

MEASURING BUSINESS MODEL INNOVATION PERFORMANCE OF FOOD AND BEVERAGE INDUSTRY: A STUDY OF SMEs IN BOGOR CITY

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Abstract

Business model innovation is a business practice tool to develop a business competitive advantage. Extensive research on the business model has resulted in wide definition, conceptualization, and its multi case-based results. But there is still a lack of study in measuring the business models as proof of its performance. This study fills the gap by analyzing the business model innovation performance in special cases of food and beverage small and medium industries (SMIs) in Bogor City and finding room improvement to increase their performance. This study uses practical business model performance analysis with three dimensions acquired by a rigorous approach from the previous study. As a result, this measuring method shows the performance of food and beverage SMIs Bogor City mostly innovative. However, there are some improvements needed to increase the performance in element new capability, new channel, and new revenue model.

Keywords: Business model innovation, food and beverage industry, SMEs' performance

Introduction

Business model innovation has received wide attention from researchers for a long time. (Freeman & Julious, 2005) found the research related to business models has emerged since 1975 and began widely used in the 1995-2010 period and continues to develop since the emergence of internet technology in the mid-1990s. While another statement from (Trimi & Berbegal-Mirabent, 2012) found the interest in business model research began around 1998 and the largest contribution in this field occurred in 2005 and 2010. Business models as a competitive advantage have been used to find new ways to adapt to the fast-changing environment (McGrath, 2010) (Barden-Fuller C, 2010) (Wirtz et al., 2010) (Lok P, 2018) and also to expand industry and organization (Perkmann & Spicer, 2010).

The business model is interpreted as a configuration of the constituent components of the organization in creating value and delivering it to customers to generate profits (Teece, 2010). A short definition of interpreting a business model is the way the company conducts its business. Business models are also defined in different forms and ways (Baden-Fuller and Morgan 2010) including as an architecture (Teece,

2010), a statement (Stewart & Zhao, 2000), description (Applegate, 2001), structural templates (Amit & Zott, 2001), representations (Shafer et al., 2005), expression of business logic (Österwalder 2004), a conceptual model (Bock & George, 2014); Lecocq 2010; (Osterwalder et al., 2005), a method (Afuah, 2004), a framework (Afuah, 2004), or a multi-dimensional concept (Li et al., 2017). According to (Bock & George, 2014) business models must represent the core building blocks of the entrepreneurial process. Based on this perspective, business models are very useful for finding partners and investors (Trimi & Berbegal-Mirabent, 2012).

In a fast-changing environment, the business model cannot stop in the conceptual framework only, but enterprises also must be innovative to improve their business model performance and run it dynamically than competitors, and search for room improvement to change the organization, process, and their capability (Blanchet et al., 2014). Most researchers study business models as a concept but there is still a lack of study to test the business model performance. Developing performance measurement will help enterprises to improve their dynamic capability.

On the other side, the food and beverage industry has become the main sector in Indonesia. This sector contributes to gross domestic product (GDP) above the national average (Badan Pusat Statistik (BPS), 2019). Based on its scale this industry is dominated by Micro Small and Medium Enterprises (MSMEs) rather than big capital industries. Indonesia Trade and Industry Affairs (Disperindag) simplify its term as Small and Medium Industries (SMIs). One of the regions that produce food and beverage industries is Bogor City. Half of the main products come from food and beverage products (Badan Pusat Statistik (BPS), 2019). As a consequence, the performance of this sector must be primary attention to make sure they are dynamically innovative to adapt to the fast-changing environment (Safar et al., 2018). Therefore, this research will contribute to measuring their business model performance and propose room improvement to increase their competitive performance.

