Single Origin: The Potential of Market Innovation for Increasing the Competitiveness of SMEs in Chocolate Industry in Indonesia

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ABSTRACT

As the fourth largest cocoa producing country in the world, Indonesia has the opportunity to be the center of processing industry and production of chocolate. Effort to increase the competitiveness on the whole chocolate business chain, from upstream to downstream industry, is not yet optimal as seen from the low productivity of agricultural product of national cocoa plantation in addition to intermediate industry and end product which are still dominated by foreign company. The development of consumer preference-based product is necessary to ensure the new product developed will meet customer satisfaction. This study was aimed to increase the competitiveness of innovation-based small medium enterprises (SMEs) chocolate downstream industry. Innovation consists of four typologies, namely product innovation, process innovation, market innovation, and organizational innovation. Product innovation and process innovation are characterized as technical innovation, while market innovation and organizational innovation are included in non-technical innovation. Analysis result through analytical hierarchy process (AHP) shows that the priority for the development of chocolate industry is the market with weight of 0.477. Market innovation consists of six alternatives, those are: marketing, distribution, branding, promotion, e-marketing potential, customer relationship management-CRM, and single origin. This value indicates that the development of downstream industry that produces end product in the form of chocolate is no longer focused on product innovation with its different kinds and varieties produced all the time, yet the aspect of market is strategically responded by producer.

Key Words: Chocolate, Industry, Small Medium Enterprise, Innovation, Development.

1. INTRODUCTION

Indonesia is the fourth largest cocoa producing country in the world after Ivory Coast, Ghana, and Ecuador [1]. Availability of cacao beans as the main raw material of chocolate is not balanced with the growth of processing industry, particularly in Indonesia. Consumer is more familiar with the producer of European and even American brand of chocolate despite the fact that the two regions do not geographically produce cocoa bean. Several processing industries in the form of small medium enterprises (SMEs) continue to grow in the middle of competition and invasion of widely known products or brands. This challenge will be difficult to accept if the actors of SMEs are not able to do a breakthrough, especially in the most basic aspect like product and process. The aim of this paper is to perform effort in increasing the competitiveness of innovation-based SMEs.
chocolate downstream industry. Study of Syahruddin and Kalchschmidt [2] showed that world chocolate consumption increased by 14% each year during 1997-2006. Global consumption of chocolate was dominated by European people of 49% and North American of 22% with average consumption of 3.2 kilogram per person in 2006. Each country has its own preference and particular mix for cocoa-based foods and beverages. Swiss was the world largest chocolate consumer with value of 9 kg per capita, while Japan consumed 2.0 kg per capita. Singapore had 0.5 kg per capita and Indonesia still obtained a relatively low value of 0.25 kg per capita, increased from the previous year of 0.01 kg [1], [3], [4]. Global cocoa production was sourced from Ivory Coast, Ghana, Ecuador, Indonesia, Cameroon, Nigeria, Brazil, Papua New Guinea, and other countries with production of 2,010,000 ton, 950,000 ton, 270,000 ton, 260,000 ton, 240,000 ton, 225,000 ton, and 180,000 ton, respectively by supplying 4.7 million ton world cocoa requirement in 2016/2017 [1].

Figure 1. World Cocoa Production by Country-2016/2017
(Source: ICCO, edited)

Development of chocolate downstream industry is strategic for the increasing economy of Indonesia along with the availability of cocoa raw material and rising trend of chocolate consumption per capita. It is difficult for small medium enterprises (SMEs) in chocolate industry to compete with producers that already have famous brand and dominate the market share today since SMEs have many limitations compared to the large-level chocolate processing industry with well-known brand. Innovation is a required action to be performed by SMEs in order to compete with other competitors by continuously offering new value to consumers.

