Driving factors of open innovation adoption on MSMEs in Indonesia

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Abstract

This exploratory research aimed to identified basic dimensions which drive the open innovation implementation by MSMEs in Indonesia.The Analysis tools used in this research was Factor Analysis with varimax rotation.The analysis results showed there were 4 factors drivenMSMEs to do some cooperation with external parties in some activities in order to develop their own product. Those 4 factors are; deeper market insight orientation, improve capability orientation, expand network orientation andidea generated orientation. This finding can be used as a consideration for external parties who concern in MSMEs development.

Keywords: driving, factors, innovation, analysis, orientation.

Factores de impulso de la adopción de innovación abierta en las MIPYME en Indonesia

Resumen

Esta investigación exploratoria tuvo como objetivo identificar las dimensiones básicas que impulsan la implementación de la innovación abierta por parte de las MIPYME en Indonesia. Las herramientas de análisis utilizadas en esta investigación fueron el análisis factorial con rotación varimax. Los resultados del análisis mostraron que hubo 4 factores que impulsaron a las MIPYME a cooperar con partes externas en algunas actividades para desarrollar su propio producto. Esos 4 factores son; una orientación más profunda del conocimiento del mercado, mejorar la orientación de la capacidad, ampliar la orientación de la red y la orientación generada por la idea. Este hallazgo puede usarse como una consideración para las partes externas que se preocupan por el desarrollo de las MIPYMES.

Palabras clave: conducción, factores, innovación, análisis, orientación.

1. INTRODUCTION

Innovation is the important thing that should be done by the company, wether large or small companies. Innovation must be done since the current business getting more competitive, the technology changing more rapidly and the higher demands of consumers.

Innovation become one of the dominant factors that play an important role in creating and increasing competitive advantages for the company (Calantone et al., 2002).

Innovation has several types, based onseveral experts. Among them,there are radical innovation versus incremental innovation and product innovation versus process innovation (Olso, 2005), innovation enhanced competency versus undermined innovation competency (Tushman and Anderson, 1986), sustaining innovation versus disruptive innovation, (Bower and Clayton, 1995)and one type of innovation that is currently being attention is open innovation versus closed innovation (Chesbrough, 2003).

Open innovation is defined as the used of certain knowledge from internal and external of the company that aims to accelerate the innovationof the company, in vice versa, to extend the used of corporate innovation from internal the company (Chesbrough, 2003). The concept of open innovation is based on the idea that valuable ideas can be obtained and offered both from internal and external the company through a network of cooperation (Chesbrough, 2003).

There are several benefits can be gained by a company by a network cooperation with various external sources in an innovative development. These benefits include (Schilling, 2015);

a. Companies are able to acquire knowledge, expertise or resources needed in the innovation process, faster than developing the knowledge, expertise or related resources themselves.

b. Improve the efficiency of resource used, alsothe company flexibility. In a business environment, where life cycles become shorter and technology is changing rapidly, a company can choose to become more specialized, and work with other companies with other specializations to access knowledge or resources they do not have.

c. Share the costs and risks of innovation development undertaken.

From the practical side, there is a tendency for many companies to apply open innovation in order to develop their core competencies, improve their business performance by networking, collaborating, and utilizing information disclosure of technological developments to support the innovation process undertaken. Although initially the application of open innovation is mostly done by big companies, but now there is a positive trend for small companies and small and medium enterprises (SMEs) to implement open innovation as well.

With thoseseveral benefits, the concept of open innovation can be adopted as an alternative way of developing innovation capacity in

MSMEs. Since MSMEs have many limitations and problems faced by MSMEs especially in their innovation development process. The implementation of open innovation seems to be to help them improve their performance and achieve a sustainable competitive advantages (Parida, 2012).