(Freeman & Julious, 2005) found the research related to business models has emerged since 1975 and began to be widely used in the period 1995-2010 and as the internet progressed, it has continued to develop since the mid-1990s. It aims to expand industry and organization (Perkmann & Spicer, 2010), while other opinions from (Trimi & Berbegal-Mirabent, 2012) interest in new business model research began around 1998 and the largest contribution in 2005 and 2010 period. Business model as a competitive advantage (Freeman & Julious, 2005) (Burkhart et al., 2011) used to find new ways to adapt to a fast-changing environment (McGrath, 2010) (Barden-Fuller C, 2010) (Wirtz et al., 2010) (Lok P, 2018). The term business model cannot be equated to a business strategy or an economic model (Trim Berbegal-Mirabent 2012). Business model is a part of the strategy, the business model has a broader range of strategies related to the company's potential in creating values (Morris et al., 2005) (Teece, 2010) to produce new strategies (McGrath, 2010), while strategies relate to the way of organization to achieve company's goals with limits on opportunities and threats, as well as limitations on resources and capabilities possessed (Nandakumar et al., 2010).

Besides that, the business model is also different from the innovation term that usually focuses on products and services (Trimi & Berbegal-Mirabent, 2012), while the business model includes everything customers will pay (McGrath, 2010). Business models used to explain the way how a company works, and as an economic perspective as part of an instrument to seek partners and investors (Trimi & Berbegal-Mirabent, 2012).

Subsequent studies also have a variety of different components, including represented in the form of value creation and potential competitiveness (Afuah, 2004), content, structure, and governance (Freeman & Julious, 2005), market, supply, operational, point of view management (Storbacka & Nenonen, 2009), content, context, trade, and connections (Weirtz et al. 2010), the archetype of e-business models, system activities, and cost/revenue architectures (Freeman & Julious, 2005), process identification, design, and evaluation (Spieth & Schneider, 2016), value offer, value capture, and value creation (Muller et al. 2017). All these elements do not contradict the definition of a business model because it increases its capabilities to create value that will benefit the organization. These elements also helped researchers to develop their perspective of business models because the business model will continue to change, a new business model will emerge (Österwalder 2003). Business models also have a unique relationship and every decision in an element will influence the other elements and a good business model involves all related elements (Teece, 2010).

Food and Beverage SMIs in Industry 4.0

Industry 4.0 brings a lot of technology, with challenges and opportunities. (Arvind & Bourne, 2016) states that each revolution brings significant changes. According to (Sung, 2018) industry 4.0 is supported by several disruptive devices including increasing the volume of data, computational and connectivity (emergence of business intelligence and analytical capabilities), changes in human and machine interactions such as interfaces and augmented reality systems (improving the transfer of digital instructions to the physical world). Lu (2017) specifically mentions 8 principles of operating in industry 4.0 consist of accessibility, multilingualism, security, privacy, subsidiarity, open standards, open-source software, and multilateral solutions. Enterprises also will be able to plan, monitor, and control the performance because every equipment connected to sensors and collecting data allows managers to keep the performance on track.

SMIs have a significant role for the Indonesia economy in terms of employment especially unskilled labor, using domestic raw material for added value, local ownership, and as distributors or suppliers of the big venture. In Indonesia, attention to SMIs is increasing since these enterprises were able to survive the '98 crisis (Barlian et al. 2013). SMIs have a proportion of about 99.9% of the Indonesia industry and absorb almost 98.7% of employment share because no specific skills are needed, but dominating (87%) by micro enterprises (Umkm & Indonesia, 2016). Mostly, working on the commodity products/agriculture sector included livestock and fisheries (about

48.9%) with productivity of \$1.355, far from Thailand (\$12.3) and Malaysia (\$20.6). These facts show that there is still much room for improvement to increase Indonesian enterprise productivity.

