Economics Efficiency Of Arabica Coffee Farming In Kledung, Temanggung Regency

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ABSTRACT

Kledung's Coffee plantation is the largest Arabica coffee producer in Temanggung Regency, but over the last few years, it has experienced fluctuations in production yields with land areas that tend to remain stable. This study aims to analyze the efficiency of Arabica coffee farming in the Kledung District. The research method that is used in this research is quantitative research. Furthermore, the sampling method that is used in this research is simple random sampling with a total population is 1,319 people, and the number of samples is 92 people and questionnaire data collection.

Based on the data analysis using efficiency tests (R/C ratio) the results showed that: Arabica coffee farming in Kledung has an average efficiency value of 2.04 with an efficiency value of 2.78 on an area of ≤ 1000m2 and an efficiency value of 2.19 and 1.29 in an area land of 1001-1500 m2 and a land area of >1500m2. It can be concluded that the Arabica coffee business in Kledung has achieved the highest efficiency in 1,000 m2 plantation.

Keywords: Farming, Arabica Coffee, Efficiency, Kledung

1. Introduction

Coffee is one of the commodities that occupies the highest position as an agricultural product that is in great demand in the international market, this can be proven by the high number of exports produced by Indonesian coffee farmers penetrating the United States market with export values reaching 138.8 tons for 2017 and 123, 6 tons for 2018. (Ismail, 2019). Coffee is known by all groups, including the lower, middle, and upper-class economies. Coffee is also known by all ages. This is what drives the high consumption of coffee in the world. World coffee consumption reaches 70 percent of the Arabica coffee type, while 30 percent of the robusta coffee type (International Coffee Organization, 2018).

Table 1. Top Ten Countries with the World's Largest Coffee Consumers 2016/2017

No	Countries	total (Million inhabitants)
1	European Union	42,6
2	America	25,8
3	Brazil	21,2
4	Japan	7,9
5	**Indonesia**	**4,6**
6	Russia	4,6
7	Canada	3,8
8	Ethiopia	3,7
9	Philippines	3,1
10	Vietnamese	2,4

Source: International Coffee Organization, (2018)

As a country with a high level of coffee consumption, Indonesia is also a coffee producer. This can be seen from Table 2 which shows that Indonesia is the fourth-largest coffee exporter in the world

Table 2. The Five Largest Coffee Exporters in the World in 2018

No	Countries	Production (ton)
1	Brazil	3.050.000
2	Vietnamese	1.760.000
3	Colombia	864.000
4	**Indonesia**	**674.000**
5	Honduras	450.000

Source: International Coffee Organization, (2018)

The distribution of coffee plants in Indonesia, especially in Java, has the second-highest amount of coffee production in Indonesia. When viewed from its productivity figures, Java Island has the highest production value compared to other islands in Indonesia. This is evidenced by the data below:

Table 3. Land Area and Coffee Production by Islands in Indonesia in 2017

No	Province	Land area (Ha)	Production (Ton)	Productivity (Ton/Ha)
1	Sumatera	779,647	435,215	0,55
2	**Java**	**186,151**	**109,205**	**0,58**
3	Sulawesi	114,487	42,062	0,36
4	Nusa Tenggara	113,674	43,306	0,38
5	Borneo	22,450	6,992	0,31
6	Maluku and Papua	13,591	2,632	0,19
	Total	1.229,973	639,412	2,37
	Average	204,995	106,568	0,39

Source: Dinas Pertanian Jawa Tengah, (2018)

One of the coffee producers on the island of Java is Central Java Province, which can produce quite a high amount of coffee because the Central Java region supports growing coffee, both robusta, and arabica coffee. Coffee is one of the leading commodities in Central Java Province. Temanggung Regency has the largest plantation area in Central Java. Besides, Temanggung Regency also has the largest number of farmers in Central Java (BPS, 2017). Temanggung coffee is one of the best coffees among the other 15 best coffees in Indonesia (Dinas Pertanian, 2016). The uniqueness of the specific taste produced by Temanggung coffee made this coffee able to steal the world's attention during the Specialty Coffe Association (SCAA) event in 2016. This event was held in Sweden (Harian Nasional, 2016). This event was also the background for the holding of the Temanggung Coffee Festival, which was held 5 times by the Indonesian Young Entrepreneurs Association (HPMI). Temanggung coffee has also penetrated the world market in 2015 through Wali Limbung Coffee (Antaranews.com, 2015). Coffee production in Temanggung is quite high due to the large area used to grow coffee. This can be seen from the following table:

Table 4. Area of Arabica coffee plantation in Temanggung 2017

No	sub-district	Land Area (Ha)	Production (Ton)
1	Kledung	588..09	319.69
2	Tretep	293.00	180.11
3	Bulu	148.90	72.37
4	Candiroto	96.93	28.11
5	Ngadirejo	65.40	48.38
6	Selopampang	43.70	17.38
7	Parakan	37.75	17.60
8	Bansari	36.85	20.16
9	Wonoboyo	34.00	22.61
10	Kaloran	14.00	2.61
11	Tlogomulyo	3.20	2.79
	Jumlah	1,381,82	731,81

Source: Badan Pusat Statistik, (2017)

From the table above, it can be seen that Kledung District has the largest area of Arabica coffee plantation in Temanggung Regency, which is 588.09 hectares. This is due to the location of Kledung District which is at an altitude of 1,138 masl with a maximum temperature of 29˚C. This situation supports the growth of Arabica coffee, although during the last few years the

production of Arabica coffee in Kledung District has decreased. Coffee production in Kledung District continues to decline, even though the area of coffee plantations in Kledung District tends to be constant. This can be seen from the data below:

Table 5. Land area and Arabica coffee production in Kledung District

Year	Land Area (Ha)	Production (total/year)	Productivity (Ton/Ha)
2014	578,09	553,46	0,95
2015	578,09	483,86	0,83
2016	578,09	349,17	0,59
2017	588,09	319,69	0,54
Total	2.322,02	1.706,18	2,91
Average	580,59	426,54	0,72

Source : Badan Pusat Statistik, (2014-2018)

Increasing the yield of coffee farming can be done in several ways. One of the ways that can be taken is by using production factors effectively and efficiently. The factors of production of land area and labor are very important in supporting coffee production. Land area and seeds are important things in coffee farming. Proper planting and care of plants will result in high coffee production. On the other hand, other production factors, if used properly, will encourage optimal production so that it will create efficiency in farming. Efficiency will save the use of production factors. Efficiency will also reduce the costs incurred by farmers during the planting period. In the end, this situation will create greater profits during the harvest period. Bigger profits will encourage sustainability and smooth farming.

From this discussion, a research question was obtained, namely What is the level of economic efficiency in coffee farming in Kledung District, Temanggung Regency?
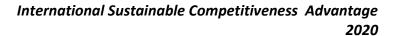
2. Materials and methods

This type of research is quantitative research, namely the activities of collecting, processing, analyzing, and presenting data based on the amount, which is carried out objectively to solve a problem (Sugiyono, 2017). This research was conducted in Kledung District, Temanggung Regency, Central Java Province. The population in this study was 1,319 farmers of Arabica coffee in Tlahab Village, Kledung District, consisting of 21 neighborhood units. To determine the sample size with a known population, a formula from Yamane and Issac and Michel can be used (Suharsimi, 2010).

$$n = \frac{N}{1 + N(e)^2}$$
$$= \frac{1.319}{1 + 1.319(0.1)^2}$$
$$= 91,66$$

So the sample size taken was 91.66 which was rounded up to 92 farmers who were divided into 21 neighborhood units, then each RT a quota of approximately 4 to 5 people was taken. The sample in this study uses the quota sampling method, which is a sampling method by assigning several population members to samples who have certain characteristics to the desired number regardless of the level in the population but are classified into several groups (Sugiyono, 2018).

Primary data collection is obtained directly through interviews and using questionnaires that are distributed directly to respondents. According to Sugiyono the questionnaire is giving a set of questions to respondents to be answered and then returned to the researcher (Sugiyono, 2018).

The efficiency test is used to investigate whether the input used in the Arabica coffee production process in Kledung District is efficient or not. Efficiency is the best comparison between input and results from the resources that have been used, to achieve maximum results as well as the relationship between what has been accomplished (Hadi, 2011). The efficiency test used is economic efficiency.

Analysis of coffee farming in Kledung District using the R / C ratio (Sari, 2011) to determine the level of economic efficiency in the farming.

R/C=Revenue/Cost

- If the R / C ratio> 1, it can be said that farming has achieved economic efficiency
- If the R / C ratio <1, it can be said that the farm is not achieving economic efficiency or experiencing inefficiency.
- If R / C ratio = 1, it means that the farm does not achieve efficiency but also does not experience inefficiency.

