Formulation of strategies for developing local chocolate product Socolatte in Pidie Jaya

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Abstract. The best strategy is intensively required for small industries in Indonesia nowadays, especially in Aceh. Rimbun Corp, as the oldest chocolate company in Aceh, still has many problems with expanding the production of Socolatte (local chocolate bar brand). The product has become unfamiliar for the tourists in Aceh recently. Moreover, this product has a short shelf life and lower quality if being stocked in an extended period. As a result, this chocolate cannot be sent further from the store, and it is more challenging for the customer to buy the product. The purposes of the research are to identify the main problems and to choose the best strategy using Business Model Canvas (BMC) as a method to collect the current data and to determine the specific problem in the whole production process. The research finds that there are no actions in the company to maintain customer relationship, and the main key activities should be priorities for finding a solution. After testing through the Analytical Hierarchy Process (AHP), the crucial criteria for expanding the small industry is the raw material (0.4453). Moreover, the industry should adopt new technology (0.3632) for creating an advanced chocolate product from bean to bar so the company can sell them globally and profitably.

Keywords: Strategy, Socolatte, BMC, AHP

1. Introduction

Consuming chocolate has continuously increased worldwide, and demand for chocolate products with a high standard directly increases too [1]. Therefore it requires industry to be more productive to produce chocolate in a large amount without decreasing its quality [2]. The quality of the chocolate product starts from how to treat raw material appropriately [3].

The cocoa bean, as raw material, is the crucial part of the chocolate making, which has a flavor and aroma that cannot be replaced by other commodities [4]. This fact provides an excellent opportunity for the development of the downstream chocolate industry, both local and international. Based on figure 1, chocolate consumption in Indonesia is still relatively small (0.25 kg per capita), and it is under the average amount of the majority worldwide consumption (around 4 to 5 kg per capita approximately) [5].

The most consumed chocolate product is from Switzerland (9 kg per capita) and followed by the three other nations: Germany, Austria, and the United Kingdom, which are lower by 2% than
Switzerland at the time; however, it is expected to steadily grow [1] because many chocolate industries spread both as a local and multinational company in Indonesia. Worldwide chocolate consumption is shown in Figure 1.

The need for good quality of raw material also increased rapidly. As a result, the price also continues to get higher [6], including for small scale industries in Aceh. Therefore, cocoa bean still becomes an essential commodity for the global world because of its role as the main ingredient of chocolate products. In Indonesia, the consumption of cocoa beans as the primary raw material in the processing of chocolate products continues to increase along with the increasing interest in various chocolate processed products [7].

Even though [8] Indonesia is the third biggest world producer of cocoa beans (260,000 tons), the quality of the beans is still below the two other biggest countries, namely Ivory Coast and Ghana (2,010,000 and 950,000 tons, respectively) [8]. The most used term of causing the lower quality is not fermented properly and completely unfermented [11]. As a consequence, quality standards [4] of cocoa bean production should be applied not only in large industries but also in the local small scale industries, especially in Aceh. The complete Indonesian National Standard (SNI) of cocoa bean is briefly depicted in table 1.

**Figure 1.** Chocolate consumption worldwide per capita in 2015 [5].

| Country        | Consumption (kg/capita) |
|----------------|-------------------------|
| Switzerland    | 9                       |
| Germany        | 7.9                     |
| Austria        | 7.8                     |
| United Kingdom | 6.6                     |
| Norway         | 5.4                     |
| Estonia        | 5.3                     |
| Sweden         | 5.2                     |
| Finland        | 4.9                     |
| Belgium        | 4.9                     |
| Austria        | 4.7                     |
| Netherlands    | 4.5                     |
| New Zealand    | 4.3                     |
| USA            | 4.2                     |
| France         | 4.2                     |
| Denmark        | 4.2                     |
| Lithuania      | 4.2                     |
| Japan          | 4.2                     |
| Singapore      | 2                      |
| Indonesia      | 0.5                     |
| China          | 0.04                    |
| India          | 0.03                    |

| Material                           | 1st Quality | 2nd Quality | Sub Standard |
|------------------------------------|-------------|-------------|--------------|
| Amount of seeds /100 gr            | **          | **          | **           |
| Water content, %(w/w) max          | 7.5         | 7.5         | >7.5         |
| Mildew, %(w/w) max                 | 3           | 4           | >4           |
| Unfermented %(w/w) max             | 3           | 8           | >8           |
| Insects, hollow seeds, germinate, %(w/w) max | 3 | 6 | >6 |
| Broken seeds, % (w/w) max          | 3           | 3           | 3            |
| Foreign objects % (b/b) max        | 0           | 0           | 0            |
| Packaging per kg, netto/Sack       | 62.5        | 62.5        | 62.5         |
Information:
* Revision September 1992
* Seed size is determined by the number of seeds per 100 gr

Globally, the downstream of the cocoa industry has three types, the first is semi-processed cocoa (grinding), the second is cocoa coverture, and the last is a product for food [9], and those require different technology. Rimbun Corp in Aceh runs its business by collecting the raw material (beans) from local farmers. [10] Then, the industry produces beans using both manual methods and machines. This only chocolate industry, which produces Socolatte, has a vast target market not only from the local community but also from tourists from outside Aceh [7]. This industry has been well known as a producer of health and sweet taste chocolate [7]. However, they often create a chocolate product with a limited amount. It is because of the lack of technology to control product quality [11].