SMEs competitive advantage can be achieved by increasing the innovation capacity, information and communication technology, and the product, but (Mutula & Van Brakel, 2007) found the workers in developing countries are not ready with information and communication technology. (Umkm & Indonesia, 2016) also states that Indonesia's technology literacy is below of ASEAN (on average). Schmidt et al. (2014) study found that SMEs' interest in digitization declined as well. In complex issues such as industry 4.0, 26 of 68 respondents do nothing towards industry 4.0 phenomena (Engelbertink & Woudstra, 2017), and two of third manufacturing companies interviewed do not know about the industry 4.0 concept. In spite of SMEs multi disadvantages, they are more agile to adapt than large companies that have more complex resources, multi-interest, and need more time to fit the technology with their current resources, also many hierarchies that must be passed (Engelbertink & Woudstra, 2017).

The food and beverage industry has special issues related to agriculture commodity characteristics, which tend to be perishable, bulky, quality and security issues. Some of the consumers also need special attributes added such as they do not contain non-halal meat, gluten-free, less sugar, attention to animal welfare and rights, but still lack traceability but the technology is able to increase the consumer's trust and transparency. This phenomenon will soon become a world trend since the world becomes more open, increasing education level and wealth, a global campaign, and information spreading across the world. High technology has a significant role to satisfy those demands by supporting traceability, real-time data, mass communication, (Walters & Rainbird, 2007) said that the change of business environments make consumer demands and satisfaction (quality standard and preferences) changing toward product-services innovation, the variety of product, supporting services. Further, technology development and consumer attributes have been changing demand patterns and how consumers can be found with multi-various needs and channels.

Nowadays, as mentioned above, consumers not only focus on functional products anymore but also on other added value of the product such as contribution to environments, products contain, human and animal welfare. For example, one of the most disruptive innovations in the food industry is Beyond Meat, this enterprise uses animal welfare and climate change issues as an impact of excessive meat consumption so they offer new substitution products that are produced from the plant. Food as a functional product as a daily need, the innovation should concern other attributes such as size, packaging design, standard certification as assurance. Therefore, the same products can be sold at different prices due to their value. Consumers also can be reached by multi-channels. There are many optional channels such as marketplaces, social media, reseller networks, and websites (national and global). Then, it depends on marketing strategy and creativity and its product value offers.

The evidence of technology development's role to change consumer behavior can be seen in consumers' lifestyles, such as shopping by smartphone, delivering the product directly to their home by drone. In addition, this technology is also declining delivery cost and products arrive in a shorter time to consumers' homes. In some large companies, virtual reality is also used as product marketing. The value chain becomes shorter and quality product guarantee can be solved by using sensors and the Internet of Things (IoT) in a real-time case, even blockchain to overcome the 3rd parties' trust issues. On the other hand, advanced technology also offers to improve agricultural product handlings such as damaged detectors, inventory stock, and production planning optimality, demand prediction, quality screening, etc. This phenomenon indicates that businesses who do not use technology will be left behind, because the competition becomes more aggressive among global players. For this reason, the use of technology cannot be avoided to meet customers' needs.

Methods

This research was conducted towards food and beverage small and medium industries (SMIs) in Bogor City. The location was chosen purposively considering Bogor City as a strategic region in developing food and beverage industries based on main products and total investment capital. This research was conducted from February to June 2019. This study used primary and secondary data. First, the secondary data was collected from Disperindag to obtain SMIs population and used literature review to help to understand the research context in relevant issues. Second, the SMIs samples were chosen by random sampling technique about 30 samples. Third, the owners were interviewed by structured questionnaires. Then, the results were analyzed and validated by interviewed to Indonesia Industry Affairs as stakeholder institutions who play an important role in industries' development. Data types and sources detail shown in Table 1.

Table 1
Data Types And Sources

No.	Name of data	Type	Source
1	SMIs population	Secondary	Document/Industry and trade Affair of Bogor City
2	SMIs profile	Primary	Questionnaires/SMIs
3	Innovation performance level	Primary	Questionnaires/SMIs
4	Results validating and added information	Primary	Interviews/Industry and trade Affair of Bogor City

Source: Data Process, 2019

Measurement Design

Performance indicators used a previous study that was tested by validity and reliability according to (Clauss, 2017). These indicators were derived from three main dimensions, consisting of value creation innovation, value proposition innovation, and value capture innovation. The dimensions are supported by 10 constructs and 31

items/sub-constructs, and it is prepared to be structured questionnaires with a 5-scale performance test and converted to quantitative data. Business model innovation performance dimensions and its elements/sub-constructs show in Table 2.

