Volume 12 Number 3 2013

Process and Source of Innovation in SME: Case of Indonesia's Food and Beverage Firms

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Abstract

In a free trade environment, the requirements to remain competitive become more demanding. The requirements make innovation more necessary to be done, and strongly associated with the ability to take advantage on scientific achievement. Therefore, innovation process conducted becomes an important determinant for its final outcome. Nevertheless, how innovation occurs in SMEs is still rather unknown exactly. This paper attempts to analyze innovation process in SMEs especially in low-technology sectors, particularly in food and beverage sector, in terms of sources of innovation which is related with sources of information and knowledge. This study use case study approach within two food and beverage SMEs. The innovation process is seen through the decision making process approach. This study reveal several important conclusions. In food and beverage sector, it appears that the process of innovation in the SMEs do not only involve the internal but also external parties. The process of innovation was still very simple. Generally, the approach in decision making and understanding of innovation is more static, non-rational, informal and hierarchical. Nevertheless, to complement the result, further studies still need to be conducted to obtain stronger justification of conclusions and policy recommendation.

Keywords: innovation process, decision making, source of innovation, food and beverage sector, SME

Received: 19 September 2013, Revision: 11 November 2013, Accepted: 12 Desember 2013.
Print ISSN: 1412-1700; Online ISSN: 2089-7928. DOI: http://dx.doi.org/10.12695/jmt.2013.12.3.6

Abstrak

Dalam era perdagangan bebas, kebutuhan untuk memiliki daya saing menjadi sangat dibutuhkan. Hal tersebut menjadikan inovasi menjadi sangat penting untuk dilakukan, dan sangat terkait dengan kemampuan untuk mengambil keuntungan dari capaian ilmiah yang dilakukan. Oleh karenanya, proses inovasi yang dilakukan menjadi faktor penentu yang sangat penting untuk mencapai hasil akhir yang ingin diperoleh. Walaupun demikian, bagaimana suatu inovasi dapat muncul di UKM masih belum diketahui secara pasti. Tulisan ini berupaya menganalisis proses inovasi di UKM khususnya pada sektor teknologi rendah, terutama sektor makanan dan minuman, dalam hal sumber inovasi yang terkiat dengan sumber informasi dan pengetahuan. Studi ini menggunakan pendekatan studi kasus pada dua UKM pada sektor makanan dan minuman. Proses inovasi dilihat melalui pendekatan proses pengambilan keputusan. Studi ini menghasilkan beberapa kesimpulan penting. Pada sektor makanan dan minuman, terlihat bahwa proses inovasi yang terjadi di UKM tidak hanya melibatkan pihak internal tetapi juga pihak eksternal. Proses inovasi yang terjadi masih sangat sederhana. Pada umumnya, pendekatan dalam pengambilan keputusan dan pemahaman mengenai inovasi lebih bersifat statis, non-rasional, informal, dan hirarkikal. Walaupun demikian, untuk memperkaya hasil, studi lanjutan masih dibutuhkan untuk memperoleh justifikasi yang lebih kuat dari kesimpulan yang diperoleh dan rekomendasi kebijakan.

Kata kunci: proses inovasi, pengambilan keputusan, sumber inovasi, sektor makanan dan minuman, UKM

1. Introduction

In a free trade environment, the requirements to remain competitive become more demanding. This is not only faced by large corporations, but also by small and medium enterprises (SMEs). The requirements make innovation more necessary to be done, where it is largely determined by firm's capability. Innovation is strongly associated with the ability to take advantage on scientific achievement, where it takes more than just a new idea, but also the ability to turn it into something more tangible and more benefits. In this case, the innovation process conducted becomes important determinant for its final outcome. Challenges of free trade also imply on the consequences of increasing competitiveness through innovation for companies in Indonesia. This also implies to companies in low-tech sector which use less sophisticated technology and dominated by SMEs.

