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FEASIBILITY ANALYSIS OF ARABICA COFFEE BUSINESS IN MAJU BERSAMA PLANTATION GROUP, BOMOMANI VILLAGE, DOGIYAI REGENCY, CENTRAL PAPUA PROVINCE

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Abstract

This study aims to assess the profitability and operational effectiveness of Arabica coffee (Coffea arabica) cultivation managed by the Maju Bersama Plantation Group in Bomomani Village, Mapia Subdistrict, Dogiyai District, Central Papua. The study was conducted over the course of one month employing a quantitative method through field-based surveys. The collected data were assessed using key indicators, including production costs, income, net profit, and the revenue-to-cost (R/C) ratio. The results show that the total cost of cultivation for one production cycle was Rp. 14,150,000, with a total revenue of Rp.80,000,000, resulting in a net profit of Rp.65,850,000. An R/C ratio of 5.6 indicates that Arabica coffee cultivation is a promising and sustainable economic opportunity for the local community. The study recommends further development by enhancing farmers' institutional capacity and integrating technological support and government policy to strengthen the Arabica coffee value chain in the Central Papua region.

Keywords: Arabica Coffee, Business Efficiency, Cost Analysis, Farmer Groups, Financial Feasibility

1. Introduction

Coffee is one of the leading commodities in the plantation sub-sector, known for its high economic value and long-term development potential (Agustiansyah et al., 2023). Coffee is a natural resource of significant commercial value. Evizal & Prasmatiwi, (2020), stated that coffee plants have a long production cycle, with a planting lifespan of up to 25 years. In the global market, Indonesian coffee has made a significant contribution, ranking Indonesia as the world's fourth-largest coffee producer, behind Brazil, Vietnam, and Colombia (Alfareza & Ichsan, 2024). This commodity is not only economically important but also holds increasing export potential, particularly for Arabica coffee, which is known for its distinctive flavor and high quality (Rahayu et al., 2023). Globally, coffee consumption is dominated by Arabica, accounting for approximately 70%, while Robusta makes up around 26%, with other coffee types comprising the remaining 4% (A. Nugroho et al., 2023). Therefore, according to Ati & Nursamsiyah Yulistia Devi, (2015) ; Putri et al., (2018), Arabica coffee has greater market potential compared to Robusta.

Specifically, Arabica coffee is known for its superior quality compared to Robusta, primarily due to factors such as microclimate conditions, varietal differences, and distinctive post-harvest processing methods (Bicho et al., 2013). In 2021, Indonesia's coffee production reached approximately 774 thousand tons, consisting of 82% Robusta and 18% Arabica (Fadhillah et al., 2023). Although Arabica accounts for a relatively small portion, global demand for Indonesian Arabica coffee continues to grow, particularly from countries in Europe and North America. This increasing demand is largely attributed to Indonesia's favorable agroclimatic conditions, which support the production of high-quality coffee, especially in highland regions (Suparno et al., 2022).

However, behind this great potential lie several serious challenges that hinder the optimization of Arabica coffee productivity. Farmers still face numerous obstacles, such as aging coffee plants, limited adoption of modern cultivation technologies, insufficient production facilities, and weak access to financing and markets. Adri et al., (2022), noted that the average national coffee productivity remains below the crop's genetic potential, reaching only about 1 ton per hectare. These issues are further exacerbated by suboptimal farmer institutional development, limited technical training, and low efficiency in post-harvest handling and marketing processes (Achmad et al., 2024); (Gisisi & Purwaningsih, 2025).

In remote regions such as Dogiyai, these structural challenges are even more pronounced. Limited access to financing constrains farmers' ability to invest in quality inputs and equipment. Weak distribution networks for agricultural inputs, such as fertilizers and pesticides, often result in delays and higher prices. Additionally, poor road infrastructure not only increases transportation costs but also reduces market access and disrupts the supply chain. Collectively, these constraints significantly reduce the operational efficiency and profit margins of Arabica coffee businesses, despite their strong agroclimatic potential.

A feasibility study of coffee farming is crucial in addressing the current economic uncertainties. Financial feasibility evaluation provides essential information on whether a farming venture is viable and worth pursuing. Such studies can serve as a basis for investment decision-making by farmers, government agencies, or partner institutions (Ichsan et al., 2019); (Faidah & Harjanti, 2019). The Central Papua region, particularly Dogiyai Regency, holds significant potential for Arabica coffee development due to its suitable soil, altitude, and climate conditions. Despite the region's favorable agroclimatic conditions for Arabica coffee development, farming efforts face several challenges, including limited technical assistance, inadequate post-harvest facilities, and the absence of a comprehensive feasibility study. Understanding these structural barriers is essential for formulating targeted interventions that can improve supply chain efficiency and enhance the overall viability of agribusiness in marginalized regions. Given the strategic role of agriculture in rural development, especially in underdeveloped regions like Central Papua, the urgency to develop Arabica coffee lies in its potential to become a key driver for economic resilience and poverty reduction. Arabica coffee can serve as a superior commodity that empowers local communities, creates employment opportunities, and improves income stability.