Table 2
Performance Measurement Of Business Model Innovation

No.	Dimension	Performance Indicator/Sub-construct
1	Value creation innovation	New capabilities New technology/equipment New partnerships New processes
2	Value proposition innovation	New offerings New customers and markets New channels New customer relationship
3	Value capture innovation	New revenue models New cost structures

Source: (Clauss, 2017)

Analysis Technique

This study used descriptive analysis to show and describe SMIs profile, interview results, and performance measurement as follows. Business models innovation performance in every dimensions and elements were defined by:

Define Higher score : Maximum score x value

Define Lowest score : Minimum score x value

Define Interval class : Range/Total class

$$I = \frac{range}{\sum C}$$

Then, it formulates to:

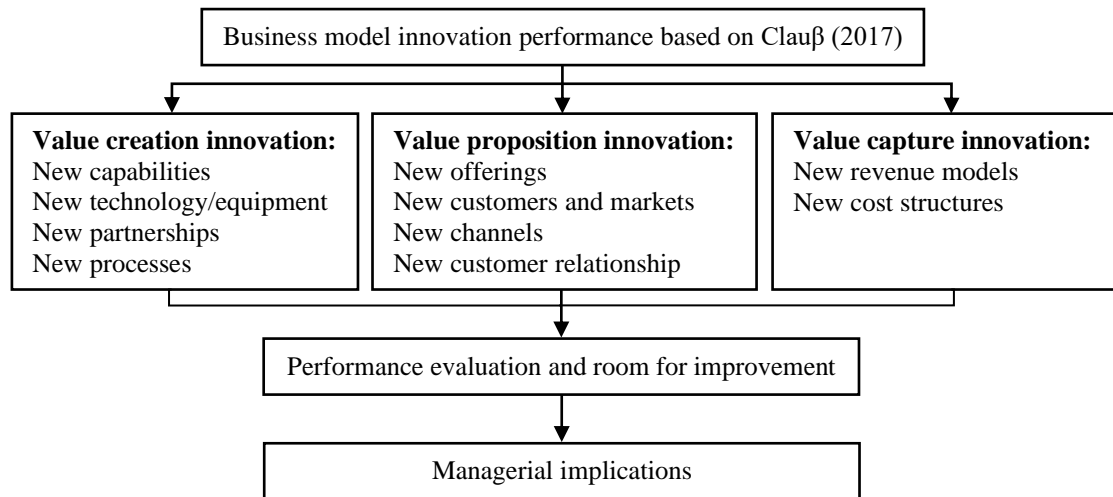
Means:

I : Class Interval

Range : Higher score – lowest score

C : Total Class

The class consists of 5 classes: not innovative/less innovative/fair/innovative/very innovative that were determined by the criteria above. Then, to search for room improvement analyzed using descriptive analysis of performance results in each element.



Results and Discussion

SMEs Respondent Profile

Food and beverage industries in this study are the producers of food and beverage which spread in various areas in Bogor City with relative homogeneous characteristics. Based on the obtained data, SMIs respondent profile shows in Table 3.

