SWOT analysis and strategy formulation for cocoa small and medium enterprise development in Nglanggeran area, Gunung Kidul regency-Indonesia: the case of Taman Teknologi Pertanian

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Abstract. Cocoa is one of the potential agricultural resources in Indonesia but still lacks the attention of stakeholders to get the best economic value. It is important to encourage the cocoa business industry to capture opportunities in the cocoa processing business in the future. Taman Teknologi Pertanian in Nglanggeran is an SME that is also a business incubator that has produced various chocolate products. The design used in this research was explanatory research with the process of data collection through interviews, observation, and questionnaires. This analysis consists of two steps of weighting and prioritizing. The weighted score of the IFE and EFE matrix is (2.5671; 3.1132). SWOT diagram is used to determine the current position of the company which is on the second quadrant (1.1895; 0.0460) which refers to the S-T strategy. The chosen strategy triggered to do diversification strategy as doing product innovation gradually according to consumer needs. Concentric diversification for internal can be done by utilizing cocoa peel waste as scrubs, whereas, concentric diversification for external can be done by developing agro-tourism. These strategies support sustainability in the area.

1. Introduction
Indonesia is an agrarian country that produces many agriculture products, especially on the plantation sub-sector. One of the best commodities in international trade is cocoa. Indonesia is the third larger cocoa producer in the world after Cote d'Ivoire and Ghana. Indonesia produces 456,000 tons/year of cocoa beans. The raw cocoa beans are exported in the amount of 365,000 tons/year, and the rest, 121,000 tons/year are processed by the industry in the country. Some of the processed products are exported annually in the form of cocoa butter (36,942 tons), cocoa powder (25,423 tons), cocoa cake (17,354 tons), and cocoa liquor (1,272 tons) [1]. Even so, this condition is not supported by the development of the domestic industry.

It is needed to provide law to encourage the development of the cocoa industry [2]. Cocoa is one of the potential agricultural resources in Indonesia but still lacks the attention of stakeholders regarding the need to improve quality to get the best economic value. This matter could be the best advantage for SME to catch opportunities. Indonesia has a chance to enter the global and domestic markets.
According to the data, the number of consumers who consume cocoa in Indonesia is increasing every year. The number of consumers who consume cocoa in 2017-2021 is expected to increase [3]. The rate of consumption growth of the year 2017-2021 is 7.98%. This could be the best opportunity for SMEs to develop their products. The number of cocoa’s consumers are presented in table 1.

Table 1. Projections for the Consumption of Cocoa [3]

| Year | Production (Ton) | Consumption (Ton) | Growth (%) |
|------|------------------|-------------------|------------|
| 2017 | 666,085          | 503,814           |            |
| 2018 | 691,870          | 543,007           | 7.78       |
| 2019 | 721,599          | 586,144           | 7.94       |
| 2020 | 755,416          | 633,370           | 8.06       |
| 2021 | 793,467          | 684,828           | 8.12       |
| Rate of Growth (%) |                   |                   | 7.98       |

According to Table 1, it was estimated that the production and consumption of cocoa powder will be increasing within years. Those would give opportunities to the industrial stakeholders to develop. It is supported by the availability of cocoa in the area. Special Region of Yogyakarta (DIY) is one of the provinces in Java Island that was developed to be the potential area of cocoa. The cocoa plantation area in DIY is 3,614 ha consisting of 1,990 ha very suitable land in Gunung Kidul regency and 1,624 ha suitable area in Kulon Progo regency (227 ha), Gunung Kidul (1,047 ha), and Bantul (300 ha) [4]. Those data show that a large number of cocoa plantations in Gunung Kidul regency. The cocoa plantation in Gunung Kidul regency was spread in three areas, Patuk, Ponjong, and Karang Monjo. Patuk is the largest area that produces 244.78 tons in 749 ha suitable land with a productivity rate of 800 kg/ ha [5]. Nglanggeran is one of the potential villages in Patuk that had been producing consumed chocolate products. Taman Teknologi Pertanian (TTP) Nglanggeran is a business incubator that evolved to be a Small and Medium Enterprise (SME) that has produced daily chocolate products such as cocoa powder, instant chocolate drink, dark chocolate, and milk chocolate. The manager said that 30% of the cocoa in Nglanggeran is processed in TTP in a day. Compared to table 1, TTP needs to improve the current condition and manage the strategy to catch the opportunities in the future.