Creative Industry and MSMEs Innovation in Indonesia

This research will examine the effect of open innovation activity toward the innovation performance in handicraft MSMEs in Indonesia. The handicraft sector is chosen because this sector is one of the creative economy sub-sectors that has greatly contributed to the national economic growth of Indonesia, ranging from the increase of added value, the absorption of labor, the number of companies,and to the export market. According Industry and Trade Ministry, traditional craft that has been inherited by the elders of Indonesia is able to produce superior products and have a high value of tradition or high style, either from the aspect of craft, woven, pottery, or clothing products which each of them has various beautiful forms and diverse functions. Traditional crafts also have great potential as a creative industry commodity with high aesthetic and economic value.

In 2014-2015, the highest growth is achieved by craft sub-sector bythe export growth rate of 11.81 percent, followed by fashion bythegrowth of 7.12 percent, advertising at 6.02 percent and

architecture 5.59 percent. By 2016, the creative industry has contributed Rp 642 trillion or 7.05 percent of Indonesia's total gross domestic product (GDP). The biggest contribution came from culinary business in 32.4 percent, fashion 27.9 percent, and craft 14.88 percent. Besidescontributing the national GDP, the creative industry is the fourth largest sector in employment, by a national contribution of 10.7 percent or 11.8 million people. The largest contribution average came from fashion business as much as 32.3 percent, culinary 31.5 percent, and craft 25.8 percent.

In order to continue to develop and have competitiveness, the handicraft sector requires a major resource of creativity and innovation. Creativity and innovation are needed so that they can create new products and increase the added value of the products they produce. However, several studies have shown that the level of innovation in MSMESs is still low. This condition has an impact in the lack of competitiveness of MSMES products in an increasingly competitive market. The results of Suliyanto et al. (2010) studiedshowed that the low competitiveness of batik handicraft products is due to the simplicity of the technology used in the production process also the low level of product innovation. Furthermore, the research also has shown the very low level of creativity and innovation of MSMESs, especially batik craftMSMEs because the craftMSMEs have not realized the importance of innovation for them. Some factors becoming are the reluctance to change the pattern of work rhythm and unwilling to learn and develop

new batik motifs and processes, the fearness ofdisobeying the grip in batik as well as fearness of failure. Products produced by MSMESs have a less competitive quality and still limited in number. MSMESs are relatively difficult to adopt new technological developments to improve the competitiveness of products they produce, due to the limited human resources possessed by this business unit. In addition, the lack of information related to the advancement of science and technology, led to the slow development of facilities and infrastructure that isextremely needed to support the progress of its business (Boschma, 2005).

To overcome the problem, some MSMESs began to apply the concept of open innovation, which is to cooperate with several external sources in the development of their innovation. Some external resources that can be utilized by MSMEs to build their innovation, including from the university (Caloffi et al., 2013, Huggins et al, 2011), cooperation between MSMESs with large companies in a cluster (Laperche and Liu, 2013) form of cooperation with others due to proximity in a variety of reasons, such as organization, social, cultural and institutional (Boutillier and Uzunidis,2010), or other institutions that support the development of innovation as well as public information sources such as the internet, company annual reports and various sources others (Boutillier and Uzunidis,2010).

This research will explore the reasons underlying MSMESs to collaborate with external sources in their open innovation activities by identifying the fundamental dimensions that encourage adoption of open innovation done by MSMEs.

2. METHODOLOGY

a. Data collection

The research data was collected through a survey of 225 MSMESs engaged in the creative industry sector in Indonesia. Respondents in this study are owners of MSMESs in the creative industry sector, especially handicraft products. Handicraft products are the products of creative activities related to the creation, production and distribution of products made of precious stones, natural and artificial fibers, leather, rattan, bamboo, wood, metal (gold, silver, copper, bronze, iron) wood, glass, porcelain, fabrics, marble, clay, and lime. The response ratesof this study is quite high at 88.8%, of which 225 questionnaires were distributed, the questionnaire returned was 200 questionnaires.Furthermore, 20 questionnaires were discarded, because they were not completely filled so they could not be further analyzed. The final sample size in this research was 180(Bower and Clayton, 1995).

