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ANALYSIS OF FINANCIAL FEASIBILITY OF ROBUSTA COFFEE FARMING IN SEMENDE DARAT LAUT DISTRICT, MUARA ENIM REGENCY, SOUTH SUMATRA PROVINCE

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ABSTRACT

This study aims to 1) Describe the description of robusta coffee farming in Semende Darat Laut District, Muara Enim Regency, and 2) analyze the financial feasibility of robusta coffee farming in Semende Darat Laut District, Muara Enim Regency. The data used in this study are primary data obtained based on observations and interviews using questionnaires on sample farmers and supported by secondary data from several literatures. This research was conducted in Semende Darat Laut District by deliberately selecting 3 villages, namely Pulau Panggung Village, Karya Real Village, and Tanah Abang Village. The sample taken is the population of the 3 villages as many as 15 people in July 2022. Based on the results of the research, it is known that 1) Semende Darat Laut District is the district that produces the most coffee in Semende Darat Laut District, and the average population is robusta coffee farmers. 2) Based on the results of the calculation of financial feasibility analysis using 4 financial feasibility criteria, the Net Present Value is Rp. > 0, the Internal Rate of Return > 15%, which is equal to, the Net B/C Ratio > 1 value, and the payback period obtained is a significant amount in 4.25 years the Robusta coffee farming in Semende Darat Laut District, Muara Enim Regency can recover the costs incurred. From the calculation using the 4 financial feasibility criteria, Robusta coffee farming in Semende Darat Laut District, Muara Enim Regency is feasible to cultivate.

Keywords: Robusta coffee, farming, investment costs, income, Financial Feasibility Analysis

INTRODUCTION

Muara Enim Regency has an area of 7,486 Km² and 3,599 Km² or 44.88% is agricultural land. The plantation subsector is one of the subsectors that contributes greatly to the economic growth of the Muara Enim Regency. Coffee is one of several leading plantation commodities of Muara Enim Regency (Badan Pusat Statistik Sumatera Selatan, 2021).

Muara Enim Regency has 22 sub-districts and 14 of them cultivate coffee. Semende Darat Laut District is a district that has the highest amount of production in Muara Enim Regency with the type of coffee cultivated, namely robusta type coffee with the name Semende coffee. Coffee is the only plantation community that produces in Muara Enim Regency (Dinas Perkebunan Kabupaten Muara Enim, 2021). The height owned by Semende Darat Laut District supports the growth of robusta coffee, so robusta coffee in Semende Darat Laut District has had geographical indication certification in 2015, which means Semende coffee has excellent quality and taste. With the certification owned, cement coffee is not only legally protected but also opens up opportunities to compete in the international market. In 2017 Semende Coffee was patented or registered at the Directorate General of Intellectual Property of the Ministry of Law and Human Rights of the Republic of Indonesia and in 2020 Semende Coffee received a nomination for the Most Popular Traditional Drink at the Anugerah Pesona Indonesia event (Badan Pusat Statistik Muara Enim, 2021).

With land area, production, and productivity of robusta coffee plantations in Semende Darat Laut District, Muara Enim Regency makes Semende Darat Laut District a robusta coffee center in Muara Enim Regency. Not only meeting the demand for coffee in Muara Enim Regency but also throughout the region in South Sumatra Province and even other provinces outside the island of Sumatra.

The development of robusta coffee prices in Semende Darat Laut District experienced fluctuations from primary data from Semende Darat Laut District in 2022, from 2017 to 2019 the price of robusta coffee in Semende Darat Laut District increased, but in 2020 the price of robusta coffee again declined at Rp. 16,000/kg. This is due to the COVID-19 pandemic that occurred throughout Indonesia. The number of coffee shops that close their businesses is one of the factors reducing coffee market demand, so coffee supplies are large but demand is decreasing (Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu Kabupaten Muara Enim, 2016).

In the process of implementing farming, an increase in production is needed because it is an indicator of the success of a sustainable farm. But in fact, robusta coffee farming in Semende Darat Laut District is still experiencing several obstacles in increasing its production. The obstacles that occur are, that farmers experience limited capital so that farming is still run

conventionally, the high price of fertilizer causes farmers to fertilize not according to recommendations, and farming that has passed the productive age of coffee plants, causing robusta coffee production to decline over time. So that replanting planning is needed to restore the best production results from coffee plants. To carry out replanting feasibility study is needed. Because previously farming has been running, before planning the rejuvenation of robusta coffee farming needs to be evaluated to assess the ability of farmers to make a profit from the costs incurred and find out how long the return on investment costs can be returned, so in this study a financial feasibility analysis is needed.