Some aspects are needed to be analyzed and improved, both from internal and external factors. As a business that is still not managed well, Taman Teknologi Pertanian still faces some difficulties to pass some obstacles to develop their business. The obstacles that were occurred in the development of TTP Nglanggeran are considered as weaknesses and threats. Despite those, TTP Nglanggeran has big opportunities to develop the company with the capability that is considered as strengths. The ability of experts to diagnose the threats and maximize the strengths optimized the opportunities and minimize the weaknesses is needed to compete with others. With the SWOT matrix approach and the research-based analysis, it will be used to formulate the strategy, based on the managerial position’s decision.

On the basis of the background of above problem, this study aims to (1) identify and analyze the internal and external factors that is occurred in TTP Nglanggeran (2) analyze the strength, weakness, opportunity, and threat to determine the right decision strategy in order to develop TTP Nglanggeran (3) formulate and make decision to choose the best strategy among the alternative strategies that are given, so TTP Nglanggeran can expand their business. This study is expected to (1) provide information for the stakeholders about the SWOT of TTP Nglanggeran (2) give suggestions to the stakeholders in order to increase competitiveness to develop the business (3) contribute to the society to enrich the knowledge about strategic management in SME. The scope of this study is limited to (1) Taman Teknologi Pertanian as a Small and Medium Enterprise which produce chocolate products (2) the activities in production process, marketing, and managing human resource (3) focus on IFE (Internal Factor Evaluation), EFE (External Factor Evaluation, SWOT matrix and diagram to analyze the problem and formulate the strategy.
2. Methodology

2.1. Study site and data collection

This study was conducted in TTP (Taman Teknologi Pertanian) Nglanggeran, Patuk, Gunung Kidul regency by taking 5 respondents who have the capability to make the decision. Sampling was done by using purposive sampling technique. The respondents who participated was the employee who can make a decision and understand the condition of TTP. All the respondents were coming from internal company sources. In this study, primary data were obtained by in-depth interviewing with the capable employee and using paired comparison questionnaires. A paired comparison is used for weighing up the relative importance of different options. It helps to prioritize things that are not clear, where the options are completely different, where evaluation criteria are subjective, or where they are competing in importance. Respondents were presented with two objects and asked to select one according to some criterion. This method has an advantage of forcing constrains on respondent’s behavior on the alternative choices [1-3]. Secondary data were obtained by relevant studies, works of literature and data from Badan Pusat Statistik (BPS) and Kementerian Perindustrian (Kemenperin).

2.2. Survey procedure and valuation method

Respondents in this research were initially asked for details about their name, position, and contribution to the company. Then, they were asked to fill the question to perform the valuation methods for weighting and ranking preferences. The questionnaires were written based on the in-depth interview that had been done beforehand, then respondents were asked about preferable things. Each respondent spends time about a half hour to complete the questionnaires.

2.2.1. Determine the weight score. The first questionnaire is used to decide the weighted score of internal and external factors that are required for IFE and EFE analysis. It consists of two sections. The first section is to compare the internal factors that consist of strengths and weaknesses. The second section is to compare the external factors that consist of opportunities and threats. It used a paired comparison scaling technique. The weighting of each variable uses a scale of 1, 2, and 3 which shows that:

- 1 = if the horizontal factor is less important than the vertical factor
- 2 = if the horizontal factor is as important as the vertical factor
- 3 = if the horizontal factor is more important than the vertical factor

2.2.2. Determine the rank score. The second questionnaire is used to decide the ranked score of internal and external factors that are required for IFE and EFE. It consists of two sections. The first section is about to rank the internal factors. The second section is about to rank the external factors. It used the Likert scaling technique. The following is an IFE rating shows the company position among the competitor that is determined by the scale of 1 to 4, which shows that:

- 1 = very strong compared to competitors
- 2 = stronger compared to competitors
- 3 = weak compared to competitors
- 4 = very weak compared to competitors

Meanwhile, the following is an EFE rating shows the response of the company that is determined by the scale of 1 to 4, which shows that:

- 1 = very low response
- 2 = low response
- 3 = high response
- 4 = very high response
2.2.3. *Composition of the questions.* The questionnaire consists of 23 items of questions, 7 items for strength, 6 items for weaknesses, 5 items for opportunities, and 5 items for threats.