Based on the condition, most small companies cannot grow significantly. They might solve the problems by spending considerable investments in machinery and equipment independently [12]. However, the industry should act not only as a manager, employers, but also as purchasers of goods and services [12]. As a result, many problems cannot be coped easily. Many small scale industries worldwide collapse because of the issues. Some small industries will use the resources under standards such as raw material and existing technology to produce the downstream product. However, it will create a product with low quality and has a short shelf life [4].

Both central and local governments should play a role in increasing the awareness of local industries. It is suggested to make chocolate products from cocoa beans which are fermented well. The other way to help farmers is by giving support and training to handle the issue without emerging other problems [13].

2. Methodology
This research is conducted in Rimbun Corp, Pidie Jaya Regency in Aceh Province, Indonesia. This research starts from identifying the current situation through observation and interview the expert and completed after selecting the best strategy. The complete stage of the research process is in the research framework that is clearly shown in Figure 2.

![Research stages](image)

**Figure 2.** Research stages.
This research uses Business Model Canvas (BMC) [14] for collecting and finding the main problem. These are fundamental terms for running the business in a small industry. The business model has nine blocks that can be used to determine Customer Segments (CS) Value Prepositions (VP), Channels (CN), Customer Relationships (CR), Revenue Streams (RS), Key Resources (KR), Key Activities (KA), Key Partnerships (KP), and Cost Structures (CS).

[15] The results of Hartatik and Baroto's research, (2017) showed that strategies with Business Model Canvas could be effective and efficient in determining the strategy of product development. Before choosing a strategy, an industry can decide to use either one of the nine elements of the strategy in the BMC. These can be the alternatives that can be used as the necessary information for expert testing to rank the alternatives based on related criteria. Those are according to priority in Analytic Hierarchy Process (AHP). This research for collecting and finding the main problem uses Business Model Canvas (BMC) [14] as a fundamental need for running the business in a small industry. The method has nine blocks that can be used to determine who Customer Segments (CS) are.

Then what type of Value Prepositions (VP) the product provides, and what kind of Channels (CN) they should have. Furthermore, what the industry can do to keep Customer Relationships (CR), and where the Revenue Streams (RS) they gain. Stakeholders can help the industry by serving Key Resources (KR). Moreover, how Rimbun Corp runs the business through Key Activities (KA) and Key Partnerships (KP), and how much the Cost Structures (CS) they need to purchase. [15] The results of Hartatik and Baroto's research, (2017) showed that strategies with Business Model Canvas could be effective and efficient in determining the strategy of product development.

For choosing a strategy, an industry can decide to use either one of the nine elements of the strategy in the BMC. After that, the experts can choose alternatives professionally according to priority. The whole nine-level priorities level of the Analytic Hierarchy Process (AHP) is briefly presented in Table 2.

**Table 2.** The scale of value weight.

| Priorities Level | Definition                                   |
|------------------|---------------------------------------------|
| 1                | Element $i$ Equally more important than $j$ |  
| 3                | Element $i$ Moderately more important than $j$ |
| 5                | Element $i$ Strongly more important than $j$ |
| 7                | Element $i$ Very Strongly more important than $j$ |
| 8,6,4,2          | Element $i$ more important between after and before than $j$ |
| 9                | Element $i$ the most strongly more important than $j$ |
| The opposite     | If element $i$ has one number above when compared to element $j$, then $j$ has the opposite when compared to element $i$ |

AHP method is used to analyze actors, factors, and objectives to obtain critical components of the cocoa agro-industry development strategy. Determination of the main components of the actors, factors, and objectives that are the priorities of the cocoa agro-industry development strategy is obtained through identification, information, and the results of discussions with experts. The calculation procedure in choosing a strategy follows the AHP rules [16].

The method uses expert opinion in determining decisions [16]. This data is then weighed for the criteria and alternatives for selecting the best solution through expert testing using the Analytical Hierarchy Process (AHP) as the final step of the whole activities (Figure. 2). Furthermore, how important the criteria and alternative as the best solution will be tested using the standard, which is including the priority level in a scale of value weight Table 2. Some AHP main formulation follows these equations:

$$CI = \frac{\lambda_{\text{maximum}} - n}{n - 1}$$

- $CI$ = Consistency Index
- $n$ = Matrix Order
- $\lambda_{\text{maximum}}$ = The largest eigenvalue of the order matrix n
\[ CR = \frac{CI}{RI} \]  \hspace{1cm} (2)

- \( CR \) = Consistency Ratio
- \( CI \) = Consistency index
- \( RI \) = Random Index

If the CI value is zero, then the pairwise matrix, the comparison is consistent. Limit of inconsistency (inconsistency) is determined by using a Consistency Ratio (CR), which is a comparison consistency index with random index value (RI). Consistency Ratio can be formulated in formula (2), and the data from the analysis of three experts should all have a consistency ratio value (CR) <0.10 [21].

