

# MSEs – LARGE INDUSTRY PARTNERSHIPS BASED ON TECHNOLOGY INNOVATION IN INDONESIA

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**Abstract**—This study focuses on technological partnerships between Micro and Small Enterprises (MSEs) and large industry. It is argued that such technological partnerships can be beneficial for both types of partnership, but MSEs often are confronted by the risks of partnerships as these relationships are non-symmetric. Because of this, the strategic, internal capabilities and external capabilities of MSEs can flow unintentionally to the larger firms. If this occurs, the partnerships would be less successful from the MSEs point of view. This paper examines to what extent the size of MSEs, gender of MSEs owner, education of MSEs owner, the number of employees, and type of large industry of MSEs is related with technological partnerships. The data were taken from an annual survey of micro and small scale industry conducted by the Indonesian Central Board of Statistics (Badan Pusat Statistik - BPS). A sample of 5,397 MSEs, that is, the partner with large industry was interviewed by means of a structured questionnaire. Binary logistic regression analysis was conducted to determine the relationship between independent variables and technological partnerships. The result of the research showed that gender of MSEs owner, the number of employees, and type of MSEs partner are correlated with technological partnerships. The conclusion of this study is the opportunities for large industries to provide technological partnerships is higher compared to other institutions such as cooperatives, banks, non-governmental organizations. Likewise, MSEs with a small number of employees has a higher chance of getting a technological partnerships. Female entrepreneurs have a higher chance of getting technological partnerships compared with the male entrepreneurs.

**Keywords**—*technological partnerships, innovative, micro and small enterprises,*

## I. INTRODUCTION

The partnerships between large industries and Micro and Small Enterprises (MSEs) mandated in Law No. 20 of 2008, is implemented on government regulation No. 17 of 2013. This is believed to increase a positive impact on the management and the productivity of MSEs especially in technology transfer and efficiency. These benefits are expected to Indonesia's economic development in the long-term. Such benefits will increase the productivity of MSEs because MSEs can imitate the technology owned by large industries. These benefits will be developed in the study of the impact of partnerships between large industries and MSEs in Indonesia.

This study focuses on the technology innovation of Micro and Small Enterprises (MSEs). The study, on which the paper is based, looks at technological partnerships between MSEs

and large industries. The research builds a theory on the cooperation and the importance of networks for innovation. As the drivers of globalization and internationalization remove barriers segmented in the competitive environments of MSEs and large industries, more and more firms of all sizes are sharing the same competitive space. (Jill, 2008). Collaborative arrangements are evolving, through which smaller firms enter the value chains of larger firms (Etemad, 2001). Partnerships systems can be defined as the purposive strategic relationships between the two or more sides that share compatible goals, strive for mutual benefit, and acknowledge a high level of mutual interdependence. (Mohr J, 1994). They join efforts, including the time, resource, technology, etc., to achieve targets, gaining competitive advantage in the market place, such as accessing to new technologies, improving the ability to provide a wider range of products or services, achieving economies of scale in joint research or production, increasing the knowledge self-accumulation beyond the boundaries, and sharing risks (Kale P, 2008) (Powell, 1987) (Schreiner M, 2009) (Mazouz B, 2008). All of these cannot be attained easily by each side, acting alone. Therefore, partnerships are nearly the ubiquitous characteristics of small and micro enterprises (SMEs), in which the cooperatively combined resources may improve the ability of attracting external venture capital to grow rapidly (Kienlein, 2015). In recent years, the number of attempted partnershipss has grown almost geometrically, while the rate of success keeps at a low level, and all these prescriptions often overlook the drawbacks of such relationships, for instance, the increase of complexity, loss of autonomy, and even the potential vicious competition caused by information asymmetry. (Lifeng Lin, 2019).

Large industries have greater capacity than MSEs in terms of ability, power and resources, although the activities of large industries are limited by institutional factors. Innovative MSEs are generally more flexible and have the ability to respond more quickly to changing needs and the environment. The importance of improving technology and innovation for MSEs in Indonesia as a driver of popular economy is the main support in the Indonesian economy. Intensive technology of MSEs can become the world class in certain niches. As a consequence of their capabilities, MSEs can build collaborations between organizations and suppliers and selected competitors can build a strong network. However, the competitiveness of MSEs is constrained by internal conditions (e.g. lack of knowledge, skills, capital, technology) and external ones to the company (e.g. the

market is dominated by a small number of major players or distribution is still difficult).

Collaborations between organizations for innovation is a way for small companies to overcome this. Both for small and large companies, collaborative efforts can become profitable (Lawton Smith, 1991). Collaborations between companies are maintained so that it can benefit small companies because they can exploit new technologies and access the new knowledge, expert users, new markets, additional funds and possibility to improve management skills. From the perspective of large companies, collaborating with small companies can also be profitable. For example, small companies have people with the right combination of special skills develop new products and allow large companies to monitor the development of new technologies and equipment.