2.3. *Analysis*

Data that had been obtained then analyzed by the descriptive analysis using IFE, EFE matrix, and SWOT analysis. A descriptive analysis is used to analyze the problems and the current position of the SME that is needed to develop. IFE and EFE matrix analysis are used to identify the internal and external factors then it is used to weighted the factor. The weighted scores were obtained from the results of paired comparison questionnaires. The weighted scores are needed to decide the current position of the SME through the SWOT diagram. SWOT analysis is used to formulate the strategy by using strength, weakness, opportunity, and threat.

3. *Result and Discussion*

3.1. *Analysis of internal and external factors*

Strengths and weaknesses are included in internal factors meanwhile opportunities and threats are included in external factors. The internal factors were obtained by interview and observation results. The internal factors could be seen in Table 2.

| Table 2. Internal Factors of Taman Teknologi Pertanian Nglanggeran. Internal Factor |
|---------------------------------|----------------------------------------------|
| No.    | Strength                                           |
|--------|----------------------------------------------------|
| 1      | The location of the factory is near the resources |
| 2      | Availability of variation products                |
| 3      | The machine which is used is semi-modern          |
| 4      | Availability of license from the related institutions |
| 5      | The human resources who have loyalty to the company |
| 6      | The good quality standard of the products         |
| 7      | Integrated with tourism area                      |

The external factors were obtained by interview result and it was arranged by five factors. The external factors could be seen in Table 3.
Table 3. External Factors of Taman Teknologi Nglanggeran. External Factor

| No | Opportunity                                         |
|----|-----------------------------------------------------|
| 1  | Opportunity to enter the global market               |
| 2  | Government’s supports to SME                         |
| 3  | The growth of online shopping activities             |
| 4  | Increased consumption of cocoa products              |
| 5  | Potential tourism area to support the marketing activities |

| No | Threat                                               |
|----|------------------------------------------------------|
| 1  | Many competitors in the same field                   |
| 2  | Decrease number of brand loyalty                     |
| 3  | Buyer propensity to substitute                        |
| 4  | Cost of changing in certain condition could affect the price |
| 5  | Price sensitivity of customers                        |

3.2. Internal and External Factor Evaluation Matrix (IFE-EFE)

IFE (Internal Factor Evaluation) matrix is a tool to evaluate the strength and weaknesses of the company. It is a brief step in an internal audit of strategic management. IFE matrix is an instrument for assessing internal factors (strengths and weaknesses) [6]. Internal analysis is an attempt to determine the organizational capability in operations and achieve performance. The determination of internal strategic factors can be done by comparing and evaluating the past performance of the company, key competitors of the company, and industry [7]. The EFE matrix is an instrument to analyze the external opportunities and threats [8]. External factors evaluation matrix is used to know whether the company can effectively take some advantages of existing opportunities. Along minimizing the external threats [9]. The weighted score assessment of IFE and EFE of the company could be seen in Table 4 and Table 5.

Table 4. Internal Factor Evaluation of Taman Teknologi Pertanian Nglanggeran

| Internal Factor Evaluation | Weight | Rank | Weighted Score |
|----------------------------|--------|------|----------------|
| No  | Strength                                      |       |                |
| 1  | The location of the factory is near the Resources | 0.0771 | 3.8 | 0.2929 |
| 2  | Availability of variation products            | 0.0670 | 3   | 0.2010 |
| 3  | The machine which is used is semi-modern      | 0.0846 | 3   | 0.2539 |
| 4  | Availability of license from the related institutions | 0.0737 | 3.6 | 0.2653 |
| 5  | The human resources who have loyalty to the company | 0.0763 | 3.8 | 0.2898 |
| 6  | The good quality standard of cocoa powder     | 0.0833 | 3.6 | 0.3000 |
| 7  | Integrated with tourism area                  | 0.0801 | 4   | 0.3204 |

**Total Strength Score** 1.9233
3.3. **SWOT diagram and analysis**

The approach used to choose the business development strategy in Taman Teknologi Pertanian Nglanggeran was SWOT analysis. The SWOT analysis employs the strategies of the company development so that internal and external factors could be formulated and assessing and weighting could be done furthermore to those factors.