Financial feasibility analysis is a way to determine a profitable business measured in terms of money, namely based on cash flow and finance seen from capital (investment). The flow of revenue (benefit) and expenditure (cost) in business activities. Financial feasibility analysis uses several methods, namely Net Present Value, Internal Rate of Return, Net B/C Ratio, and Payback Period. Financial feasibility analysis is closely related to farming because whether or not the farm is feasible is seen from the financial capability of the farm (Effran, 2023).

RESEARCH METHODS

This research, the object was aimed at robusta coffee farmers located in Semende Darat Laut District, Muara Enim Regency with the selection of 3 villages, namely Karya Nyata Village, Pulau Panggung Village, and Tanah Abang Village. The data collected is secondary and primary. Primary data will be obtained using interview questionnaires and secondary data will be obtained by literature study and documentation. The sampling method used a purpose sampling method, namely 15 sample people and stratified sampling by averaging samples with plants aged 25 years.

This research uses descriptive data analysis and quantitative data analysis. Descriptive analysis was used to describe robusta coffee farming in the research area and quantitative analysis was used to determine the financial feasibility of robusta coffee farming in Semende Darat Laut District, Muara Enim Regency. To analyze financial feasibility using 4 financial feasibility criteria, namely Net Present Value, Internal Rate of Return, Net B/C, and Payback Period (Titik, 2016), and (Sofyan, 2003).

Net Present Value Analysis with the formula:

$$NPV = \text{Present Value Benefit} - \text{Present Value Cost}$$

or

$$NPV = \sum_{t=0}^n \frac{B_t - C_t}{(1+i)^t}$$

Where:

B_t = Acceptance Robusta Coffee Farming in the t -th year

C_t = Cost Robusta Coffee Farming in the t -th year

i = Interest rate used in Robusta Coffee Farming

t = Year t

n = Economic age Robusta Coffee Farming

From the results of the NPV calculation, then

- If $NPV > 0$, the project can be declared feasible to implement
- If $NPV = 0$, the project returns exactly its cost
- If $NPV < 0$, the project cannot produce value for money.

Net B/C Ratio Analysis the formula,

$$\text{Net B/C Ratio} = \frac{\text{Jumlah PV Net B positif}}{\text{Jumlah PV Net B Negatif}}$$

Net B/C Ratio > 1 , then robusta coffee farming is worth pursuing

Net B/C Ratio $= 1$, then robusta coffee farming breaks even between costs and benefits

Net B/C Ratio < 1 , then robusta coffee farming is not worth pursuing.

Internal Rate of Return Analysis

$$IRR = i1 + (i2 - i1) \frac{NPV_1}{NPV_1 - NPV_2}$$

$i1$ = Interest rate that produces a greater NPV

$i2$ = Interest rate that produces a smaller NPV

$NPV1 = \text{bigger NPV}$

$NPV2 = \text{smaller NPV}$

With the criteria:

If $IRR > \text{Interest rate}$, then robusta coffee farming is worth the effort

If $IRR < \text{interest rate}$, then robusta coffee farming is not worth the effort

Payback Period Analysis

$$PP = \frac{\text{Initial Investment}}{\text{Acceptance Period}} \times 1 \text{ Year}$$

With the following criteria:

If $PP \leq \text{Business period}$, then robusta coffee farming is worth the effort

If $PP \geq \text{Business period}$, then robusta coffee farming is not worth the effort

RESULTS AND DISCUSSION

1. General Description of the Research Area

Semende Darat Laut District is located in the southeastern part of Muara Enim Regency, South Sumatra Province with an area of 269.14 km², 92 km from the district capital and 276 km² from the provincial capital. The topographic characteristics of Semende Darat Laut District is a highland area and has a height of 803 meters above sea level with rainfall of 481 mm/year and an air temperature of 18°C - 26°C. The shape of the Semende Darat Laut District area is 15% wavy to hilly and 85% hilly to mountainous. There are 10 villages and 35 hamlets in the Semende Darat Laut District. The population of Semende Darat Laut Subdistrict based on administrative data from the Semende Darat Laut Subdistrict Government records that, 2022 from January to June 2022 the population will reach 15,375 people consisting of 4189 families (heads of families) with 7,630 being male and 7,745 female.

a. Livelihood

The characteristics of the population of Semende Darat Laut District based on livelihood can be seen in Table 1.

