

## **The Mediating Effect of Innovation on the Relationship of Leadership, Technological Capabilities, Learning, Industry Competitive Forces and the Performance of Small and Medium Enterprises**

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**Abstract:** This study examines the influence of leadership, technological capabilities, learning and industry competitive forces on the performance of SMEs, either directly or indirectly. The sample consists of 113 SMEs in the meubelair, food and beverage specialties, handicrafts, batik and embroidery sector in Jember District, East Java Province, Indonesia. Results using path analysis show that from eight hypothesis, four hypothesis were accepted. The study finds significant direct effect of technological capabilities and learning on the performance of SMEs. There is an indirect and significant effect of technological capabilities and industry competitive forces on the performance of SMEs through innovation.

**Key words:** Leadership, technological capabilities, learning, industry competitive forces, innovation, performance, SMEs

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### **INTRODUCTION**

The development and contribution of SMEs in the Indonesian economy can not be doubted. Data from the Ministry of Cooperatives and SMEs showed that the number of SMEs and the contribution of Gross Domestic Product (GDP) of SMEs in Indonesia from year to year are always increasing of which there were a total of 57.9 million business units.

The contribution of SMEs in the economy of each province is not the same. From 33 provinces in Indonesia, East Java is still the only province where the SME sector has a significant role in promoting and supporting the regional economy (Ministry of Cooperatives and SMEs of the Republic of Indonesia). The dominance role of SMEs was reflected in a way that SMEs are the leading sectors in stimulating the economy of East Java. They are the major sector of providing employment opportunities and the greatest contributor to the national development.

About 55% of East Java's economy is supported by the SME sector. By 2016, the number of SMEs in East Java Province reached a total of 6.8 million units which was dominated by the agricultural sector of about 4.1 million units. The agricultural sector employed

about 6.2 million of a total of 11.1 million (Department of Cooperatives and SMEs in East Java Province). East Java has 38 regencies (cities and municipalities).

Compared to other regencies, Jember is an area with considerable potential as it has the highest number of SMEs which amounted to 424,151. The agricultural sector is the greatest contributor where there are 243,004 business units. Like other areas in East Java, Jember is still heavily dependent on the agriculture and relies on natural resources. This makes its economy becomes less stable.

Although, Jember Regency has the highest number of SMEs in East Java, investors are less keen to invest in Jember. Based on the data from the Investment Board of East Java Province, Foreign Direct Investment (FDI) and Domestic Investment (DCI) in Jember is still low, leading to small impact on the economy, especially for SMEs. Human Development Index (HDI) of Jember in 2013 amounted to 66.60 which is ranked the sixth lowest in East Java. This indicates that the welfare of society Jember is still low.

Given that interesting features of SMEs in Jember Regency, it is a challenge to examine the factors that are related to the success of SMEs. This study focuses on the influence of leadership, technological capabilities,

learning and industry competitive forces on the performance of SMEs directly or indirectly with innovation as a mediating variable. Many existing research aims to analyze the influence of these variables on the performance of SMEs directly. Some empirical evidence shows that SME performance is determined by several factors, including leadership (Iscan *et al.*, 2014; Ozer and Tinaztepe, 2014), technological capabilities (Olatokun and Kebonye, 2010; Hinson, 2006; Antlova *et al.*, 2011), learning (Sok *et al.*, 2013; Kitapci and Celik, 2014; Delen *et al.*, 2013; Ahmad *et al.*, 2010) and industry competitive forces (Jamsa *et al.*, 2011; Sami, 2014; Ahmad *et al.*, 2010; Metts, 2007).

However, few studies were directed to analyze the influence of these variables on the performance of SMEs through innovation. Yet, empirical evidence shows that the innovation affects the performance of SMEs (Keskin, 2006; Iscan *et al.*, 2014; Sok *et al.*, 2013; Ar and Baki, 2011; Ndubisi and Agarwal, 2014; Thakur and Hale, 2013; Al-Ansari *et al.*, 2013). Previous researches have found that there are several factors that affect the performance of SMEs through innovation such as leadership (Chang *et al.*, 2011; Chang and Hughes, 2012) and industry competitive forces (Chang *et al.*, 2011; Keskin, 2006). Study on the effect of technological capabilities and learning on the performance of SMEs through innovation has never been done. This study is filling this gap.