In order to capture the relationships, both technological partnerships and independent variables (size of MSEs, gender of MSEs owner, education of MSEs owner, the number of employees, and type of large industry) are compared. Therefore, this paper employs Logistic Regression for micro and small industry data. The organization of this paper proceeds is as follows: Section 2 provides a literature review of partnerships. Section 3 provides a method, data sources and variable construction. Section 4 presents the results and discussion for model specification and estimation, followed by an analysis of empirical results. The summary of findings and policy implications are given in conclusion section.

## II. LITERATURE REVIEW

MSEs will significantly contribute to the economy of a country, both in terms of employment, growth and development of its economy (Rodney T., 2009). In European Union countries, of the 99.8% MSEs in the country accounted for 56 % GDP, and absorbs 67% of labor (European, 2008). Ledwith (2004), based on his research, shows that 25% of MSEs in Ireland, improving their MSEs strategy to improve production, 14% of MSEs are innovating in developing MSEs. However, it is not easy to innovate in MSEs (O'Regan N, 2006) because small businesses only have limited innovation space, limited capital, knowledge and skills; in addition, the number of sales is limited compared to the cost of innovation (Roger, 2004). Therefore, the important thing is to set aside some of the capital to do innovation, if MSEs will improve the performance of MSEs.

In Indonesia, seen from the large number of business units in all sectors of the economy and its large contribution on employment and income opportunities, MSEs have a role, large enough in national economic development. The existence of MSEs have been tested during the economic crisis that hit the Indonesian economy in 1998 and 2008, where the crisis destroyed the business world, especially the big business world. But MSEs have received less attention in the past in order to make it able to survive and develop. MSEs are quite flexible and can easily adapt to ups and downs and directions of the market demand. MSEs are also quite diversified and provide important contribution to exports and trade.

However, in MSEs development, they are faced with the following problems: lack of capital, difficulties in marketing, strict business competition, difficulty of raw materials, less technical production and expertise, lack of managerial skills, lack of knowledge in management problems, and lack of technology. The problems of the MSEs were addressed

through the program mutually beneficial partnerships between MSEs or between MSEs and large industries in the country and overseas. Thus MSEs will have inner strength to compete with other business people, both from domestic and overseas. Continuous partnerships between organizations in MSEs are important (Cyert, R. and March, JG., 1992). MSEs are often partnered with other organizations (large industries) as efforts to improve the performance of their MSEs (Nooteboom, 2000). The form of the partnerships can be joint ventures, strategic alliances, or other forms of partnerships but the the most important is the existence of such cooperation can increase the role of MSEs.

Partnership is a collaboration between small industries and large industries accompanied by business development and guidance large business with respect to the principle of mutual requirement, strengthening each other and mutual benefit. The partnerships pattern is the optimal way to overcome inequality in the national business world. Large industry still dominates because of its high capitalistic capabilities. This is compounded by the unbalance of the business chain downstream and upstream as well as the relative level of productivity of cooperatives and lower MSEs. The local government must facilitate partnerships between cooperatives and local MSEs to work on the economic potential of the region with investors.

To contextualize this study, we first look at the percentages of technological partnerships (innovating industry) with at least one innovative collaborative relationship, divided by size of MSEs (see Table 1). Innovative micro and small industries in Indonesia show a far higher level of partnerships activity, which is a indication of the relevance of this study. However, having higher levels of partnerships activity does not necessarily mean that these partnerships are regarded as problematic by innovative Indonesian MSEs.

**TABLE 1. PERCENTAGES OF TECHNOLOGICAL PARTNERSHIPS BY SIZE OF MSES**

Technological Partnerships	Size of MSEs	
	Micro	Small
None	80.85	85.52
One or More	19.15	14.48

(Source : The Indonesian Central Board of Statistics, 2015)

Innovation is described by (Freeman, 1997) as comprising of two parts—recognition of a potential market for a new product or process, and technical knowledge that may be generally available, or may include new scientific and technological knowledge resulting from research. Referring to Pistorius's definition of innovation, innovation equals invention and market exploitation, and technological innovation encompasses idea generation, development, manufacturing and diffusion into the market (Pistorius, 1998). Another reason for partnerships is to acquire external knowledge resources. From MSEs perspective, partnering with a large company is a way to commercialize a higher-technology product. Since MSEs have resource constraints, partnering is a way of accessing resources (management skills, distribution channels, marketing infrastructure, etc). (Jill, 2008).