In this context, conducting a financial feasibility analysis is essential to determine whether the Arabica coffee farming activities undertaken by the local community are viable for further development. Thus, the purpose of this study is to analyze the financial sustainability of Arabica coffee farming operated by the Maju Bersama Plantation Group in Bomomani Village. The findings are expected to provide valuable insights for the sustainable development of coffee farming in Central Papua and help promote it as a strategic regional commodity that supports inclusive economic growth and poverty alleviation.

2. Methods

The research was conducted over a one-month period, from November to December 2024,

in Bomomani Village, Mapia District, Dogiyai Regency, Central Papua Province. This location was purposively selected as it serves as the center of Arabica coffee cultivation activities carried out by Maju Bersama Plantation Group, which is the main subject of this study. The research employed a descriptive quantitative design. The descriptive approach was used to portray the actual conditions of Arabica coffee farming, while the quantitative approach was applied to measure economic variables numerically. Data collection was carried out through survey methods using questionnaires and interviews with coffee farmers who are members of the farmer group. Respondents were selected purposively, involving the group leader and active members engaged in Arabica coffee farming activities.

The data were analyzed using descriptive and financial analysis methods. Descriptive analysis was used to describe the characteristics of the farming enterprise and the socio-economic conditions of the farmers. Financial analysis included the calculation of Total Cost, Total Revenue, and Income (Profit), using the following formulas:

1. Farm Business Analysis
   a. Production Cost Analysis

$$TC = TFC + TVC \quad \text{.....(1)}$$

Information:
TC = Total cost
TFC = Total Fixed Cost
TVC = Total Variable Cost

   b. Acceptance Analysis

$$TR = P \; x \; Q \quad \text{.....(2)}$$

Information:
TR = Total Farming Revenue
P = Coffee Selling Price per Unit
Q = Number of Products Produced

   c. Revenue Analysis (profit)

$$\pi = TR - TC \quad \text{.....(3)}$$

Information:
π = Farm Income
TR = Total Farm Business Income
TC = Total cost

2. In addition, to assess business feasibility, the following financial feasibility indicators are used:

$$\frac{R}{C} Ratio = TR - TC \quad \text{.....(4)}$$

Information:
R = Income

C = Total cost

Criteria:

i. If R/C ≥ 1, the business is considered profitable, and the investment is feasible because the revenue obtained is greater than the cost.
ii. If R/C = 1, it means break-even;
iii. If R/C < 1, the business incurs a loss and is not feasible to continue because the revenue obtained is less than the cost.

3. Results and Discussion

Findings from the analysis of the Arabica coffee enterprise managed by the Maju Plantation Group. The analysis includes cost components (fixed and variable), revenue, profit, and business feasibility based on the revenue-to-cost ratio (R/C Ratio).

Production Costs of Arabica Coffee Business

Production costs consist of fixed costs and variable costs. Fixed costs include depreciation of production equipment and other supporting tools, which in this study amounted to Rp.5,150,000. Fixed costs are constant and do not depend on the production volume. The details of the fixed costs are as follows.

Table 1. Details of fixed costs of arabica coffee business

No	Description	Volume	Unit	Unit Price (Rp)	Total Price (Rp)
1	Tripe Machine	1	Unit	3.500.000	3.500.000
2	Crowbar	5	Unit	50.000	50.000
3	Shovel	5	Unit	150.000	150.000
4	Meter	1	Unit	50.000	50.000
5	Cart	1	Unit	1.000.000	1.000.000
6	Machete Tool	5	Unit	100.000	500.000
7	bucket	5	Unit	50.000	250.000
8	Scales	1	Unit	150.000	150.000
9	Transportation	1	Package	1.000.000	1.000.000
10	Tarpaulin	1	Unit	500.000	500.000
11	Spray tool	1	Unit	400.000	400.000
		Total			5.150.000

Source: Processed Data (2024)

Meanwhile, variable costs include components that change according to production volume, such as the purchase of coffee seedlings, organic fertilizer, pesticides, and transportation costs. The details of the variable costs can be seen in Table 2 below.

Table 2. Details of variable costs of arabica coffee business

No	Description	Volume	Unit	Unit Price (Rp)	Total Price (Rp)
1	Coffee Seeds	1.000	Seeds	5.000	5.000.000
2	Manure	50	Sack	50.000	2.500.000
3	Pesticide	10	Liter	50.000	500.000
4	Transportation costs	1	Package	1.000.000	1.000.000
		Total			9.000.000

Source: Processed Data (2024)

The highest variable cost comes from the purchase of coffee seedlings, amounting to Rp. 5,000,000. This is considered reasonable since seedlings are a key component in coffee cultivation and have a relatively high price. The total production costs (fixed and variable) can be seen in Table 3.

Table 3. Total cost of arabica coffee business

No	Description	Amount (Rp)
1	Fixed Costs	5.150.000
2	Variable Costs	9.000.000
	Total	14.150.000

Source: Processed Data (2024)

Based on Table 3, the study results show that the total costs incurred for one cultivation cycle of Arabica coffee amounted to Rp. 14,150,000, with the largest portion coming from variable costs, which accounted for 63.6%, while fixed cost comprised 36,4% of total costs. This cost structure is consistent with national Arabica coffee farming efficiency benchmarks, which indicate that efficient coffee farms typically have variable cost shares ranging from 60% to 70% and fixed cost shares between 30% and 40%. Therefore, the ratio between fixed and variable costs in this case aligns well with national standards, suggesting efficient resource allocation.