Table 1: Main livelihoods of residents of Semende Darat Laut District in 2022

No	Livelihood	Number of people	Presentation of Total Population (%)
1.	Coffee Farmers	5900	38.37
2.	Laborer	300	1.95
3.	Trader	250	1.62
4.	Civil servants	190	1.23
5.	Etc	184	1.19
Amount		6,824	44.36

Source: (Badan Pusat Statistik Muara Enim, 2021)

Table 1 explains that in Semende Darat Laut District, coffee farming is one of the jobs with the largest percentage, namely 5,900 people with a percentage of 38.37% of the total population.

b. Facilities and infrastructure

Existing facilities and infrastructure in Ibru Village can be seen in Table 2.

Table 2: Educational Facilities and Infrastructure in Semende Darat Laut District in 2022

No.	Educational Infrastructure	Number of Infrastructure (units)
1.	Kindergarten	12
2.	Elementary school	19
3.	Junior high school	6
4.	Senior High School	1
5.	Vocational schools	1
6.	Gerentam Islamic Boarding School	1
7.	General Hospital	1
8.	Community Health Centers	10
9.	Integrated Healthcare Center	10

Source: (Badan Pusat Statistik Muara Enim, 2021)

2. General Description of Robusta Coffee Farming

a. General Description of Robusta Coffee Farming in the Research Area

Coffee farming is the main occupation of the residents of Semende Darat Laut District. The land

used for farming is one's land with an average area of 1 ha. Robusta coffee farming in Semende Darat Laut District is still running conventionally due to limited capital. However, some farmers are more modern. The labor used is domestic and non-family labor with a wage of Rp. 50,000. Land clearing or management is still used with conventional tools, namely, hoes, machetes, sickles, and others. Farmers carry out fertilization once a year, which is not by recommendation because fertilizer is scarce there, causing high fertilizer prices. Even farmers there rarely carry out pest and disease management. In the maintenance process, farmers also use labor within the family and labor outside the family (Shinta, 2011). Robusta coffee harvesting is generally carried out at the fourth age of the coffee plant. The types of coffee beans harvested are random and red-picked coffee. To sell coffee beans (green beans), farmers sell them to collectors (Panggabean, 2011).

b. Farmer Age

The characteristics of robusta coffee farmers based on farmer age can be seen in Table 3.

Table 3: Distribution of Sample Farmers by Age Group in the Research Area in 2022

No.	Farmer Age Level (year)	Number of people)	Percentage (%)
1.	36-40	1	6.70
2.	41-45	2	13.33
3.	46-50	3	20.00
4.	51-55	4	26.70
5.	56-60	3	20.00
6.	61-65	2	13.33
Amount		15	100

Source: Primary data, 2022

It can be seen in Table 3 that farmers in the research area have various ages, ranging from farmers aged 36 years to 65 years.

c. Farmer Education Level

Characteristics of robusta coffee farmers based on education level can be seen in Table 4.

Table 4: Distribution of Sample Farmers Based on Education Level in the Research Area in 2022

No.	Level of education	Number of people)	Percentage (%)
1.	Junior high school	4	26.67
2.	Senior High School	9	60.00
3.	Higher Education (S1)	2	13.33
Amount		15	100

Source: Primary data, 2022

d. Number of Family Members

Characteristics of coffee farmers based on education level can be seen in Table 5

Table 5: Distribution of Sample Farmers Based on Number of Family Members in the Research Area in 2022

Number of Family Members (People)	Number of Farmers (People)	Percentage (%)
1	5	19,20
2	2	7.70
3	3	11.50
4	14	53.80
5	1	3.80
6	0	0.00
7	1	3.80
Amount	26	100

Source: Primary data, 2022

e. Land area

Characteristics of robusta coffee farmers based on land area can be seen in Table 6.