2. LITERATURE REVIEW

There are several studies discussing effort to strengthen the competitiveness of national cocoa and chocolate industry, particularly the downstream industry. Research of [5] examined the benefit aspect of global value chain of cocoa industry. Improvement in value chain of cocoa industry was a topic of research conducted by [6]. Study carried out by Rifin [7] specifically investigated the increase in cocoa competitiveness concerning the aspect of trade transaction value of cocoa commodity. Yet, these researches did not comprehensively discuss the approach of the four innovation typologies, namely: product innovation, process innovation, market innovation, and organizational innovation in the development of downstream industry of chocolate processing. Large industries with well-known brand commonly have sufficient resources to explore the four innovation aspects in strengthening market penetration of their products. This condition is different from the small medium enterprises (SMEs) regarding the limitation of capital and human resources, particularly the division of research and development. Focus on one of innovation types to develop chocolate products of SMEs provides opportunity for downstream industry to be stronger, together
with the whole activities starting from processing to marketing which are performed innovatively. Innovation cannot only be explored from the typology of product innovation or process innovation as generally conducted by SMEs in chocolate industry, but also from market innovation. Marketing activity is strongly related to the expansion of market share through the creation of new market segment which is aimed at increasing sales and also related to the performance of the company [8].

General definition of innovation is divided into four subcomponents of innovation, which is defined based on Bogota and Oslo manual of Organization for Economic Cooperation and Development-OECD [9] as, (i) product innovation: introduction of new or substantially improved goods or services, (ii) process innovation: introduction of new or significantly improved production or delivery method (iii) marketing innovation: implementation of new marketing method which involves significant change in product or packaging design, product promotion, or price determination, and (iv) organizational innovation: involving the creation or change in business practice, workplace organization, or external relationship [10]. Innovation is the source of competitive advantages for company which enables them to face the competition developed in national and international market [11].

Innovation becomes one of strengths in the middle of tight competition of food and beverage industry in developed countries [12]. The sector of food industry has strategic position in global economy since it involves many different actors who continuously interconnect with various demands from customers, final users, and policy makers. On the other hand, food product has shorter life cycle, high quality standard, food safety, and competitiveness [13]. Research of [12] examined the innovation of food and beverage industry based on two aspects, namely: (i) innovation related to food and beverage and agricultural skill, and (ii) new technics in biotechnology, packaging, chemistry, and others, called as non-food innovation. Portion of non-food innovation in food and beverage industry is considered high, amounted to 45%-50% [14],[15].

Figure 2. Chocolate consumption per capita in several Countries in 2016

(ICCO; Euromonitor; Faostat, edited)
Innovation will result in competitive advantages which enables company to obtain return on innovation such as higher sales and company growth [16]. Food and beverage industry in Europe only made small investment in research and development compared to other sector of industry where new and radical product is rarely found [17]. Producers realized the importance of more unique and different product, yet they also understood that anything might be imitated [18]. Food based agricultural system is an industrial system with low intensive level of research and development-R&D [12], [19], [20].

3. METHODOLOGY

The study was conducted in several small medium enterprises (SMEs) in chocolate processing industry located in Jakarta, Blitar, Bandung, Jember, and Banda Aceh. Through interview and depth interview with the management or business leader of chocolate SMEs in those regions, strategic policy and innovative breakthrough already applied by those SMEs were obtained, while product development and technical processes of transforming cocoa beans into chocolate were performed in the division of research and development of the company. Analysis of innovation implementation in chocolate SMEs was done to obtain information on activities related to innovation in term of innovation typology performed from the aspect of: product innovation, process innovation, market innovation, and organizational innovation.

Based on the result of investigation and interview in the field, it is known that some innovation activities performed by chocolate SMEs also experienced failure in which the product or process believed as an innovation were not responded well by the market and the process did not generate the effect of efficiency as expected, thus the innovation was stopped. Related to this condition, analysis on the reason of success and failure in applying innovation was done to map the characteristic of potential innovation typology. Implementation of innovation does not have to be done simultaneously, in fact, limitation of resources should be taken into consideration. Moreover, priority analysis of innovation-based chocolate SMEs development through AHP method with expert choice was done, where experts consisted of product development expert who had experiences in developing chocolate products in industry. Further step was the determination of innovation technology selected to be the priority in accordance with the result of AHP weighting and analysis.

