuously passed down and adapted to contemporary needs.

1) Preservation of the Tri Hita Karana Philosophy in Spatial Layout and Building Orientation

Green School Bali applies the *Tri Hita Karana* philosophy comprehensively as the foundation of its sustainable architectural design concept. This philosophy embodies three essential aspects of life balance harmony with God (*Parahyangan*), harmony with fellow humans (*Pawongan*), and harmony with nature (*Palemahan*). The implementation of the *Parahyangan* concept is expressed through spatial layout arrangements and floor level hierarchies that consider spiritual orientation and the vertical relationship with the Creator. The *Palemahan* aspect is realized through the use of natural, renewable, and environmentally friendly materials such as bamboo, wood, natural stone, and thatch. Meanwhile, the *Pawongan* aspect is manifested by considering social interaction, accessibility, user needs, and the impact of design on space users.

The site layout of Green School Bali reflects a deep respect for the existing natural ecosystem. During the construction process, only a few trees were cut down and later replanted elsewhere, while several others were left to grow through the roofs, becoming an integral part of the building structure. The buildings were designed to follow the natural contours of the land, minimizing soil filling and demonstrating an adaptive approach to the site's

geographical conditions. More than 60% of the 4.55-hectare area is dedicated to green open space, far exceeding the built-up area allowing learning activities to take place without disturbing the surrounding natural ecosystem.

2) Cultural Adaptation Mechanisms to Modern Needs

The living heritage concept enables Balinese bamboo architecture to adapt to modern needs without losing its traditional values. In Penglipuran Village, the preservation of bamboo forests is carried out through physical measures (*sekala)*, such as maintaining supported bamboo populations and observing taboos against harvesting bamboo carelessly. Through spiritual actions *(niskala)*, the community performs the *Tumpek Pengatag* ritual regularly to honor God in His manifestation as the protector of plants. The people believe that bamboo must be harvested at the proper time, as harvesting on inauspicious days will result in decreased bamboo quality.

Modern adaptation is also evident in the development of productive economic institutions such as bamboo farmer groups and cooperatives owned by traditional villages. In several villages across Bali, bamboo weaving artisans have even established cooperatives to organize the sale and distribution of their products. Educational programs on bamboo craftsmanship in various villages not only help preserve cultural heritage but also create opportunities for younger generations to explore their creativity by combining tradition with innovation.

The Green School and Green Village projects demonstrate a more advanced form of adaptation by integrating the knowledge of traditional craftsmen (*undagi*) with modern engineering technologies developed by professional architectural teams such as IBUKU. This collaboration has led to innovations in bamboo joint systems, lamination techniques, and curved structures capable of supporting large-scale buildings such as ‘The Heart of School’, which spans 60 meters with bamboo arches reaching 14 meters in height.

3) Community Participation in Development and Preservation

The involvement of local communities in the design, construction, and preservation processes of bamboo architecture is a key element of the living heritage approach. In the context of Green School Bali, local community participation is evident through the use of local labor in construction, bamboo craftsmanship training for nearby residents, and the integration of local knowledge regarding suitable bamboo species for building. *Bambu petung*, used as the primary construction material, is a strong and widely available bamboo species in Indonesia, selected based on local understanding of its characteristics and durability.

Bamboo education workshop programs held in various tourist destinations, such as bamboo forests, provide opportunities for visitors to learn directly from local artisans about weaving techniques, the making of traditional musical instruments like the *angklung*, and bamboo decoration. These activities are not only enjoyable but also serve as a medium for knowledge transfer and the preservation of local culture through interactive and hands-on experiences.

4) The Impact of Living Heritage Preservation on Ecological and Economic Sustainability

The implementation of the living heritage concept in bamboo architecture has had a significant impact on the ecological and economic sustainability of Balinese communities. Ecologically, the preservation of bamboo forests in Penglipuran Village has proven effective in maintaining water sources and preventing soil erosion along the slopes. The existence of bamboo forests also protects local flora and fauna, creating a balanced and sustainable ecosystem. The integration of spiritual, social, and ecological values within Balinese bamboo architectural practices demonstrates that the living heritage concept is not merely about preserving the past, but also about shaping a sustainable future through the continuity and adaptation of living cultural values.

C. Technological Innovation in Adaptive Bamboo Architecture

Technological innovation in adaptive bamboo architecture in Bali is evident in the application of bamboo material engineering and modern construction techniques to enhance strength, durability, and design flexibility. Engineered bamboo products such as laminated panels and composite materials have been applied in projects like Green Village Bali, enabling the creation of more complex, long-lasting, and eco-friendly structures while preserving the beauty and natural character of bamboo as a core element of sustainable architecture. In addition, the use of modern jointing techniques (bolts, metal plates, and knock-down systems) allows for faster and stronger construction processes, supporting adaptive modular building systems that are easy to assemble and disassemble, and accommodating future design changes or spatial needs.