b. Measures

This study specifically explores the information of the respondents on matters that encourage them to cooperate with external parties in their product innovation development efforts. A five Likert scale (1 totally not agree - 5-totally agree) was used to evaluate 20 factors driving factors of MSMESs to adopt an open innovation. These 20

factors were partially based on earlier studies of open innovation adoption (Parida, 2012; Van de Vrande et al., 2008).

c. Analysis method

This research type is an exploratory research that aims to identify fundamental dimensions that drive the implementation of open innovation by Indonesian MSMESs. The analysis tool used in this research is Factor Analysis with varimax rotation.The accuracy of the factor model formed tested with Barletts Test Sphericity and Kaiser Mayer Olkin (KMO) to determine the adequacy of the sample. Determination of the number of factors formed based on the value of eigenvalue obtained as well as the percentage of the total variance. Factual interpretation is done by classifying a minimum loading factor of 0.4 variable.

3. RESULT

General Description of the respondents

Table 1.The characteristics of respondents based on the length of business

Length of business (year)	Amount	Percentage (%)
0 – 5	83	46,11
5,1 – 11	66	36,67
11,1 – 17	9	5,00
17,1 - 23	6	3,33
23,1 – 29	5	2,78
>29,1	11	6,11
	180	100

Based on table 1 above, the characteristics of respondents based on the length of business shows that the majority of respondents (46.11%) have run their business for 1 to 5 years. A substantial percentage is also found among respondents who have run their business between 5.1 to 11 years, amounting to 36.67%. What is interesting is that there are respondents who have run business more than 23 years that is equal to 8.89%. Respondents in this category are respondents who have been involved in handicraft business that is hereditary, such as batik crafts, ceramic handicrafts and handicrafts from shellfish (Olso, 2005).

Table 2. Characteristics of Respondents Based on Number of Employee

Number of worker	Amount	Percentage (%)
< 5	135	75
6-11	25	13,89
>11	10	5,56
10 - 20	4	2,22
➢ 20	6	3,33
	180	100

The table above shows that the majority of research respondents included in the category of micro-enterprises (75%)., which are businesses that have an employee less than 5 people. 35% of respondents are in the small enterprises category and only 3 % of the respondents are in the medium category.

Analysis Result

Factor Analysis with varimax rotation was used to explore factors that driveMSMESs to adopt an open innovation. The results of factor analysis obtained can be seen in the table below:

Table 3. KMO and Bartlett's Test Result

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	2.583E3
	df	190
	Sig.	.000

The result of factor analysis shows that Kaiser Mayer Olkin (KMO) value is good enough, which is 0,885. KMO value measure of sampling. The adequacy obtained has a value> 0.5, this indicates that the number of samples analyzed is sufficient to be analyzed by factor analysis.

The Barletts Test Sphericity value obtained is 0.002583, with sig. 0,000. The sig value. (0,000) <α (0.05). This value indicates that the correlation matrix tested is not an identity matrix. Based on the

value of KMO and Bartlett's test obtained, then the correlation matrix declared eligible for further processing by factor analysis.

The result of total variance explained from factor analysis revealed that there are 4 factors formed, they are factor 1 with value eigenvalue = 8,830, factor 2 with value eigenvalue = 2,830, factor 3 with value eigenvalue = 1,291 and factor 4 with value eigenvalue = 1,030.

Four factors are formed, each having a variance percentage of 44.152; 14,279; 6,456 and 5,152, with total variance percentage of four factors formed at 70,039. Thus, 70.039% of all variables that exist, can be explained by the 4 factors that are formed. Table 2 below shows the results of Rotated factor loading_driving / inhibiting factor to adopt open innovation.