The process of Analytical Hierarchy Process-AHP analysis is a method in decision making for multi criteria. Analytical Hierarchy Process was developed by Thomas L. Saaty from Wharton School of Business in 1970s. The basic principle of AHP is to simplify complex and unstructured problems into a hierarchical order (level) within its part, thus the process of decision making becomes faster and measurable. In AHP method, information of problems are elaborated into hierarchical criteria and alternative. Both qualitative and quantitative criteria are able to be used and compared by judgement to obtain weights and priority. Method of Analytic Hierarchy Process (AHP) consists of four steps, namely: (i) structuring hierarchy, (ii) constructing pair-wise comparison matrix, (iii) synthesis of priority, and (iv) logical consistency.

Constructing hierarchy is a decomposition of the existing problems. Hierarchy is built by setting goal, followed by determining the criteria, sub criteria (if any), and alternative to be further examined by expert. Constructing pair-wise comparison matrix is done to determine the relative effect between elements. Comparison of pair-wise matrix is done based on the judgement of decision maker by assessing the level of importance of each element compared with other element by using Saaty scale at Table 1 below. If the decision makers have finished with their assessment or perception of elements compared in one level, a matrix of comparison is built in each level of hierarchy to determine the most important criteria. Matrix is a set of objects (number) arranged to form rectangle, consists of row and column and bounded by square brackets or parentheses. If a matrix has m row and n column, the matrix has size (order) of m x n. Whereas vector in n dimension is an orderly arrangement of element in the form of number as many as n. Vector can be arranged based on row, from left to right, termed as row vector (order of 1 x n). It is also can be arranged based on column, from up to bottom, called as column vector (order of n x 1). If A is a matrix of n x n, vector x is called as eigen vector of A if Ax is scalar multiple of x, that is Ax = λx. Scalar λ is an eigen value of A and x is an eigen vector corresponding to λ.
Table 1. Fundamental scale of analytical hierarchy process

<table>
<thead>
<tr>
<th>Intensity of importance on absolute scale</th>
<th>Definition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equal importance</td>
<td>Both elements are equally important</td>
</tr>
<tr>
<td>3</td>
<td>Weak importance of one over another</td>
<td>One element is slightly more important than other elements</td>
</tr>
<tr>
<td>5</td>
<td>Essential or strong importance</td>
<td>One element is more essential or has strong level of importance than other elements</td>
</tr>
<tr>
<td>7</td>
<td>Demonstrated importance</td>
<td>One element shows very strong level of importance than other elements</td>
</tr>
<tr>
<td>9</td>
<td>Extreme importance</td>
<td>One element shows absolutely higher level importance than other elements</td>
</tr>
<tr>
<td>2, 4, 6, 8</td>
<td>Intermediate values between the two adjacent judgements</td>
<td>Intermediate scale or median between two adjacent judgement</td>
</tr>
<tr>
<td>Reciprocal</td>
<td>If activity ( I ) has the number above when compared with activity ( j ), then ( j ) has reciprocal value when compared with ( i ).</td>
<td></td>
</tr>
</tbody>
</table>

Rationals: Ratio that appears from the scale.

(Source: Saaty, 1990)

In Logical Consistency, hierarchy consistency is examined through the Consistency Ratio expressed as CR.

\[
CR = \frac{CI}{RI}
\]

(1)

Remarks:

CR : Consistency Ratio
RI : Random Index

\[
CI = \frac{(\lambda_{max} - n)}{(n - 1)}
\]

(2)

Remarks:

CI = ratio of consistency deviation (Consistency Index)
\( \lambda_{max} \) = the highest eigenvalue of matrix with order of \( n \)
n = matrix order

The AHP method uses input in the form of perception of decision maker. Therefore, due to the limitation of human in expressing perception, inconsistency may happen, specifically when comparing quite a lot of indicators. However, AHP still allows this inconsistency to certain limit. According to Saaty [21], if Consistency Ratio (CR) of CI in random matrix is significantly low (specified about 10% or less), then weight (w) is accepted, yet higher value will result in improvement application in consistency.
4. RESULT AND DISCUSSION

Small medium enterprises (SMEs) in chocolate processing industry are hindered with resource limitation in developing their product and industry. This condition is different from large scale industry that has relatively sufficient resources to support the business development. The first assessment applied is aimed to determine the priority of innovation implementation performed through expert choice which results in weight and rank as presented in Table 2 below. It is also seen that market innovation has the highest weight of 0.477 which indicates that effort to strengthen SMEs in chocolate processing downstream industry is able to be achieved by strengthening market innovation. Dissemination of information related to chocolate product produced by SMEs is highly required by consumer.

