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Added-Value and Development Strategy of Arabica Coffee Manufacturing Business

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Abstract

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The manufacturing business of Arabica Coffee highly potential in increasing the selling value of the coffee commodity. Unfortunately, this business still faces some hindrances during its implementation. This study aimed to: (1) analyze the amount of added-value in the manufacturing process of Arabica Coffee and (2) analyze the development strategy required. The study conducted from December 2019 to February 2020 in six Arabica Coffee Manufacturing businesses in Tlahab Village. This case-study was involving 12 respondents and employing Hayami Method, IFAS matrix, EFAS matrix, and SWOT matrix as the data analysis method. Result showed that the mean of the added-value of the green bean and coffee powder, green-bean coffee and the coffee powder was IDR 3,425.44 and IDR 16,916.05, 26.45% (moderate added value) and 54.94% (high added value), respectively. The analysis from the IFAS and EFAS matrix resulted six factors of strength, five factors of weakness, five factors of opportunity, and three factors of threat. According to the SWOT diagram, the Arabica Coffee manufacturing business in Tlahab Village was in Quadrant I that indicated the strategy required was using the strength and utilizing the opportunities existed. Those strategies consisted of the utilization of all resources in Tlahab Village, improving cooperation between the stakeholder and business owner, and developing the marketing management used.

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INTRODUCTION

Coffee is a plantation plant that widely cultivated in Indonesia. The coffee commodity production in Central Java in 2018 had reached 20,399.66 tons, while the coffee production in East Java and West Java in 2018 reached 66,661 tons and 8,515 tons (Statistic, 2019). Based on those data, the area of Central Java was above the area of West Java and below East Java. This data showed that the coffee agroindustry in Central Java was potential to be developed.

Coffee was one superior commodity in Temanggung Regency, besides tobacco. There were two types of coffee cultivated there: Robusta and Arabica Coffee that could be distinguished by its seed, form, and taste. Arabica Coffee contained less acid and caffeine compare with Robusta Coffee (Rahardjo, 2017). Arabica Coffee was only well cultivated in a plateau area > 1,250 – 1,850 mdpl, while Robusta coffee well planted in lowland < 1,000 mdpl (Alam, 2007).

Kledung District was a well-known area that produced the highest coffee commodity in the year of 2017 (219.69 tons) (Statistic Data, 2018). The high amount of coffee harvested stimulated the local community to build coffee manufacturing businesses. The coffee manufacturing business was processing the *gelondong merah* (red-log) coffee into green-bean coffee and coffee powder. The manufacturing process showed significant increase on the value added to the coffee commodity harvested. The added value defined as the difference between the product value with the raw material (Hayami et al., 1987). The added-value analysis required to calculate the amount of value added after the coffee manufacturing process. As time went by, there was some coffee manufacturing business built by the local community. Hence, a development strategy needed to organize the manufacturing business. The strategy was an activity done to allocate the resource and achieve the goal set. Development strategy analysis was the internal and external environment that consisted of strength, weakness, opportunity, and threat.

According to a study in East Java, the added-value of Arabica coffee powder was higher than *gelondong merah* coffee (Hariyati & Rahayu, 2014). Similar to this result, a study done in Bali also found that the added-value of Arabica Coffee powder was higher than the green bean coffee (Dewi et al., 2015). A study conducted by Tambarta (2017) in Aceh found that the added-value of Arabica Coffee powder had a higher specialty in comparison with other types of coffee.

The novelty of this study lied in the analysis of the added-value of Arabica Coffee that manufactured by the full-wash method and investigation of the development strategy of the coffee on the scope of home-industry. Finally, this study aimed to (1) analyze the amount of added-value required in manufacturing Arabica Coffee and (2) analyze the business's development strategy.

RESEARCH METHOD

The study location was Tlahab Village in Kledung District, Temanggung Regency that was selected by a purposive random sampling technique. The study location chosen based on the high number of arabica coffee commodity produced and coffee manufacturing business existed in the village. This study conducted on December 2019 to February 2020. The study population was six owners of the arabica coffee manufacturing business who involved in added-value analysis and six-key persons who involved in development strategy analysis. The key persons were expert in the arabica coffee manufacturing business who were chosen by purposive sampling technique. The data collection done session with the business owner, marketing parties, distributor, educator, community leader, and the head of departments by employing a questionnaire. The analysis method used were:

1. The first study aim done by hayami method to know the amount of added value. The calculation of added value using hayami method shows by Table 1.