Based on the data of science and technology indicators 2011, low-tech sector has higher spending on innovation activity than the medium-low and high-tech sectors. This indicates a fairly high innovation activity in the sector. SMEs have gained more attention in the innovation literature. Nevertheless, how innovation occurs in SMEs is still rather unknown exactly (Vermeulen, et al., 2003). Studies and related research, especially in Indonesia have more discussed on the interaction patterns in the manufacturing sector (Simamora and Nadhiroh, 2010), the determinants of innovation capability of SMEs (Rianto et al, 2006), social capital in SMEs (Ariana, 2005), the key factor for increasing competitiveness (Aiman, 2007), FDI and innovation in SME clusters (Tambunan, 2009), open innovation (Hamdani and Wirawan, 2012), and policy studies (Simamora and Aiman, 2006). The previous studies have not specifically discussed the process of innovation in SMEs, even the decision making process of innovation.

One related study using decision making approach was conducted by Uru et al (2011) which discuss on entrepreneurship characteristics in strategic decision making. Eventhough, this case is not specifically analyze the condition of leaderhip in SME. Another study on decision making process of firm was conducted by Musso and Francioni (2012) which discuss strategic decision making in international field. This case makes significant contribution to understand SME with high global competitiveness. Nevertheless, SMEs in Indonesia are mostly have less global competitiveness. In relation with previous explanation, Braga and Braga (2013) have conducted study on factors influencing innovation decision making of firms. Nevertheless, the empirical study does not consider the scale of the firm in the analysis. Meanwhile, innovation decision making is usually different according to the business scale. Other related study about innovation on SME was the nature of SME cooperation and innovation (Tomlinson and Fai, 2013). They argue that external sources have important role on SME innovation activity.

This paper attempts to analyze innovation process in SMEs especially in low-technology sectors, particularly in food and beverage sector, in terms of sources of innovation which is related with sources of information and knowledge. The innovation process is seen through the decision making process approach. Sources of information which have particular role in the process are also discussed. This paper gives contribution in understanding the behaviour of SMEs particularly to make decision for innovation. Besides, different from other studies, this paper distinguish invention and innovation as output of creative process within an organization. This study also contribute to filling the knowledge gap on how innovation may occure in SMEs which is still unknown exactly (as said by Vermeulen et al, 2003). In addition, this study can also give implication for policy recommendation for government in order to increase the competitiveness of SMEs by fostering their innovation.

2. Literature Review

Many literatures have discussed about definition and types of innovation. At firm level, innovation can be defined as the application of new ideas for products, processes, and other firm's activities (Dodgson and Rothwel, 1994). Schumpeter defined five types of innovation (OECD, 1997), namely the introduction of a new product or a qualitative change in existing products, new innovation from an industrial process, opening new markets, development of new sources of raw materials or other new input, and changes in industrial organization.

There are two types of innovation, namely incremental and radical innovation. Incremental innovations appear continuously in the organization and lead to minor improvements in products or processes. On the other hand, radical innovation is more long term and strategic, as well as aiming to change the key capabilities of the company to create a new paradigm. All organizations need both types of these innovations.

Beside the two types of innovation, OECD in Oslo Manual (OECD, 1997) also divided innovation based on the novelty of innovation in production technology changes which are categorized into four types of innovation (Bell, 2009):

(a) Innovation which is new to the world. This innovation arises when the company firstly introduced the innovation to all markets and industries, either domestic or international.

(b) Innovation which is new to the market. This innovation occurs when the company firstly introduced the innovation in a particular market.
(c) Innovation which is new to the firm. This innovation arises when the company introduced the product, process, or new methods that are new in the company or significantly updated by the company, even though the innovation has been implemented by other companies.
(d) Non-Innovations. This category includes other matters related to the purchase of equipment models that are identical or minor renewal on existing equipment or technology.