Table 3
Food and beverage SMIs respondent profile

No	Profile	Category	Percentage (%)
1	Industries product	Food	73,33
		Beverage	26,67
2	Gender	Male	30
		Female	70
3	Age	< 34 old	30
		35-49 old	40
		> 50 old	30
4	Latest education	Junior high school	3,33
		Senior high school	30
		Diploma/Bachelor	66,67
5	Establish year	<2005	10
		2005-2009	6,67
		2010-2014	53,33
		>2015	30
6	Employers	1-2 people	30
		3-4 people	50
		> 5 people	20
7	Revenue (in a month)	< 25 million	70
		> 25 million	30

Source: Data Process, 2019

Table 3 shows the characteristics of SMIs do not have significant differences. Based on Table 3 could be explained and interpreted below. First, most of the businesses in this industry are dominated by micro and small industries with employees about 3-4 people. This number of employees also shows that there are no significant differences between micro and small industries. It is also confirmed by observation of their facilities that are relatively homogenous. Second, if seen from the gender profile, the actors of the industry are dominated by women. The reason, according to the interview, is because they can run their business from home, so their roles as housewives will not be disturbed and additional income still obtained. Third, SMIs are also dominated by 40 to 59 old entrepreneurs, because most of them quit their job to focus on family but they wanted to have income which was possibly obtained through business activities. The actors in this industry have a better education level; high senior school/above. This result is still relevant to (Bellefleur et al., 2012) that SMIs are dominated by senior high school and undergraduate level, but different in gender proportion which is shown mostly done by women. If viewed from the business scale, mostly dominated by micro-enterprises with turnover/revenue below 25 million/month. Therefore, we can see as a general conclusion on the profile that SMIs are potentially to develop as home industries to increase home productivity and household income with a good education level.

Business Model Innovation Performance

Business model innovation has three main dimensions, consisting of value creation, value proposition, and value capture (Clauss, 2017). Based on the result obtained SMIs performance level in each dimension shown in Table 4.

Table 4
Distribution Of Business Model Performance Level

No	Dimension	Not inn. (%)	Less inn. (%)	Fair inn. (%)	Inn. (%)	Very inn. (%)
1	Value creation inn.	3.33%	10%	20%	63.33%	3.33%
2	Value proposition inn.	3.33%	10%	13.33%	63.33%	10%
3	Value capture inn.	-	-	20%	80%	-

* inn. = innovation/innovative

Source: Data Process, 2019

Based on Table 13 is known that most performances in three dimensions are at an innovative level. The total score of business model innovation performance shows 63.33% of SMIs are innovative. The performance of each of these dimensions can be parsed to detail based on each indicator measurement in Table 5.

Table 5
Business model innovation based on indicators

Dimension	Performance indicator	Not inn. (%)	Less inn. (%)	Fair inn. (%)	Inn. (%)	Very inn. (%)
Value creation inn.	New capabilities	-	13.33	50	26.67	10
	New technology/equipment	10	6.67	23.33	46.67	13.33
	New partnerships	-	10	26.67	40	23.33
	New processes	6.67	-	33.33	56.67	3.33
Value proposition inn.	New offerings	6.67	3.33	26.67	46.67	16.67
	New customers and markets	3.33	6.67	30	43.33	16.67
	New channels	3.33	10	40	40	6.67
	New customer relationships	3.33	10	36.67	43.33	6.67
Value capture inn.	New revenue models	-	6.67	53.33	40	-
	New cost structures	3.33	3.33	6.67	73.33	13.33

* inn. = innovation/innovative

Source: Data Process, 2019

Table 5 shows at indicator level performance in each element shown more diverse results, but still mostly in innovative level. Value creation dimension shows that every element is innovative, but new capabilities still at a fair-innovative level. Value proposition innovation performance mostly at an innovative level and there is a second large group still at a fair-innovative level. Third, every element in the value capture innovation dimension shows mostly in fair-innovative in new revenue models, but innovative at new cost structures. These conditions indicate that there are some improvements needed to increase SMIs performance. Therefore, the non innovative SMIs have to improve their performance to become more innovative. Based on their profile, innovative and not innovative SMIs are divided into Table 6.