On the other hand, adaptive bamboo architecture has also embraced digital and automation technologies through the integration of smart home concepts, such as temperature sensors, automatic lighting, and energy control systems for efficient electricity use. Advances in bamboo processing techniques—such as non-toxic preservation and specialized coatings—ensure greater resistance to tropical weather, termites, and extended material lifespan. All these innovations demonstrate that Balinese bamboo architecture continues to evolve, not only as a traditional heritage but also as a resilient, beautiful, and sustainable solution for contemporary construction.

D. Application of Sustainable Architectural Principles

The application of sustainable architectural principles in bamboo architecture in Bali, such as at Green School and Green Village, places strong emphasis on the use of locally sourced, eco-friendly, and renewable materials, with bamboo serving as the primary construction material. Bamboo is chosen for its rapid growth, carbon absorption capacity, strength, and flexibility, all of which support the concept of green building. In addition to bamboo, the designs optimize natural lighting, cross ventilation, and green open spaces to create thermal comfort while minimizing artificial energy consumption and reducing ecological impact throughout the building's life cycle.

At Green Village Bali, the implementation of sustainable architecture is evident in the design choices that harmonize with the natural landscape contours, the use of responsibly harvested materials, and construction processes that account for durability against tropical weather and pest resistance. Bamboo materials not only provide natural aesthetics and structural functionality but also make a tangible contribution to reducing carbon footprints and raising public awareness about the importance of environmentally friendly development. In practice, this project

promotes a replicable construction model as a future solution for housing and public buildings that support the circular economy and local sustainability.

E. Social, Economic, and Ecological Impacts of Bamboo Architecture

Social Impact

Bamboo architecture in Bali has brought significant social impacts by strengthening the sense of togetherness and the identity of local communities. Bamboo structures such as the Green School and Green Village not only serve as spaces for activities but also as venues for social interaction, education, and artistic and cultural expression that reinforce community cohesion. The construction process, which involves local communities, particularly traditional craftsmen and *undagi* (Balinese master builders), encourages intergenerational knowledge transfer and empowers communities through creative collaboration rooted in local wisdom. This makes bamboo architecture a living cultural symbol that binds social relationships among residents and strengthens solidarity in preserving sustainable architectural heritage.

Economic Impact

Economically, the use of bamboo as the primary material has created a value chain involving farmers, artisans, and sustainable tourism industries. Local bamboo production in the regions of Bangli, Gianyar, and Karangasem supports rural livelihoods while reducing dependence on imported materials. The development of projects such as Green Village and Hideout Bali also opens new entrepreneurial opportunities, ranging from crafts and culinary industries to ecological architectural tourism popular among international visitors. Through a bamboo-based circular economy system, communities gain not only economic value from construction but also from derivative activities such as craft training and community-oriented ecotourism.

Ecological Impact

From an ecological perspective, bamboo architecture plays a crucial role in climate change mitigation and environmental conservation through the use of natural, renewable materials with a negative carbon footprint. Bamboo can absorb up to 35% more carbon dioxide than typical trees and regrows within 3–5 years, making it an exceptionally efficient resource for sustainable development (Fina Astuti & Nabila Shania, 2024). In addition, bamboo forest systems in Bali, such as those in Penglipuran, function as groundwater retainers and erosion preventers, maintaining the balance of local ecosystems. Through the implementation of bioclimatic design and green open spaces, bamboo buildings support energy efficiency, reduce construction waste, and reinforce Bali's role as a natural laboratory for environmentally friendly architecture worldwide.

5. CONCLUSION

Adaptive bamboo architecture in Bali demonstrates that the integration of local wisdom, technological innovation, and sustainability principles can produce a holistic, harmonious, and functional development model. Through the implementation of the living heritage concept, Balinese cultural values such as *Tri Hita Karana* are revitalized in architectural designs that are not only aesthetically pleasing but also ecologically and socially functional. Projects such as Green School, Green Village, and Hideout Bali provide concrete evidence that bamboo has great potential as a future material that is not only environmentally friendly and economical but also rich in cultural and spiritual significance for Balinese society.

Engineered bamboo innovations, modern jointing systems, and the integration of smart home technology have expanded the application of bamboo architecture from traditional contexts to globally recognized sustainable modern construction. Its impact is felt not only ecologically through carbon footprint reduction and resource

conservation but also socio-economically through the empowerment of local communities, increased income, and the preservation of bamboo forests that support both human and natural life. Thus, adaptive bamboo architecture in Bali represents a tangible example of the *sustainable living heritage* approach, connecting the past, present, and future within a harmonious and sustainable life system.

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