Related with process innovation in a firm, Kline and Rosenberg in Lazic (2007) argue that firms innovate by combining existing knowledge as a response to a commercial need for something. Sometimes, the existing knowledge is insufficient and there is need to develop new knowledge. Nevertheless the innovation process cannot be separated from the decision-making in the company. Gutierezz et al (2008) discuss decision-making approach and also the understanding of innovation by firm which can be summarized in Table 1.

In the innovation process, the basic building blocks that enable innovation include networking, management processes that balance freedom and discipline, performance metrics, and an organizational culture that motivates people to take risks (reward system). Basic premise of continuous growth through innovation in an organization is not a single person but a network. The networks include not only internal people but also external parties (suppliers, vendors, professional associations, universities, clients, online forums, groups and unknown partners, etc.). Innovation can certainly benefit from internal structures that encourage interaction and from healthy dose of external exposure (Lazic, 2007).

Table 1. Approaches for making decisions and understanding innovation

Approaches for making decisions and understanding innovation			
Innovation can be forecasted and planned	Static	Dynamic	Innovation is unpredictable; changes are unavoidable
Analytical procedures that aim to achieve optimal decisions	Rational	Non-rational	Intuition and subjective evaluations; particular interests prevail
Structured and written processes, such as stage-gate models	Formal	Informal	Meetings and decisions without any written procedure
Highest organizational levels influence decisions	Hierarchical	Non-hierarchical	Decisions made by middle managers without higher approval

Source: Gutierrez et al [12]

Cooper (1999) distinguishes between the group of success factors pertaining to doing the right projects and doing projects right. The former is thought to be external to organizations while the latter is considered internal and therefore, fully controllable by organizations. External factors such as market's characteristics, industries competitive position, and technological arena are leveraged by the company's core competencies. On the other hand, the internal critical success factors (e.g., adequate up-front homework, early innovation definition, understanding of clients' needs, unique value proposition, and a well thought out innovation diffusion plan can be leveraged successfully through internal management controls.

3. Methodology

This paper attempts to analyze the innovation process occurs in SMEs in low technology sector. More specifically, this paper will discuss SMEs in food and beverage sector, where this sector is more dominated by SMEs. The sector is also a priority economic development as mentioned in MP3EI. Furthermore, the discussion will relate to the stages of the process, particularly through the decision making process approach. In addition, sources of information and knowledge will be discussed, beside the parties involved in the process, either internal or external parties. Data and information was obtained through in-depth interviews of case studies on two SMEs in the food and beverage sector. Data and information were analyzed qualitatively.

4. Results and Discussion

4.1. Case study of Company A

Company A is a small-local of egg peanuts snack producer and traditional drinks. The company only divided into production, sales and marketing, and packaging department. Management of the company is held by its own owner. The company initially worked on a small scale but over time became large due to its innovations. At first the company only made ??regular eggs peanut but by its product innovation the company is now becomes able to make egg peanuts with various flavors. The company also produces soy fritter that is beneficial to health. Beside food products, the company also produces instant beverages from traditional materials for health such as juice green bean, soya, brown rice, and black rice. Product advantages of this company are the distinctive good tastes and its durability while not using preservatives.

This far, company's products are only marketed inside the country through several distributors. In addition to its product innovation, the company was also conducted process innovation in form of speeding up the process and saves supporting material or replacing it with the cheaper ones like cooking oil and butter. Innovation process also allows the company produces eggs and soybeans with low content of oil. Moreover, its production process also supports the durability of the product. Besides the modification process, the company also modified its production equipment and has even been patented. In this case the owner of the company modified the flour making machine, so that it can produce softer flour when being drunk for instant beverage products. In doing the frying, the company also uses a thermometer to help controlling the temperature, in order to obtain a high quality product. This breakthrough is very rarely to be carried out by SMEs.

This company has already had its own brand. In terms of marketing, companies innovate its marketing method by the presence of open house tours. Therefore, through its agents in many areas, consumers can buy the product and at the same time obtain information about it. The Open House Tours is able to attract shoppers, especially tourists who visit the area. The company also avail the facilities provided by the government through the participation in the food and beverage products exhibition. Packaging of the products also made ?a powerful and attractive as well as easy to carry to lure the customers.