Table 1. Added value Calculation Procedure Using Hayami Method

Variable	Unit	Notation
Output, input and price		
Total product output	IDR/production process	A
Raw material input	kg/production process	B
Worker input	Worker working days/ production process	C
Conversion factors	Kg output/ kg raw material	$D = a/b$
Worker coefficient	Worker working days/ kg raw material	$E = c/b$
Output price	IDR/kg	F
Mean worker's income	IDR/production process	G
Income and Profit		
Raw material input price	IDR/kg	H
Contribution of other input	IDR/kg	I
Output value	IDR/kg	$J = d \times f$
Added-value	IDR/kg	$K = j-h-i$
Added-value ratio	%	$L = k/j \times$ 100%
Worker income	IDR/kg	$M = e \times g$
Worker party	%	$N = m/k \times$ 100%
Profit	IDR/kg	$O = k - m$
Profit party	%	$P = o/j \times$ 100%
Retribution for the Production Factor		
Margin	IDR/kg	$Q = j-h$

a. Worker's Income	%	$R = m/q \times 100\%$
b. Contribution from other input	%	$S = i/q \times 100\%$
c. Profit	%	$T = o/q \times 100\%$

Source: (Hayami *et al.*, 1987)

- The second study aim was analyzing correlation between the internal and external environment by using IFAS and EFAS matrix and investigating the business development strategy.

RESULT AND DISCUSSION

Added-value

The arabica coffee manufacturing business in Tlahab Village produced green bean coffee and coffee powder. The coffee manufacturing process resulted in added-values that show in Table 2.

Table 2. Added-Value of Green Bean Arabica Coffee in Coffee Manufacturing Business Tlahab Village 2019

No	Added Value	Added Value Ratio
	---IDR/kg---	---%---
1	4,062.86	29.94
2	4,786.40	37.23
3	2,304.65	18.44
4	2,625.31	20.42
5	3,642.41	28.33
6	3,131.43	24.36
Mean	3,425.44	26.45

Source: Processed Primary Data (2020)

The added-value mean of green-bean coffee manufacturing process from the *gelondong merah* coffee in Tlahab Village was IDR 3,425.44 per kg. The lowest and the highest added value was IDR 2,304.65/kg and IDR 4,786.40/kg, respectively. The lowest ratio and the highest ratio was 18.44% and 37.23%, respectively. The mean ratio of added-value in manufacturing green-bean coffee was 26.45% that classified into moderate category. Hubeis (1997) stated that the added-value ratio of 15% to 40% considered as moderate category. A moderate added-value ratio caused by the low output price that set. The price set determined by the coffee manufacturing process and production cost. The coffee manufacturing process in Tlahab Village was similar to the coffee manufacturing process in Nepal. The fewer step of the coffee manufacturing process resulted in a lower price than the manufacturing process with more steps (Subedi, 2011).

Tabel 3. Added-Value of Arabica Coffee Powder in Coffee Manufacturing Business Tlahab Village 2019

No	Added Value	Added Value Ratio
	---IDR---	---%---
1	14,360.86	50.26
2	6,812.27	39.74
3	9,498.63	42.74
4	27,421.25	68.55
5	22,720.02	66.27
6	20,684.26	62.05
Mean	16,916.05	54.94

Source: Processed Primary Data (2020)

The mean added-value of the coffee powder manufacturing process from the *gelondong merah* coffee in Tlahab Village was IDR 16,916.05. The lowest and highest added-value was IDR 6, 812.27 and IDR 27,421.25, respectively. The added-value of the coffee powder manufacturing process was higher than the added-value of the green bean coffee manufacturing process due to more steps needed in manufacturing coffee powder. The added-value formed by several steps. Therefore, the output price set was higher than another coffee product (Priantara et al., 2016). After the roasted and milling process, the coffee product became more expensive.

The highest and lowest added-value ratio from the coffee manufacturing business in Tlahab Village was 68.55% and 39.74%, respectively. The mean added-value ratio from the six respondents was 54.94%. The mean added-value of the *gelondong merah* manufacturing process to coffee powder in Tlahab Village had higher added value. Hubeis (1997) stated that the added value considered to be high, moderate, and low if the percentage > 40%, 15 – 40%, and < 15%, respectively. This added-value ratio was higher than the coffee manufacturing process in Austria that happened due to the roasting process was increasing the added-value as much as 100–300% (Yeretzian et al., 2002).

Development Strategy

IFAS Matrix

According to the internal environmental factor analysis on the strength and weakness factor, the IFAS matrix shows by the Table 4.