Table 6: Distribution of Sample Farmers Based on Land Area in the Research Area in 2022

Land Area Interval (Ha)	Number of Farmers (People)	Percentage (%)
0.02-0.03	20	76.90
0.04-0.05	1	3.80
0.06-0.07	1	3.80
0.08-0.09	0	0.00
0.10-0.11	3	11.50
0.12-0.13	1	3.80
Amount	26	100

Source: Primary data, 2022

3. Analysis of Robusta Coffee Farming

a. Investment Costs

Table 7: Average Robusta Coffee Farming Investment Costs in the Research Area in 2022

Cost component	Year			
	1996	1997	1998	1999
1. Labor				
a. land clearing	2,756,666.67	0	0	0
b. planting	493,333.33	0	0	0
c. Fertilization	493,333.33	423,333.33	406,666.67	390,000.00
d. maintenance	1,760,000.00	1,440,000	1,360,000	1,360,000.00
2. Seedlings	12,746,666.67	0	0	0
3. Equipment	1,256,666.67	0	0	0
4. Fertilizer				
a. Urea	298,666.67	298,666.67	256,000.00	256,000.00
b. Sp 36	420,000.00	420,000.00	360,000.00	360,000.00
c. KCl	696,000.00	696,000.00	597,333.33	597,333.33
d. NPK (Ponska)	6,000.00	12,000	12,000.00	0
e. Compost	37,333.33	90,666.67	90,666.67	106,666.67
5. Medicines	0	0	28,000.00	0
Total	20,964,666.67	3,380,666.67	3,110,666.67	3,070,000.00

Source: Primary data, 2022

In Table 7 it can be explained that the investment costs incurred at plant age 0 or the start of farming are Rp. 20,964,666.67. At the age of 1-3 plants, they still have expenses (costs) because the farming has not yet produced production or has not yet generated income with an average investment cost of IDR. 3,187,111.11.

Table 8: Investment Costs for Robusta Coffee Farming Equipment in the Research Area

Sample No	Total Cost (Rupiah)			
	2002	2007	2012	2017
1.	480,000	470,000	480,000	480,000
2.	620,000	470,000	460,000	480,000
3.	620,000	620,000	480,000	480,000
4.	620,000	620,000	480,000	480,000
5.	330,000	330,000	330,000	480,000
6.	620,000	620,000	470,000	480,000
7.	480,000	470,000	480,000	480,000
8.	810,000	810,000	810,000	810,000
9.	620,000	470,000	460,000	480,000
10.	730,000	675,000	675,000	675,000
11.	710,000	240,000	240,000	240,000
12.	810,000	810,000	810,000	810,000
13.	810,000	810,000	810,000	810,000
14.	730,000	675,000	675,000	675,000
15.	810,000	810,000	810,000	810,000
Amount	9,800,000	8,900,000	8,470,000	8,670,000
Average	653,333	593,333	564,667	578,000

Source: Primary data, 2022

Equipment investment costs are investment costs incurred to purchase equipment when the farm is producing or when the farm has generated income.

b. Operating costs

Operational costs are costs incurred when the plant has produced production and is sustainable in the farming process to produce production from the farming business. In use, operational costs are incurred for labor costs, fertilizers, and medicines (Rahardjo, 2021).

c. Reception

Table 9: Average Revenue from Robusta Coffee Farming in the Research Area in 2022

Year	Revenue (Rupiah)	Year	Revenue (Rupiah)
1997	0	2010	27,000,000
1998	0	2011	26,856,000
1999	0	2012	25,680,000
2000	30,120,000	2013	24,744,000
2001	31,080,000	2014	23,730,000
2002	31,356,000	2015	23,160,000
2003	32,226,000	2016	22,776,000
2004	30,757,000	2017	21,240,000
2005	33,960,000	2018	22,813,333
2006	34,032,000	2019	20,895,000
2007	34,032,000	2020	17,002,667
2008	30,534,000	2021	21,780,000
2009	29,555,333		

Source: Primary data, 2022

Production resulting from the farming process will generate income. Revenue is obtained from the selling price of production multiplied by the quantity of production. Revenue is influenced by the selling price of coffee and coffee production, so there are differences in revenue each year. In robusta coffee farming in the research area, the highest revenue was in 2006-2007, amounting to Rp. 34,032,000 and the lowest in 2020, namely IDR. 17,002,667.