Related with company's management, the owner of the company has a vision to foster innovation culture. Nevertheless, the owner of the company authorized his worker to be creative and innovative. This is evident from the change based on the initiative of production machine by production team. Such changes can be made ?as long as it has positive impact such as to increase productivity. The changes can be done without waiting for instructions from the owner of the company. However, the majority of the resulting innovations were still initiated by the owner. This is due to limited capacity of its human resources. The owner himself always tried to find resources and knowledge that are needed by company either through trial and error or from external sources, such as from print and electronic media, discussions with experts and business partners, conference, as well as input from the customer. These shows that the innovation made by Company A is not R & D based. Innovation is not done routinely and is only done whether there is demand from customers or if the owner finds a new idea supported by trusted information and knowledge.

Based on above explanation, it can be concluded that innovation of the company is very depending on the initiative and the ability of the owner. Nevertheless, apart from the experience of, the owners need information and knowledge from outside the company. Innovation processes occurring within Company A is shown in Figure 1.

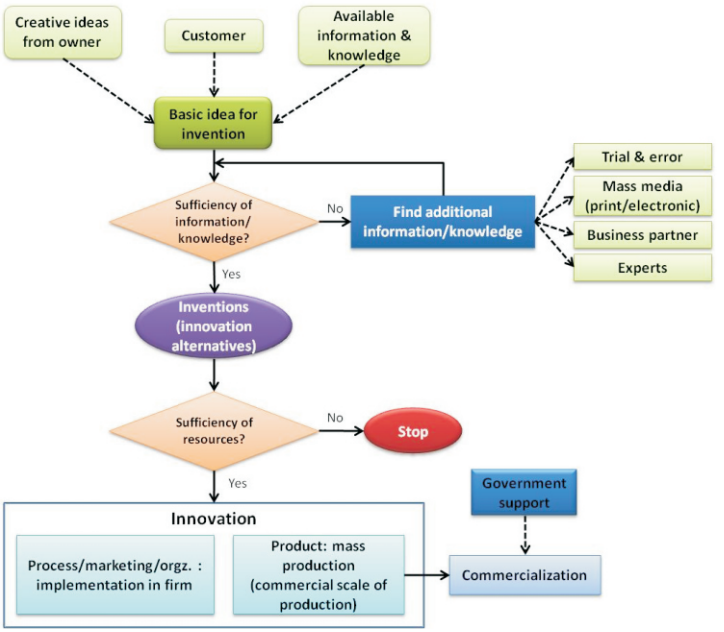

Figure 1. Innovation Process in Company A

4.2. Case Study of Company B

Company B is a producer of food in form of tofu crackers which started its business in 1986, located in Central Java. At first the company was only avail unsold tofu from traditional market to be fried so that it can be further be consumed as a snack. It is done with consideration to increase its added value. Over time, the company develops its own products by making out a round one. This product was the new one in the market. Initial production was only 8 kg per day and now has been increased up to 2 tons per day. As first time to be a small local company, now this company has developed into a medium scale company. Currently, there have been many competitors for similar products. To maintain and increase customer loyalty in order to maintain its position in the increasingly fierce competition, the company is trying to maintain the quality of its products by using cooking oil that guarded to be always new, keeping the crisp taste, and keeping the secret spices to get a good taste. The company also seeks to ensure that the resulting product can be long lasting. The resulting product can currently hold up to 3 months.

Organizational structure of the company is still modest, consisting of the owner, secretary, production, and packing departments. The owner directly handles the business and supervises its production workers. The secretary who is the owner's daughter helped the company's management. This shows that the management company is still family-oriented and do not innovate. Until now the targeted markets are middle to upper class society in the area of ??Central Java, West Java and DKI Jakarta. Although it already has a considerable market share, the company has not yet export the product.