3. Results and discussion

In calculating the efficiency of coffee farming in Kledung District, it is divided into 3 groups, namely land area 1000m^2, 1001-1500m^2, and ≥1500m^2. The total income per hectare of Arabica coffee farming is as follows:

No	Land Area (m^2)	Production (kg)	Price (Rp)	Income (Rp)
1	≤1000	99.950	5.867	586.450.000
2	1001-1500	52.998	5.843	309.688.500
3	≥1500	41.317	5.891	243.402.000
	Average	**64.755**	**5.867**	**379.846.833**
	Total	**194.265**	**17.601**	**1.139.540.500**

Source: Primary data, (2020)

From the data above, it can be seen that the average income generated from Arabica coffee farmers in Tlahab Village, Kledung District has a high enough value, namely IDR 379,846,833 with a total cost of IDR 1,139,540,500. In addition to the following income, the costs incurred by Arabica coffee farmers in Kledung District were obtained with a total cost of IDR 541,568,067

Costs used by farmers in Arabica Coffee Farming in 2019

No	Land Area (m^2)	Total Cost (Rp)
1	≤ 1000	211.839.595
2	1001-1500	141.285.207
3	>1500	188.443.265
	Total	541.568.067
	Average	180.522.689

Source: Primary data, (2020)

Farming Efficiency is a condition in which in the farming process using certain inputs to get a certain output or by using the minimum possible input and costs to get the maximum possible output.

Farming Efficiency is used to determine the level of farming success. To determine the level of efficiency in coffee farming, the R / C ratio is calculated. R / C ratio is the ratio between total revenue and total costs incurred. Analysis of coffee farming in Kledung District using the R / C ratio (Sari, 2011) to determine the level of economic efficiency in the farming.

$$\frac{R}{C} = \frac{Revenue}{Cost}$$

- If the R / C ratio> 1, it can be said that farming has achieved economic efficiency
- If the R / C ratio <1, it can be said that the farm is not achieving economic efficiency or experiencing inefficiency.
- If R / C ratio = 1, it means that the farm does not achieve efficiency but also does not experience inefficiency.

The following is the efficiency obtained by coffee farmers in Tlahab Village, Kledung District :

$$\frac{R}{C} = \frac{1.139.540.500}{541.568.077}$$
$$= 2,10$$

The value of the R / C ratio of 2.10 means that each expenditure is Rp. 1 will get a yield of 2.10 rupiah. From the value of the R / C ratio> 1 means that it can be said that farming is efficient and feasible to continue. Efficient means that each farm revenue earned can cover the costs incurred in farming Arabica coffee.

4. Conclusion

Based on the analysis of the research data that has been conducted, it can be concluded that the results of research on Arabica coffee farming in Tlahab Village, Kledung District are in general, Arabica coffee farming in Tlahab Village, Kledung District has an R / C ratio > 1 of 2.10, it can be said that coffee farming Arabica is efficient and worthy of continuing efforts.

Based on the research that has been done, Arabica coffee farming in Tlahab Village, Kledung District has achieved efficiency. To optimize the production carried out, farmers must pay attention to farming processes such as regular fertilization of coffee plants, which is done twice a year, namely at the beginning of the rainy season and carried out after the harvest season is complete (Aak, 2010) spraying coffee plants to avoid plant pests. coffee and pruning unnecessary plant branches, besides that it is necessary to replace plants or rejuvenate Arabica coffee plants after the plants are 15 years old because plants that are 15 years old will experience a decrease in productivity so it is necessary to rejuvenate plants to be more efficient in using production factors.

In this study, it was found that Arabica coffee farming in Tlahab Village, Kledung District, was said to be profitable, if the farmers in the business process were able to use production factors properly such as the use of superior seeds that did not experience plant defects such as rotten stems or leaf rust and regular fertilization or two times a year, namely at the beginning of the rainy season and after the harvest period is complete and performs optimal maintenance such as spraying coffee plant pests, pruning unnecessary branches and replacing unproductive plants, namely plants that are more than 15 years old or rejuvenation of coffee plants that are more than 15 years old to produce optimal fruit (Kementrian Pertanian, 2016) so that production results will increase and will increase profits received by farmers and it is necessary to carry out further education by local governments or local government agencies. krait to provide counseling on proper Arabica coffee plant cultivation techniques to increase the production and productivity of Arabica coffee plants.

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