<table>
<thead>
<tr>
<th>Innovation typology</th>
<th>Weight</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product innovation</td>
<td>0.322</td>
<td>2</td>
</tr>
<tr>
<td>Process innovation</td>
<td>0.145</td>
<td>3</td>
</tr>
<tr>
<td>Market Innovation</td>
<td>0.477</td>
<td>1</td>
</tr>
<tr>
<td>Organizational innovation</td>
<td>0.056</td>
<td>4</td>
</tr>
</tbody>
</table>

Next assessment performed on each innovation is aimed to provide complete description about the implementation of each innovation typology towards competitiveness strengthening. Assessment of weight and priority of product innovation is presented in Table 3 below. Item of criteria in each product innovation is described as follows:

a) New product development (NDP): company implements innovation through new product development, that is by introducing new product.

b) Packaging: company implements innovation in packaging.

c) Product quality: company implements innovation in product quality.

d) IT for products: company implements innovation through information technology approach on product.

e) Investment in R&D: company conducts research and development to obtain good result of product research.

The highest priority of product innovation is new product development-NPD with weight of 0.406. Focus of innovation is to produce new chocolate products required by downstream industry, particularly the small medium enterprises (SMEs).

<table>
<thead>
<tr>
<th>Product innovation</th>
<th>Weight</th>
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</tr>
</thead>
<tbody>
<tr>
<td>New product development-NPD</td>
<td>0.406</td>
<td>1</td>
</tr>
<tr>
<td>Packaging</td>
<td>0.226</td>
<td>2</td>
</tr>
<tr>
<td>Product quality</td>
<td>0.222</td>
<td>3</td>
</tr>
<tr>
<td>IT for products</td>
<td>0.096</td>
<td>4</td>
</tr>
<tr>
<td>Investment for R&amp;D</td>
<td>0.050</td>
<td>5</td>
</tr>
</tbody>
</table>

Result of assessment of weight and priority of process innovation is presented in Table 4. Item of criteria in each product innovation is described as follows:

a) Manufacturing process: company performs innovation on manufacturing process by introducing a new process which significantly increases production quantity.

b) Information Technology (IT) for process: company performs innovation through information technology-IT approach.

c) Development of new technology: company develops new technology in chocolate production process.

d) Development of cost: company reduces production costs.

e) Time to market: company launches new product that enters the market faster than that of major competitor.
The highest priority of product innovation is development cost with weight of 0.381. Implementation of development cost can be done by performing inventory of all excessive or unrequired chocolate processing processes to suppress production cost.

**Table 4. Weight and priority of process innovation**

<table>
<thead>
<tr>
<th>Process innovation</th>
<th>Weight</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing process</td>
<td>0.296</td>
<td>2</td>
</tr>
<tr>
<td>Information technology (IT)</td>
<td>0.062</td>
<td>5</td>
</tr>
<tr>
<td>Development of new technology</td>
<td>0.097</td>
<td>4</td>
</tr>
<tr>
<td>Development cost</td>
<td>0.381</td>
<td>1</td>
</tr>
<tr>
<td>Time to market</td>
<td>0.164</td>
<td>3</td>
</tr>
</tbody>
</table>

Assessment of weight and priority of market innovation is listed in Table 5 below. Item of criteria in each market innovation is as follows:

a) Marketing: company performs marketing innovation by opening new market significantly.
b) Distribution: company performs innovation in distribution, both for raw materials and finish product.
c) Branding: company performs product brand strengthening.
d) Promotions: company performs product promotion to market.
e) E-Marketing potential: company performs e-marketing.
f) Customer relationship management-CRM: company performs activities that build relationship with consumer in the form of CRM.
g) Single Origin: company produces chocolate from pure cocoa (no mixing) of certain region with cocoa from other region.