During its business development, company B applied new ways to market its products, although these methods have been widely applied in fact by other food companies. In this case, innovation marketing done is only considered to be 'new to the firm'. The company markets its products to local supermarkets. The company also provides products to tourists including business cards and hope that their products can be more widely known by the cards. Company has its own brand of products. However, to market its product to a wider market, the company uses different brands. To market its products, Company B has some distributors in many cities, where in one city there is only one distributor. This is done to maintain price standardization. Distributors usually come directly to the factory to pick up goods. This resulted in the reduction of distribution costs incurred by the company.

Promotional efforts are also made by using attractive packaging design to attract the attention of consumers. The thickness of the packaging is also a differentiator against similar products from other companies. The company also actively participated in exhibitions which were usually held by the government with expectation that the products can be wider exposed. Participation in this exhibition has made this company become a spotlight by journalist from electronic media.

In addition to product and marketing innovation, the company also undertakes process innovation. The innovation was made in the form of production technology, such as the use of steam boiler to warm up from the original only use the furnace. The application of the boiler can save 35-40 percent of fuel.In addition to the boiler, the company also replaces the use of a bucket with a jack to rest on the pressure to tofu. This process results in a faster pressing process. Device to round out the tofu was also made by the owner of the company. These gives impact on the increase of production and quality of products in a better shape and standardize resulting spherical shape out.

Companies also use splitting tool out of the manual in the beginning, so as to increase the number of products produced, decrease costs, and reduce worker fatigue. In the innovation process, there is role of government who solicited local university to provide assistance in the development and application of technology in this company.