Table 4. IFAS Matrix

Internal Strategy Factors	Weight	Rating	Score
Strength:			
1. The production process run according to the standar operational procedure (SOP) set	0.12	3.43	0.40
2. Provided online service	0.10	3.29	0.32
3. Had an adequate stock of raw material needed	0.10	3.71	0.38
4. Had a unique taste	0.10	3.57	0.36
5. Had full-set of equipments	0.10	2.43	0.23
6. Well-known as Arabica Coffee producing area	0.09	3.14	0.29

Strength Factor Total			1.98
Weakness:			
1. Equipment malfunction happened quite often	0.07	3.29	0.22
2. Several coffee product merk was not widely known	0.09	2.29	0.20
3. Did not had proper amount of capital to run the business	0.08	3.43	0.27
4. No sachet-packaged available	0.08	2.71	0.22
5. The most product sold as green bean product	0.08	2.00	0.16
Weakness Factor Total			1.07
Total	1.00	33.29	3.06

Source: Processed Primary Data (2020)

According to Table 4, the first strength in the internal factor was the production process that run based on the SOP had the highest score of 0.40. All coffee manufacturing business in Tlahab Village employed the production process based on the SOP, using modern technology equipment. This technology claimed to be effective in producing high-quality coffee. Production process implemented in Tlahab Village similar to the coffee manufacturing process in Kenya. Most coffee manufacturing businesses in Kenya implemented proper production processes by using modern technology equipment to maintain the coffee quality produced (Muthoni, 2014).

The majority of Arabica Coffee sold was the factor with the lowest score in the internal factors (0.16). The key-informant stated that the demand for green-bean was higher than the coffee powder due to the difference in the consumer characteristic. The majority of consumers who bought the Arabica Coffee in the form of green-bean were the owner of coffee businesses or coffee shops. They usually bought the coffee in a high amount to be re-manufactured, while the consumer of coffee powder was usually coffee drinker. They usually bought coffee in a small amount for personal consumption.

EFAS Matrix

According to the external environmental analysis on the opportunity and threat factor, the EFAS matrix shows by the Table 5.

Table 5. EFAS Matrix

External Strategy Factors	Bobot	Rating	Score
Opportunity			
1. Support widely provided by the government	0.14	3.57	0.51
2. Drinking coffee trend	0.12	3.57	0.43
3. New regulation of drinking coffee every Friday	0.13	2.86	0.36
4. High demand	0.12	2.86	0.33
5. Condition and strategic geographical area	0.13	3.29	0.42
Opportunity Factor Total			2.05
Threat			
1. Competition with the similar type of business	0.11	2.43	0.27

2. Uncertain sale amount	0.13	3.00	0.38
3. Competition with coffee product produced by factory	0.13	2.29	0.30
Threat Factor Total			0.95
Total	1.00	23.86	3.00

Source: Processed Primary Data (2020)

According to Table 5, the support from the government obtained the highest score (0.51). Respondents stated that the support from the government affected the positive progress of the Arabica Coffee manufacturing business in Tlahab Village. The support administered through the Agricultural Department and Industry Trade Cooperation Small Medium Enterprises Department consisted of providing coffee manufacturing equipment (pulper and huller machine), room for exhibition event to introduce the product, and conducted education sessions related to the coffee agribusiness. The type of support given by Bali government was quite different. Their government mainly focused on the coffee branding that mostly done by loosening some regulations related to export and enhancing cooperation with Indonesia-State-Owned Cooperation in providing capital for the coffee business (Sukiada & Parameswari, 2020). All support accepted in Tlahab Village only given by the government. Luitel (2017), in their study, found that the Nepal government also cooperated with the private sector to manufacture and promote their coffee product.

The competition from a similar type of business in the external factor had the lowest score of 0.27. A similar type of business already appeared in some areas at Temanggung Regency. This type of competition also happened in Kodagu, India that caused monopolistic competition (Chethana et al., 2010).