4. Financial Feasibility Analysis

To determine the financial feasibility of a farm, you can use 4 financial feasibility criteria, namely, Net Present Value, Net B/C Ratio, Internal Rate of Return, and Payback Period. The interest rate used or discount factor is 15% (Wahyuni et al., 2012), (Kusmiati, 2020), (Zakki, 2021) and (Amalia et al., 2023). Robusta coffee farming in Semende Darat Laut District, Muara Enim Regency can continue to be implemented if it meets the eligibility requirements for all the investment criteria used. The results of the financial feasibility analysis of robusta coffee farming in Semende Darat Laut District, Muara Enim Regency can be seen in Table 10.

Table 10: Results of Financial Feasibility Analysis of Robusta Coffee Farming in the Research Area in 2022

Investment Criteria	Mark	Indicator	Appropriateness
<i>Net Present Value(NPV)</i>	Rp. 75,687,812	> 0	Worthy
<i>Net B/C Ratio</i>	3.57	> 1	Worthy
<i>Internal Rate of Return(IRR)</i>	36.43%	> 15%	Worthy
<i>Payback Period(PP)</i>	4.25 years	< 20 years	Worthy
<i>Primary data processed (2022)</i>			

a. Net Present Value

From Table 10, it can be seen that the results of NPV calculations for robusta coffee farming in Semende Darat Laut District over a period of 25 years and the investment costs incurred were IDR. 30,525,000 has a positive NPV value of Rp.75,687,812. The NPV value shows that robusta coffee farming is worth pursuing because the NPV value is more than 0 at an interest rate of 15%(Rangkuti, 2004), (Umar, 2003) and (Blocher, 2014).

b. Net B/C Ratio

Net B/C Ratio is obtained from the total present value of positive net benefit cash flows divided by the total present value of negative net benefit cash flows in the initial year of farming (Suriyati, 2015) (Soekartawi, 2002). The results of calculating the Net B/C Ratio for robusta coffee farming in Semende Darat Laut District from plant age 0 to plant age 25 years with an interest rate of 15% are greater than 1, namely 3.57. This value shows that robusta coffee farming is worth pursuing. A Net B/C value of 3.57 means that robusta coffee farming will bring benefits of 3.57 times the costs incurred by farmers.

c. Internal Rate of Return

IRR is the maximum interest rate that can recover the costs invested in robusta coffee farming activities in Semende Darat Laut District. In calculating the IRR in the research, we look for the interest rate where the NPV is equal to 0 or at what interest rate the project is no longer financially viable because, in this research, farming is researched at the evaluation stage. In robusta coffee farming in Semende Darat Laut District, discount factors of 36% and 37% are used, so the NPV value obtained is 0. From the calculation results, the IRR result is 36.43%, meaning the IRR value is greater than the discount factor used. So, based on the criteria of the IRR analysis tool, robusta coffee farming in Semende Darat Laut District is worth pursuing.

d. Payback Period

Based on Table 11, it can be concluded that robusta coffee farming can recover its investment costs (Payback Period) within 4.25 years starting from the first year of investment. This shows that robusta coffee farming is worth pursuing considering that the farming can recover its investment capital within a robusta coffee farming period of 4.25 years with a plant age of 25 years.

CONCLUSION

Based on the research objectives and discussion that have been explained, the following conclusions can be drawn.

1. Robusta coffee farming in Semende Darat Laut District is the main livelihood of the residents of Semende Darat Laut District. The land ownership of robusta coffee farmers in Semende Darat Laut District is their own with an average land area of 1 ha. The types of seeds used are local seeds. In land management, planting, fertilizing, maintenance, and harvesting, the labor used is labor within the family and labor outside the family. Generally, the fertilizers used are urea, sp36, KCl, and compost. Fertilizer is only given to robusta coffee farms in Semende Darat Laut District, Muara Enim Regency, once a year. Robusta coffee plants have passed their productive age, namely 25 years old, and this has caused a decline in production. So, farmers in the Semende Darat Laut District are at the stage of rejuvenation.
2. Of the four financial feasibility criteria used with feasible research results, robusta coffee farming in Semende Darat Laut District, Muara Enim Regency, is financially feasible. Even though it has passed its productive age, farming still provides income.

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