3. Result and discussion

3.1 Business model canvas in rimbun corp
Based on interviewing, observing, and collecting the data, the complete Business Model Canvas that shows how the small industry, especially Rimbun Corp runs the business is shown in Figure 3.

![Business Model Canvas](image)

Figure 3. Business model canvas of chocolate socolatte.

This BMC shows that the main struggle to expand the small industry is because of no action taken to maintain the customer relationship. Even though this chocolate Socolatte is known as a halal product. Then it has a natural, tasty, fresh flavor, but without any promotion and sale, the customer does not have any interest to eat the chocolate daily[10]. As a result, the industry cannot predict the amount of chocolate to be produced, then what certain days, the need to sell more [17]. It is because of the lack of promotion to another area in Aceh. Unfortunately, there are still many people who are not familiar with the products.

Furthermore, most of the Acehnese people do not know their healthy chocolate. Therefore the customer must visit the Socolatte cafe and outlet in Pidie Jaya Regency directly because the industry cannot send the chocolate further away from the store. Based on the result of interviewing the owner,
It can destroy the chocolate bar quality because this chocolate can melt during the shipping process and other reasons [4]. Besides those fundamental activity problems, this industry fills key resources using local cocoa farmers in Aceh as suppliers of the raw material. So that this industry must continue to grow to provide many benefits to the community; nevertheless, the industry has struggled to select the best quality of cocoa beans.

Fortunately, Pidie Jaya’s government supports the cocoa industry in Indonesia by giving 200-hectare land as using the right for 100 farmers in 2019 [18]. It means to cultivate cocoa crops for the rising national production of the cocoa bean and for helping the local chocolate industry such as Rimbun Corp, which produces chocolate Socolatte. Socolatte is a brand of chocolate products not only for chocolate bars but also for instant chocolate drinks, chocolate powder, chocolate dodol, and chocolate candy in a limited number in the industry[10].

3.2 Analytical Hierarchy Process (AHP)

AHP is a method to find strategic from multi-criteria and alternatives, based on expert choice. The structure of AHP is for obtaining the goal of the decision making at the top, critical strategic purposes in the higher stages, and evaluating criteria in the middle, and choices at the bottom. The brief result of weighing criteria based on expert choice is illustrated in the below Table 3.

| Criteria | C1   | C2    | C3    | Eigen vector |
|----------|------|-------|-------|--------------|
| C1       | 1,0000 | 0,7937 | 0,7937 | 0,2743       |
| C2       | 1,2599 | 1,0000 | 3,0000 | 0,4846       |
| C3       | 1,2599 | 0,3333 | 1,0000 | 0,2411       |
| Total    | 3,5198 | 2,1270 | 4,7937 | 1,0000       |

Principal eigenvalue ($\lambda$) 3,1519
Consistency index (CI) 0,0759
Consistency ratio (CR) 0,0844

Further Information:
C1: Raw Material
C2: Cost
C3: Utility

Based on the complete analysis for finding the best strategy, the entire results have been fulfilled in Figure 4. The first result from using the AHP method is the data from three experts all have a consistency ratio value of (CR) <0.10.[13]. Besides them, the most important thing is that the data shows that the results from expert judgments are consistent. The results of the combined assessment to determine the weight of the development criteria business [19]. Moreover, the data must be CR <0.10 to be accepted.
Based on Analytical Hierarchy Process (AHP), the crucial criteria for expanding the small industry is the raw material (0.4453). Because this is the primary resource, raw material should be considered intensively of the chocolate industry as the priority alternative to assessment of each procedure related to an advanced quality product.

Moreover, the industry should adopt new technology (0.3632) for creating a high-quality chocolate product from bean to bar. [20] As result, the company can send and sell them anywhere and gain higher profit so they through putting more awareness about the composition of chocolate content and the procedure to produce it [21].

4. Conclusions and future work

Based on the current Business Model Canvas (BMC) compared to literature, chocolate brand product is getting better in marketing 'channel,' but no action to sustain 'Customer Relationship.' Analytical Hierarchy Process (AHP) shows that adopting technology and treating raw material with international standards are the best strategies for developing the small scale chocolate industry in Aceh especially in Rimbun Corp while manufacturing chocolate product Socolatte from bean to bar.

This research result is just a piece of primary research that the writer has done. However, it truly still needs deeper research to be conducted intensively in the future for discovering development strategy to be applied appropriately in small scale chocolate industry in Aceh province.

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