Based on the IFE and EFE matrix, it can be illustrated a diagram that can determine in which position the company is. On the diagram in Figure 1, the position is in quadrant 2 (Q2) where the total strength score is 1.9233, the total weakness score is 0.7338, total opportunity score is 1.5336, and total score of threat is 1.5796. For that position, the value of X-axis is 1.1895 and the value of T-axis is -0.0460.
Taman Teknologi Pertanian has a huge number of strengths in the internal of the company, but it also faces some difficulties in the external of the company, so the strategy used is to diversify new products (make a diversification strategy). Based on the analysis of IFE-EFE and SWOT diagram, the suitable strategy that can be applied in company is S-T strategy which required to diversify some products. Diversification is a policy of making new products for entering new segments of market [10].

Product diversification is an effort made by industry to develop products to pursue growth, increase sales, profitability, and flexibility. Product diversification aims to produce new product innovations that will encourage consumers to make purchasing decisions by giving consumers many choices of products, increasing customer satisfaction, and increasing sales as its main goal.

The diversification that can be done in Taman Teknologi Pertanian Nglanggeran is the concentric diversification, both internal and external. External concentric diversification can be done by developing tourism (in this case participating in agro-tourism) and internal concentric diversification can be done by creating value-added products.

Agro-tourism is one of the alternatives which involves tourists traveling to farm for both recreation and education. It provides benefits for residents, farmers, and product processing industries in that area. Agro-tourism as niche tourism is growing in many parts of the world [11]. Therefore, this idea could be adapted in Taman Teknologi Pertanian as a strategy in the future in order to compete with competitors. The advantage of a close location to the farm can be used to diversify products that will attract tourists to visit and get to know the product. This will affect sales.

Based on the observations that the researcher had done, some gaps have not been captured by the industry to diversify its products. In the process of harvesting cocoa fruit, the cocoa beans are separated from the peel to be processed into some chocolate products. The by-product of harvesting is the presence of cocoa peel. The by-product produced in large quantities will be a problem if it is not handled properly [12]. Utilizing a by-product to create a product with added value is one of the strategies that can be done.

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**Figure 1. SWOT Diagram of Taman Teknologi Pertanian**
Nowadays, some consumers have turned to a lifestyle back to nature by utilizing natural ingredients for daily activities. Scrubbing is one of the activities that women routinely did for performing beauty treatments. There are antioxidants and antibacterial compounds in the cocoa peel, including polyphenols. The dominant type of polyphenolic compound is a flavonoid compound that has the potential as a natural antioxidant that prevents premature aging.

Diversification of the by-product as scrubs can be considered to be done by looking at market demand and opportunities that have not been captured yet by other competitors so as to minimize threats. Thus, there will be a new market share for this product that is developed in the next few years. The intended market share will expand, not only to consumers who visit the tourism objects in Nglanggeran village, but young women, adult women, and salons & spas can be the new market segments for the product. In addition, diversification is carried out in an effort to encourage sustainable growth. The plantations and postharvest processing and also the utilization of waste for integrated product diversification is one of the efforts in maintaining the sustainability of activities in the area.

4. Conclusion

Based on the SWOT diagram analysis, it can be concluded that Taman Teknologi Pertanian’s current position is on quadrant condition 2 which is the S-T strategy. The strategy that can be conducted is a diversification strategy. The following strategies that can be applied in Taman Teknologi Pertanian are (1) developing agro-tourism as niche tourism that can encourage a larger number of tourist who visits the village and buys the local products, and (2) developing new products by doing innovation to the by-product as a product with added value in it, one of them is creating scrubs from the cocoa peel.

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