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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