Arabica Coffee Manufacturing Business Development Strategy

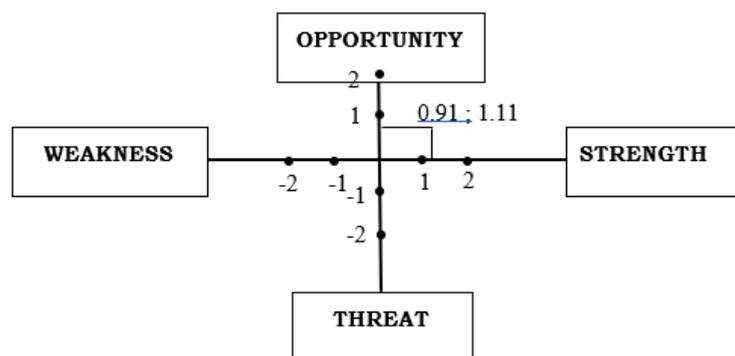
According to the SWOT analysis of the arabica coffee manufacturing business in Tlahab Village, the score for each factors was as follows:

1. Strength Score = 1.98
2. Weakness Score = 1.07
3. Opportunity Score = 2.05
4. Threat Score = 0.94

The result then calculated to know the x and y coordinats in the SWOT Diagram. The coordinates then used to describe the position of the business in the diagram. The calculation of the x and y coordinat axis was:

- a. The result of x coordinat as the internal factor was $1.98 - 1.07 = 0.91$
- b. The result of the y coordinat as the external factor was $2.05 - 0.94 = 1.11$

According to the calculation, the positive coordinat showed by the (x) and (y) axis was 0.91 and 1.11, respectively. The coordinates of (x) and (y) shows by the Picture 1.



Picture 1. SWOT Diagram

According to the SWOT diagram, the coffee manufacturing business in Tlahab Village was in Quadrant I. This position indicated that this business was profitable. The coffee manufacturing business had strengths utilized by using the opportunities that existed. The strategy required to employ in developing coffee manufacturing businesses obtained by SWOT matrix analysis. The SWOT matrix analysis done by using four types of strategy: SO (strength-opportunity), WO (weakness-opportunity), ST (strength-threat), and WT (weakness-threat) (David, 2011).

Table 5. SWOT Matrix

	Internal Strengths (S)	Weakness (W)
External	1. The production process run according to the standar operational procedure (SOP) set	1. Equipment malfunction happened quite often
	2. Provided online service	2. Several coffee product merk was not widely known
	3. Had an adequate stock of raw material needed	3. Did not had proper amount of capital to run the business
	4. Had a unique taste	4. No sachet-packaged available
	5. Had full-set of equipments	5. The most product sold as green bean product
	6. Well-known as Arabica Coffee producing area	
Opportunities (O)	S – O	W – O
1. Support widely provided by the government	Using the strength to utilize the opportunity.	Minimalizing the weakness and utilizing the opportunity
2. Drinking coffee trend	1. Enhancing all resource existed (S1, S3, S4, S5, O5)	Improving the cooperation between the stakeholder and the business owner (W1, W3, O1)
3. New regulation of drinking coffee every Friday	2. Improving cooperation between the stakeholder business owner (S1, S6, O1, O3)	1. Improving the promotion through various media (W2, O2, O4)
4. High demand	3. Developing management and	
5. Condition and strategic geographical area		

Threats (T)	S - T	W - T
1. Competition with the similar type of business	Using the strength to control the threat.	Minimalizing the weakness and avoiding the threat.
2. Uncertain sale amount	1. Enhancing the marketing process (S2, S4, T1, T2, T3)	1. Innovation: produce coffee in sachet-package (W4, W5, T3)
3. Competition with coffee product produced by factory	2. Maintaining the product quality and test (S3, S4, T1)	

Source: Processed Primary Data (2020)

According to the SWOT diagram, the coffee manufacturing business positioned in Quadrant I. Hence, the most appropriate strategy to be implemented was SO (Strength Opportunity). Strategy-SO enhanced the strengths and opportunities of the business. The strategy done by utilizing all resources in Tlahab Village, improving cooperation between the stakeholder and business owner, and developing the marketing management.

CONCLUSION

The mean added-value of the green bean coffee and the coffee powder was IDR 3,425.44 and IDR 16,916.05, respectively. There were six factors of strength, five factors of weakness, five factors of opportunity, and three factors of threat found in the SWOT analysis. The Arabica Coffee manufacturing business in Tlahab Village positioned in the Quadrant I that indicated the strategy required was using the strength and utilizing the opportunities existed. Those strategies were: utilizing all resources in Tlahab Village, improving cooperation between the stakeholder and business owner, and developing the marketing management.

RECOMMENDATION

We suggest the business owner build work together with the government to obtain equipment aid and reduce the cost of huller and roasting service. Each business owner also needs to cooperate with other business owner to maintain the quality of coffee product and set the appropriate price. Future studies need to explore the implementation and development strategy evaluation according to the result of this study.

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