Table 4. Rotated factor loading_driving factor to addopt open innovation

Driving / inhibiting factors	Factor 1	Factor 2	Factor 3	Factor 4
get a faster access toward the knowledge development in production process	**0,820**			
expand the market and marketing scope	0,798			
get an easier access toward the knowledge development in production process	0,795			

Driving / inhibiting factors	Factor 1	Factor 2	Factor 3	Factor 4
keep up with the market faster	0,789			
fulfill the market needs better	0,746			
get a faster access toward information of technology development in production process	0,645			
get an easier access toward information of technology development in production process	0,636			
get a cheaper access toward the knowledge development in production process	0,512			
do not have enough capability to innovate		**0,895**		
do not have sufficient time to innovate		0,877		
do not have enough financial resources to innovate		0,790		
reduce costs in product development		0,633		
reduce the risk of unsuccessful product development efforts		0,599		
get a cheaper access toward information of technology development in production process		0,591		

Driving / inhibiting factors	Factor 1	Factor 2	Factor 3	Factor 4
exploring the possibility of developing new products in collaboration with various parties			**0,703**	
gaining knowledge of the products making techniques that have not been mastered			0,675	
developing mutual beneficial relationships between parties			0,672	
share knowledge between parties			0,660	
get new idea to develop product				**0,791**
gain new insights into the development of products				0,697

The next step in factor analysis is to name the formed factors. Giving a name on factor factors in this study is based on the indicator that has the largest loading factor on each factor formed. Based on the largest loading factor, factor 1 is named deeper market insight orientation, factor 2 is named improve capability orientation, factor 3 is named expand network orientation and factor 4 is named idea generating orientation.

4. DISCUSSION

The result of factor analysis shows that there are 4 factors that drive MSMES to adopt the open innovation concept, by cooperating with various external parties in their innovation activity.

a. The first factor driving the adoption of open innovation is the deeper market insight orientation.

The main reason for this cooperation is the orientation of getting a deeper market picture. By adopting open innovation, MSMEs gets a faster access toward knowledge development in the production process. They can also get an easier access to the knowledge development in the production process. With that knowledge, SME's expect that they can expand their market and marketing scope, keep up with the market faster, and fulfill the market needs better.

b. The second factor that drivesthe adoption of open innovation is improved capability orientation

MSMEs realize that they have various resource constraints that can prevent them from innovating. The limitations are as follows: they do not have enough capability to innovate, do not have sufficient time to innovate, and do not have enough financial resources to innovate.Laperche and Liu's (2013)

researchalso shows that SMEs generally have weak performance in research and innovation due to limited human resources and financial resources. Thus, by adopting open innovation, through cooperation with various external parties, MSMEs hopes that they can reduce costs in product development, reduce the risk of unsuccessful product development efforts, and get a cheaper access toward information technology development in the production process.

c. The third factor driving the adoption of open innovation is expanding network orientation.

By working with various external parties, MSMEs are able to explore the possibility of developing new products in collaboration with various parties. With the cooperation done by MSMES hope they can gain knowledge about the technique of making the product that has not been mastered. MSMEs are also aware that in the established cooperation they can develop mutual beneficial relationships between parties and share knowledge between parties.

Related tothis finding, study byGassmann et al (2010) showed that MSMEs considered less attractive to be a partner in the innovation development cooperation system. So MSMEs need to prove that they also can contribute in that cooperation.

d. The fourth factor driving the adoption of open innovation by MSMESs is the idea of generating orientation.

Study by Calantone et al (2002) found that Indonesian SMEs still have lack of ideas, lack of partnership outside their cluster, and business development service that have not play an optimum role in SMEs development. This condition encourages MSMEs to adopt open innovation activity by cooperating with various external parties, such as consumers, competitors, suppliers, universities and various other sources, to get a new idea to develop product and gain new insights into the development of products.

5. CONCLUSION

The result of factor analysis has shown that there are 4 factors drive MSMEs to cooperate with several external parties in their product development activities. These four factors are deeper market insight orientation, improve capability orientation, expand the network orientation, and idea generating orientation.

6. IMPLICATION

These findings can be used as the consideration for external parties who concern about the development of MSMEs, so that

cooperation activities undertaken by MSMEs can be targeted as same as the needs of MSMEs.

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