The highest priority of market innovation is single origin with weight of 0.377. Implementation of origin is considered unique which is potential to be conducted by chocolate downstream industry. Cocoa from NTT, Bali, Aceh, Sulawesi, Sumatera, and other regions has distinct flavor. Single origin should be explored through the processing of chocolate raw material that is pure and not mixed with cocoa from other region and the content is mostly dominated by chocolate, not milk and sugar. Local and export markets have consumer with an increasing trend. Therefore, in addition to its process conducted by processing pure cocoa from certain region, the products produced also should be promoted, in term of the source of cocoa that is a single origin from one region in Indonesia.

**Table 5. Weight and priority of market innovation**

<table>
<thead>
<tr>
<th>Market innovation</th>
<th>Weight</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>0.166</td>
<td>2</td>
</tr>
<tr>
<td>Distribution</td>
<td>0.039</td>
<td>7</td>
</tr>
<tr>
<td>Branding</td>
<td>0.061</td>
<td>6</td>
</tr>
<tr>
<td>Promotions</td>
<td>0.086</td>
<td>5</td>
</tr>
<tr>
<td>E-Marketing potential</td>
<td>0.157</td>
<td>3</td>
</tr>
<tr>
<td>Customer relationship management-CRM</td>
<td>0.114</td>
<td>4</td>
</tr>
<tr>
<td>Single origin</td>
<td>0.377</td>
<td>1</td>
</tr>
</tbody>
</table>

Assessment of weight and priority of organizational innovation is as seen in Table 6 below. Item of criteria in each organizational innovation is explained as follows:
a) Paradigm: company performs effort to change organizational paradigm that innovation is important for organizational improvement.

b) Business model: company performs change in business model.

c) Business planning process: company performs change in business planning process.

d) Merger acquisitio: company performs merger and acquisition to strengthen organization.

<table>
<thead>
<tr>
<th>Organizational innovation</th>
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</tr>
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<tbody>
<tr>
<td>Paradigm</td>
<td>0.296</td>
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<td>Business planning process</td>
<td>0.097</td>
<td>3</td>
</tr>
<tr>
<td>Merger acquisition</td>
<td>0.381</td>
<td>1</td>
</tr>
</tbody>
</table>

The highest priority of organizational innovation is merger acquisition with weight of 0.381. Concerning the human resource, tools, technology, and capital owned by SMEs, chocolate processing industry which is still considered at the scale of micro business in the form of household business, should collaborate and join a settled SMEs. The most realistic treatment for chocolate processing micro industry is to cooperate with more settled industry and continues to learn until the level of independent which may be facilitated by the related agency within the region.

5. CONCLUSION

Effort to strengthen chocolate processing downstream industry is very strategic to be conducted to obtain optimal value added of cocoa commodity. Small and medium industry needs innovative breakthrough of product produced to meet consumer expectation and achieve efficient process in order to increase the competitiveness of chocolate in SMEs. The company should focus on the voice of customer to retain the customers longer [22]. Innovation typology that can be applied by small medium enterprises (SMEs) consist of product innovation, process innovation, market innovation, and organizational innovation. SMEs in industry have limitation in exploring the whole type of innovation, thus it is urgent to perform priority scale. Analysis result using AHP shows that the priority of the development of SMEs in chocolate industry is innovation market with weigh of 0.477. Market innovation consists of six alternatives, namely: marketing, distribution, branding, promotions, e-marketing potential, customer relationship management-CRM, and origin. Development of SMEs in chocolate downstream industry is no longer focused on product innovation, but on market aspect which is very strategic to perform, particularly on the single origin-based chocolate products that are produced, packaged, and marketed by concentrating on unique chocolate flavor of each region.

Chocolate with single origin has domestic and export market share that continues to grow along with the need of consumer for local chocolate product with characteristics of pure, healthy, and unique flavor (taste and aroma). This potential is found in all cocoa producing area in Indonesia along with its uniqueness obtained from fermented cocoa. Local Government via the related agency should support chocolate small medium enterprises (SMEs) through education and training of single origin-based chocolate product production with appropriate fermentation process (not over-fermented) done by farmers, thus value added of cocoa will increasingly play role to improve local economy.

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