Table 6
Innovative and not-innovative SMIs based on profile

No	Profile	Category	∑ Innovative	∑ Not Innovative
1	Latest Education	Junior high school	-	1
		Senior high school	7	2
		Diploma/Bachelor	12	8
2	Age	< 34 old	7	2
		35-49 old	5	7
		> 50 old	7	2
3	Establish	< 2004	1	2
		2005-2009	2	-
		2010-2014	5	4

		> 2015	11	5
4	Revenue	< 25 million	14	7
		> 25 million	5	4

Source: Data Process, 2019

Value Creation Innovation

Table 5 shows that innovative performance achieved on new technology/equipment, new partnerships, and new processes elements. Innovation on new technology/equipment elements shows SMIs able to capitalize on new opportunities to expand their products and services and supported by the ability to update technical resources, relative to their competitors. Innovative SMIs in new partnerships element is constantly searching for new collaboration partners and utilize its collaboration to develop their business model. Innovative SMIs in new processes are able to improve internal processes, using innovative procedures and processes to create products, and existing processes are regularly assessed and significantly changed if needed. These activities can not be carried out by other SMIs which were still in the below level.

In the new capabilities element, only several of SMIs are included in the innovative performance level, the majority of SMIs are in the fair-innovative level. The element of new capabilities is measured based on training consistency, having up-to-date knowledge and capabilities, and their reflection on new competencies to adapt to the changing market needs. At the indicator level, most SMIs in the new capabilities element are still weak in training and tend to have no up-to-date knowledge and capabilities. Whereas in terms of their environment, training has been facilitated by various supporting institutions such as the Disperindag, House Creative of State-Owned Corporation (BUMN), as well as large businesses related to SMIs, but only a small number was able to use it well.

SMIs entrepreneurs also have an opportunity to work with higher education institutions. Higher education institutions such as universities have a responsibility to develop research and development (R&D) to help them as a part of service *tri dharma* university values. However, several respondents claimed that various researchers from higher education institutions still have not been able to provide feedback that encourages productivity and performance. Besides, networking with researchers/academicians should also be an opportunity for SMIs to update the latest technology, knowledge and competencies, develop their business model, evaluate processes, and collaboration between theoretical frameworks with their technical problems.

Value proposition innovation

Table 5 shows that value proposition innovation has some group at an innovative and very innovative performance level. It is supported by elements of new offerings, new customers and markets, new channels, and new customer relationships. Based on

the elements, SMIs have different competitive characteristics at sub-constructs measurement. Generally, innovative SMIs known at element of 1) new offerings, they are able to solve customer needs which were not solved by competitors and their products/services more innovative than their competitors; 2) new customers and markets, they are able to regularly take opportunities that arise in new or growing markets and constantly seeking new customer segments and markets for their existing products/services; 3) new channels, they utilize new distribution channels for their products and services, constant changes of their channels have led them to improved efficiency of their channel functions, and also consistently change their portfolio of distribution channels; 4) new customer relationships, they try to increase customer retention by new service offerings, and emphasize innovative/modern actions to increase customers retention. Those activities know had not done by not innovative SMIs.

On another hand, the innovation activities had not done by low-performance SMIs in several elements, especially they are not able to regularly address new unserved market segments and they are not able to change their portfolio of distribution channels. Based on observed to the data, if it is linked back to the element of new capabilities, SMIs that are less innovative in these elements are also not innovative in the new capabilities element.

Value Capture Innovation

Most SMIs in the value capture dimension are in the innovative level which is strongly supported by new cost structures element, but still in the fair-innovative level in new revenue models element. Innovative SMIs in the value capture dimension are known in element of 1) new revenue model, they are able to develop new revenue opportunities and they do not rely on the durability of their existing revenue sources; 2) new cost structures, they regularly to reflect price-quantity strategy, actively seeking opportunities to save manufacturing costs, the production costs are also constantly examined and amended if need according to market prices, and utilize opportunities which arise through price differentiation. But, most of SMIs are not able to offer integrated services to realize long-term financial returns.