The highest cost was for the procurement of coffee seedlings, representing approximately 55.5% of the total variable costs. This indicates that seedlings remain the most dominant input component in the cost structure of Arabica coffee farming at the farmer level. These findings are consistent with the research by Rahmi, (2021), in Gayo Lues Regency, Aceh, which showed that variable costs, especially for seedlings and fertilizer procurement, are the largest contributors to the cost structure of Arabica coffee farming. The study noted that variable costs accounted for more than 60% of the total production costs. Similar results were found in the research by D. C. Nugroho, (2021), which stated that limited access to superior seedlings and organic fertilizers is a major constraint that increases production costs for smallholder coffee farmers.

Arabica Coffee Business Acceptance

Income is obtained through the sale of coffee yields throughout the plant's productive period, which spans eight years. The average coffee production per farmer is 100 kg per year, with an average selling price of Rp.100,000 per kilogram. Therefore, the total annual revenue is Rp. 10,000,000, and the total revenue over eight years is as follows.

Table 4. Total income of arabica coffee business

No	Component	Value
1	Annual production	100 Kg
2	Price per kg	Rp. 100.000
3	Revenue per year	Rp. 10.000.000
4	Productive age	8 years
	Total Receipts	Rp. 80.000.000

Source: Processed Data (2024)

Benefits of Arabica Coffee Business

Profit is calculated as the difference between total revenue and total production costs. Based on the analysis results, the net profit over the productive lifespan reached Rp. 65,850,000, as detailed in Table 5 below.

Table 5. Calculation of arabica coffee business profits

No	Description	Total (Rp)
1	Reception	80.000.000
2	Total Cost	14.150.000
	Total Receipts	65.850.000

Source: Processed Data (2024)

With an average production of 100 kg per year and a selling price of Rp. 100,000 per kilogram, the total revenue over the eight-year productive lifespan of the plant amounts to Rp. 80,000,000. After deducting the total costs, the net profit earned is Rp. 65,850,000. This reflects a highly significant profit margin-approximately 82% of the total revenue-indicating that the business is economically feasible and offers strong incentives for farmers. These results are consistent with the findings of Tanjung et al., (2023) who conducted a financial analysis of Arabica coffee farming in West Sumatra and found that the coffee business yields benefits 1.69 times greater than the costs incurred. Furthermore, a study by Fauzi, (2023), in Wamena showed that Arabica coffee farming generally offers high profit margins when managed intensively with efficient input utilization.

Efficiency Analysis (R/C Ratio)

To assess the efficiency of the business, the Revenue-Cost (R/C) Ratio indicator is used. Based on the calculation results:

$$\frac{R}{C} Ratio = \frac{Total\ Revenue}{Total\ cost} = \frac{80.000}{14.150.000} = 5{,}6$$

An R/C Ratio value of 5.6 indicates that for every Rp 1 of cost incurred, Rp 5.60 in revenue is generated. This value is well above the minimum feasibility threshold (R/C > 1), which means that the Arabica coffee business is highly efficient and viable for continuation and expansion. This figure also reflects a high level of business productivity, which aligns with the findings of Eliyin et al., (2024) stating that Arabica coffee farming in highland areas can provide optimal efficiency when managed properly.

4. Conclusion

Research on Arabica coffee farming managed finds that this agricultural venture is broadly feasible and operates efficiently. The analysis shows that the overall expenditure for one production cycle reaches Rp.14,150,000, covering both fixed and variable costs. On the other hand, the total revenue generated from the harvest reaches Rp.80,000,000, yielding a net profit of Rp.65,850,000. Business efficiency is evident from the R/C ratio of 5.6, signifying that every rupiah invested returns 5.6 times its value. This demonstrates that the Arabica coffee farming managed by the farmer group is financially rewarding as well as efficient in utilizing production inputs.

This study makes a concrete contribution to the agribusiness literature by providing an empirical application of financial viability analysis at the microenterprise level within a marginalized and remote region. Unlike many studies that focus on commercial or medium-scale agriculture, this research highlights the financial dynamics and profitability potential of smallholder-managed Arabica coffee farming in an underdeveloped area with limited infrastructure and market access. The use of clear financial metrics such as cost structure analysis, net profit, and R/C ratio offers a replicable model for evaluating micro-scale agribusiness ventures in similar socio-economic contexts. This reinforces the relevance of microeconomic evaluation tools for agribusiness development in highland and geographically isolated regions.

This study provides a strong foundation for the development of Arabica coffee farming in the highland areas of Central Papua, particularly in Bomomani Village, which

holds promising economic potential and can serve as a sustainable source of income for the local community. Moving forward, the findings of this study open up opportunities for scaling up the business, both through the intensification of cultivation and the diversification of processed coffee products. Additionally, further research is highly recommended to explore market aspects, value chains, and the environmental sustainability of Arabica coffee cultivation.

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