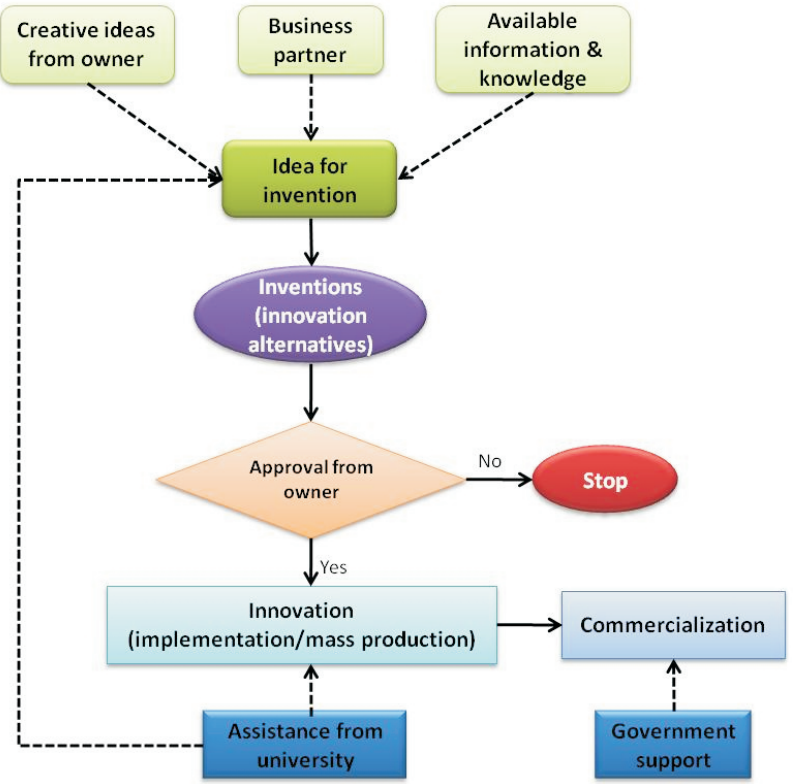

Figure 2. Innovation Process in Company B

From the two case studies, it appears that there is great role of owner in innovation process in both SMEs. More innovation initiatives were came from the owners. Therefore, the presence of the owner's vision for innovation is critical to the success of innovation. However, SMEs have also utilized the resources and the knowledge derived from external parties, particularly from customers. In addition, other external sources such as universities, R & D institutions, governments, seminars, as well as the mass media also have a role, although it is not dominant. However, in addition to more incremental nature, innovation undertaken by the SMEs is not routinely done but only appears when there was demand from the market. The innovation was not based on R & D and only based on the activity of trial and error before the owner decided to commercialized it or apply it in the company. The SMEs were also begun to form their core competence. Generally, both SMEs tend more to innovate in products, processes, and marketing, but not to perform organizational innovation. This is due to the fact that organizational structure in SMEs was still very simple and tends to be familial. In addition, there is no clear division of tasks. Culture embedded in their employees also did not support innovation in the company.

There are several reasons for SMEs to innovate. In addition to meeting the demands of customers, SMEs are trying to increase the scale of production to increase revenue. To maintain customer loyalty, SMEs tend to have more emphasis to aspects of quality and not through defining low price of the products. The innovation choice was based on their financial and human resources capacity. Innovation is also more geared to solve problems and not intended to be directed for strategic matter. In the innovation process, yet there was no mechanism to evaluate the results of the innovation that has been conducted. Nevertheless, there has been a process of evaluation before the invention into innovation, although only a simple manner.

Compared with study by Braga and Braga (2013), there are several same findings with this study. In decision making process, there are several considerations, includes the occurence of barriers, availability of information and knowledge from external sources, and availability of resources particularly the financial resources. This have an implication to SMEs to improve their capability to manage their resources to overcome the barriers and foster the innovation in the organization.

Different from Tomlinson and Fai (2013) who only found that buyer, supplier, and competitor were cooperating with SMEs for product and process innovation, this study find that other parties are having role in SMEs' innovation. The parties include university, government, mass media, and experts. Although innovation was not explicitly mentioned in study of Hamdani and Wirawan (2012), this is similar with their findings. They found that SMEs cooperate with local government, other SMEs, larger firms, university, and non-profit research center in order to increase the performance of their business process. In our study, those parties have important role in providing basic idea and additional information for invention, and also in implementation and commercialization process of innovation.

Being further examined, both SMEs have same decision-making approach and common understanding about innovation. Innovation was viewed to be static, where innovation can be forecasted and planned. Both SMEs also use non-rational approach which emphasizes more on intuition and subjective evaluation. Decisions were also more informal, while the level of decision-making is closer to the hierarchical one.

5. Conclusion and Recommedation

Based on the two case studies of SMEs in food and beverage sector, it appears that the process of innovation in the SMEs do not only involve the internal but also external parties. However, the role of the owner of the company is very dominant. The process of innovation was still very simple. There wasn't also evaluation of the innovation that has been conducted. However, basically, SMEs have already conducted products, processes, and marketing innovation although they were only incremental. For organizational innovation, the SMEs were still hampered by the lack of supportive culture and capacity of the employee culture. Generally, the approach in decision making and understanding of innovation is more static, non-rational, informal and hierarchical. Based on the case studies, it appears that the government has a role in supporting innovation in SMEs. However, the government needs to takes a greater role, especially related with IPR protection. This is due to the limited understanding of the legal aspects as well as lack of awareness on the importance of IPR by SMEs.

Some knowledge on how innovation occurs in SMEs can be simply explained through this study. In SMEs, innovation is initiated by the presence of creative ideas as basic stage for obtaining invention. This ideas is not only supported by internal capacity but also from external parties. Through informal process, this ideas are converted to be invention. Then, as there is willingness from SME's owner which then have implication on resources, the invention can be continued to be innovation. This process which include implementation and commercialization is often involving external parties, such as university and government. This study leaves several shortcomings due to the number of firms as object of case studies. To overcome this drawbacks, further study still need to be conducted by considering different location of firms, cultural background of decision makers, and industrial sectors. This is important to obtain stronger justification of conclusions and policy recommendation.

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