Performance Evaluation and Room for Improvement

Innovative performance is achieved in value creation, value proposition, and value capture innovation dimension. In value creation innovation, the innovative performance is supported by the element of new technology/equipment, new partnerships, new processes, and fair-innovative in new capabilities element. Innovation performance could be increased by developing training effectiveness and intensity, and also SMIs proactiveness to obtain up-to-date/modern knowledge and capabilities. Second, the innovative performance in value proposition dimension is supported by the element of new offerings, new customers and markets, new channels, and new customer relationships. The performance in the element of new customers and markets still could

be increased by increasing SMIs ability to solve unserved segments, also in the element of new channels by increasing SMIs portfolio of distribution channels. Last, in value capture innovation dimension is achieved in the element of new structure costs, but still in a fair-innovative level on new revenue models. Therefore, it needs to improve every indicator in the element such as increasing the ability to realize long-term financial returns. Those opportunities of room improvements summarize in Table 7.

Table 7
Room improvement to increase SMIs innovative performance

No	Dimension	Element	Room Improvement
1	Value creation innovation	New capability	Increasing training intensity and effectiveness regularly to develop up-to-date knowledge and capabilities.
2	Value proposition innovation	New customers and markets New channels	Solving unserved customer and market segments. Increasing consistently change the portfolio of distribution channels.
3	Value capture innovation	New revenue model	Increasing the ability to offer integrated services to realize long-term financial returns.

Source: Data Process, 2019

Improvement in value creation innovation, SMIs have the opportunity to obtain various forms of training from different institutions, governments and supporting companies/industries. Besides training from the Trade and Industry Affair (Disperindag), some SMIs are also listed as a member in the Creative House of State-owned Corporation (BUMN) which provide regular training. However, the performance of the new capabilities element shows that training is not well utilized to develop the latest knowledge and competencies. The training should be improved by evaluating the activeness of members' participation, effectiveness, relevancy, post-training mentoring, and regular evaluation. This training center should also be a media for connecting multi-stakeholders especially between SMIs entrepreneurs with technology providers, scholars, and investors to improve their technical skills, knowledge, resources, and strengthening of SMIs networks.

Next, improvement in value proposition innovation could be improved by solving unserved market segments. SMIs tend to be targeting the mass market who do not have a specific/specific segment to target. It means their products have no special competitive advantage which solves segmented consumers' need. Therefore, SMIs have to develop their market segment by targeting various types of consumers including mass market, segmented consumer, and diversified segment. The segmented market such as developing gluten-free products, environmentally friendly, low sugar, etcetera. The second element that tends to be weak in this dimension is the weakness of inconsistently change their portfolio of distribution channels. This distribution channel has an important role to deliver their product value propositions to customers, increase

customer awareness of products, and also enable customers to buy their products. A diverse and dynamic channel portfolio will provide opportunities and flexibility for SMIs to gain their bargaining position over time. Also, changes in the distribution channel portfolio increase the agility of SMIs, in order to difficult to be imitated by competitors.

Then, the most innovative SMIs in value capture innovation dimension are at an innovative level which is strongly supported by new cost structures element. The innovative performance of this dimension can still be improved by improving the performance of the element of a new revenue model, especially in the long-term financial return services. Long-term financial return service means issuing mortgage loans of debt that has a certain nominal to grow their capital. This improvement will provide an opportunity for SMIs to get additional capital from third-parties.

Conclusions

Based on the results, the business model innovation performance of SMIs on the three dimensions is mostly at an innovative level. However, there are several improvements needed, especially in the element of new capabilities, new customers and markets, new channels, and new revenue models. Improvements to these subconstructs are expected to increase their performance levels to become more adaptive. The improvement of each element consists of increasing training intensity and effectiveness regularly to develop up-to-date knowledge and capabilities, solving unserved customer and market segments, increasing consistently change the portfolio of distribution channels, and increasing the ability to offer integrated services to realize long-term financial returns.

As a suggestion for the next research improvement, the design of this performance measurement needs to complete with quantification details in each subconstructs, and also additional analysis to their financial and competitors' performance will provide a more comprehensive study.

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