This research have five hypotheses for several independent variables and technological partnerships, the hypothesis reads :

- H1: Size of MSEs is associated with technological partnerships
- H2: Gender of MSEs owner is associated with technological partnerships
- H3: Education of MSEs owner is associated with technological partnerships
- H4: The number of employees is associated with technological partnerships
- H5: Type of MSEs partner is associated with technological partnerships

**III. METHODS**

The main data were taken from an annual survey of micro and small industry conducted by the Indonesian Central Board of Statistics (Badan Pusat Statistik or BPS). It was carried out by sending a questionnaire to all micro and small industry, these were recorded in the directory of establishments compiled by the BPS. The micro and small industrial series data were designed to survey at least 1- 20 workers in every year. Small industry is an establishment engaging with 5-20 employees, while micro industry is an establishment engaging with 1– 4 employees. This empirical analysis used the data of 2015. The number of original observations during the periods of study was 5,397 industries. Dependent variable is technological partnership (0 = No, 1 = Yes), and then independent variables are size of MSEs (0 = small industry, 1 = micro industry), gender of MSEs owner (0 = female, 1 = male), education of MSEs owner (0 = elementary education, 1 = higher education), the number of employees, type of MSEs partner (0 = non large industry, 1 = large industry). Binary logistic regression analysis was conducted to determine the relationship between independent variables and technological partnerships. Binary logistic regression is a variation of linear regression in which continuous, discrete, dichotomous, or a combination of these variables are used to predict the occurrence or non-occurrence of an event (Hair, 2004).

**IV. RESULTS AND DISCUSSION**

Tabel 2 lists the results of descriptive statistics for the demographic profile of the respondent (micro and small industry) :

**Table 2.** The demographic profile of the respondents

Variable	Freq	%	Variable	Freq	%
<b>Size of MSEs</b>			<b>Level of Education</b>		
Micro Industry	4,962	91.9	Not Completed Elementary	948	17.57
Small Industry	435	8.1	School	1,922	35.61
<b>Gender</b>			Elementary School	1,111	20.59
Male	2,737	50,71	Junior High School	1,243	23.03
Female	2,660	49,29	Senior High School	22	0.41
<b>Type of MSEs partner</b>			Vocational High School	35	0.65
Large Industry	5,109	99.87	Diploma	112	2.08
Non Large Industry	288	5.34	Bachelor	4	0.07

Table 2 presents the demographic profile of the respondents. The results indicate that the majority of the respondents 91.9% of respondents were micro industry and

8.1% of respondents were small industry. Table 2 indicates that 50.71% respondent were male of gender, a majority (35.61%) of the respondents had attended elementary school. In terms of type MSEs partner, the highest number of respondents (99.87%) was partner with large industry.

**TABLE 3.** BINARY LOGISTIC REGRESSION ANALYSES

Variable	Coef	Odds Ratio	Std.err. OR	z	P > z
Size of MSEs	-0.256	0.774	0.184	-1.08	0.281
Gender	-0.279	0.756	0.058	-3.63	0.000***
Education	0.907	1.09	0.218	0.46	0.643
Number of Employees	-0.071	0.931	0.031	-2.13	0.033**
Type MSEs partner					
	0.156	1,168	0.086	2.11	0.034**
Constanta	-1.100	0.333	0.096	-3.83	0.000***
Pseudo R <sup>2</sup>		0.065			
Percent correct cases overall		69.74			
Percent correct cases successful		81.38			
Percent correct cases unsuccessful		19.23			

\*\*\*=sig 1%, \*\* = sig 5%, \* =sig 10%

Binary logistic regression examined empirically the relationship among the size of MSEs, gender, education, number of employees, and type MSEs partner with technological partnerships. From the results captured in Table 3, variable of gender, number of employees and type MSEs partner are statistically significant but variable of Size of MSEs and education are non significant. It turns out that the model is statistically significant. Pseudo R<sup>2</sup> = 0,065, which gives an indication of the percentage of variance explained. Percent correct cases overall, this gives the percent of cases for which the dependent variables was correctly predicted given the model. In this part of the output, this is the null model 69.74, percent correct cases successful is 81.38 and percent correct cases unsuccessful is 19.23.

The expected B (coefficient) of the number of gender and number of employees is less than 1, which signals a negative relationship between gender and number of employees with technological partnership. This means that male entrepreneurs have lower chance of getting technological partnership than female. Female entrepreneurs are shown to have communication skill better than male entrepreneurs. They also use feedback from customers and suppliers to improve their business negotiation. So Female entrepreneurs have a large chance to obtain technological partnership than male entrepreneurs and then MSEs with a large number of employees has a lower chance of getting a technological partnerships. On the other hand MSEs with a small number of employees will looking for technological partnership for minimize labour cost.

The expected B (coefficient) of Type MSEs partner is more than 1, which signals a positive relationship. This mean that large industries have higher chance to provide technological partnership than their counterparts such as cooperatives, banking, non-governmental organization. Large industries have established technology so they can share it to MSEs to easily.

## V. CONCLUSION

The conclusion of this study is that the opportunity for large industries to provide technological partnerships is high compared to other institutions such as cooperatives, banks, non-governmental organizations. Large industries have established technology so they can share it to MSEs to easily. Likewise, MSEs with a small number of employees have a higher chance of getting a technological partnerships for minimize labour cost. Female entrepreneurs have a higher chance of getting technological partnerships than male because female entrepreneurs are shown to have communication skill better than male entrepreneurs. They also use feedback from customers and suppliers to improve their business negotiation.

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