**Leadership, innovation and firm performance:** This study uses transformational leadership. Aslan *et al.* (2011) and Iscan *et al.* (2014) found that transformational leadership has a significant impact on the company while the transactional leadership does not have a significant impact on the company. In the transformational leadership, leaders raise the level of their needs and energize the followers and achieve the goal that ultimately exceed the expectations as well as their personal expectations (Winkler, 2010). There are four factors in the transformational leadership, namely charisma, intellectual stimulation, individualized consideration and inspirational motivation (Winkler, 2010).

The crucial role of leadership is to create goals, values and systems that lead to continuous performance improvement. To be a good leader a manager must be able to develop themselves continuously and may influence, inspire and direct the employees with the right to be able to achieve its goals (Lawrie *et al.*, 2004). Prior studies have found that one of the factors that affects the performance of SMEs is leadership (Iscan *et al.*, 2014; Ozer and Tinaztepe, 2014). From the aforementioned arguments, it is clear that the leadership affects the performance of SMEs. So, the proposed hypothesis as follows:

- H<sub>1</sub>: leadership affects the performance of SMEs

According to Gibson and Birkinshaw (2004), in the absence of good leadership style, the companies would lack the capacity to develop innovations. Lack of innovation can lead companies fail to adapt to changing market requirements or establish a new way to generate superior performance as the risk of higher stiffness changes. Prior studies have found that one of the factors that affects the performance of SMEs through innovation is leadership (Chang *et al.*, 2011; Chang and Hughes, 2012). Thus, it is clear that innovation will mediate the effect of leadership on the performance of SMEs. This argument leads us to hypothesize the following:

- H<sub>2</sub>: leadership affects the performance of SMEs through innovation

**Technological capabilities, innovation and firm performance:** Technological capabilities can be defined as the ability of the company to develop existing technologies into new products to meet the market demand (Weinstein and Azoulay, 1999; Abereijo *et al.*, 2007). This study uses the technological capabilities in relation to the use of Information and Communication Technology (ICT) by SMEs. According to Oyeyinka and Lal (2006), the variables that discriminate against companies using ICT is the contribution of ICT to reduce production costs, additional sales turnover due to the adoption of ICT and the pressure of internal competition. This study assumes the use of ICT by SMEs is still relatively simple such as SME that uses the phone or internet for business activity can be said to use the technology.

ICT is regarded as one of the most important attributes to the success of small businesses (Huck and McEwen, 1991). Prior studies have found that one of the factors that affects the performance of SMEs is the technological capabilities (Olatokun and Kebonye, 2010; Hinson, 2006; Antlova *et al.*, 2011). From the aforementioned discussion, it is clear that technology affects the performance of SMEs. Thus, it is hypothesized that:

- H<sub>3</sub>: technological capabilities affects the performance of SMEs

Han (2001) argues that in the face of tough competition in the economy, companies must have the ability in innovation, quality and speed to produce competitive ability. Therefore, the use of resources in mobilizing investment innovation and investment in

information technology should have a positive impact on company performance. Previous studies have examined the performance of the technological capabilities of SMEs through innovation that has never been done so that, it becomes the new construction in this study. It is arguable that innovation will mediate the influence of technology on the performance of SMEs. In line with this, the following hypothesis proposed:

- H<sub>4</sub>: technological capabilities affects the performance of SMEs through innovation.

**Learning, innovation and firm performance:** Senge (1990) defines organizational learning as a dynamic balanced relationship in which organizations acquire external knowledge and tailor it to the organization's activities. This study uses five dimensions of learning developed by fernandez-Mesa *et al.* (2013) and fernandez-Mesa and Alegre (2015). The fifth dimension of learning are experimentation, risk taking, interaction with the external environment, dialogue and participatory decision making.

Learning ability has been treated as an index of competitiveness of an enterprise, including SMEs (Jerez-Go'mez *et al.*, 2005). Prior studies have found that one of the factors that affects the performance of SMEs is learning (Sok *et al.*, 2013; Kitapci and Celik, 2014; Delen *et al.*, 2013; Ahmad *et al.*, 2010). From the foregoing, it is clear that learning affects the performance of SMEs. Therefore, it can be hypothesized that:

- H<sub>5</sub>: learning affects the performance of SMEs

Learning ability can foster the ability to identify and respond to market signals better, faster and cheaper than competitors and competencies necessary supporting SMEs to efficiently develop new products (Prieto and Revilla, 2006). This gives SMEs a greater opportunity to achieve superior performance. Importantly, the ability to learn also enable SMEs to identify new strategies and channels or networks to work more closely with customers which will then allow them to differentiate themselves from their rivals (Sok and O'Cass, 2011). So far, we could not be able to find previous studies examining the learning of the performance of SMEs through innovation, we believe this is a new construction in this study. Thus, it is arguable that innovation will mediate the learning effect on the performance of SMEs. The following hypothesis proposed:

- H<sub>6</sub>: learning affects the performance of SMEs through innovation

**Industry competitive forces, innovation and firm performance:** Porter (1980) argues that companies should

give more attention on the existing competition in the industry. This study uses five power following the recommendations by Porter (1980), namely competition between existing firms, the threat of new entrants, threat of substitute products, bargaining power of buyers and the bargaining power of suppliers. Very few studies using Porter conceptualization. More recently, these sizes are available (Metts, 2007). In the SME environment, the competitive context also represented by conceptualization Porter. SMEs spend most of their time to adjust to the competitive business environment in which SMEs are struggling to survive.

According to Ferdinand (2000) in the competitive environment, the company has to know understand and respond to the needs and expectations of customers as well as to identify the weaknesses and strengths of competitors and coordinates the company's resources. This could ultimately create superior value for customers and could create the performance of the company sustainable. Prior studies have found that one of the factors that affects the performance of SMEs is competitive industry forces (Jamsa *et al.*, 2011; Sami, 2014; and Ahmad *et al.*, 2010). Thus, it is clear that the industry competitive forces affects the performance of SMEs. Therefore, a hypothesis that can be formulated as follows:

- H<sub>7</sub>: industry competitive forces affects the performance of SMEs

In a dynamic environment, SMEs tend to use innovation to produce better profits, thereby maintaining their financial performance in the face of severe competition (Lumpkin and Dess, 2001). Prior studies have found that one of the factors that affects the performance of SMEs through innovation is a competitive power of industry (Chang *et al.*, 2011; Keskin, 2006). Thus, it is clear that innovation will mediate the effect of the industry competitive forces on the performance of SMEs. So, the last hypothesis proposed in this study is:

- H<sub>8</sub>: industry competitive forces affects the performance of SMEs through innovation

**Innovation and firm performance:** According to Fontana (2011), innovation is a social and economic success for the introduction of a new way or a new combination of old way of transforming inputs into outputs such that generated major changes in the ratio between the value of the benefits and the price according to the perception of the buyers and/or users. This research focuses on the dimensions most commonly used namely the product innovation and process innovation as advocated by Ar and Baki (2011), Suh and Kim (2012) and Ndubisi and Agarwal (2014). The description of both dimensions

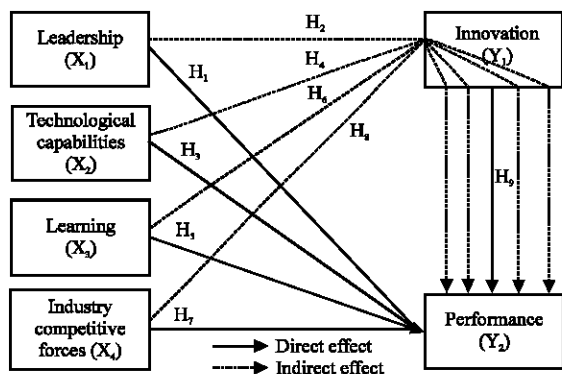


Fig. 1: Model hypothesis

entails two key issues. Firstly, product innovation involves the creation of new products to create a market, new customer or satisfying market/existing customers. Secondly, innovation process involves the creation or improvement of production methods that enable service or administrative operations to support the creation of new products and improve the process of technology or operational practice (Gopalakrishnan and Damanpour, 1997; Langley *et al.*, 2005; Oke *et al.*, 2007).

SMEs with strong innovation capability will gain competitive advantage over competitors, enabling them to achieve superior performance (Li and Mitchell, 2009; Rosenbusch *et al.*, 2011). Prior studies have found that one of the factors that affects the performance of SMEs is innovation (Keskin, 2006; Iscan *et al.*, 2014; Sok *et al.*, 2013; Ar and Baki, 2011; Ndubisi and Agarwal, 2014; Thakur and Hale, 2013; Al-Ansari *et al.*, 2013). From the aforementioned arguments, it is clear that innovation affects the performance of SMEs. So, the proposed hypothesis as follows:

- H<sub>5</sub>: innovation affects the performance of SMEs

Based on theoretical and empirical studies, framework of the studies shown in Fig. 1.

### MATERIALS AND METHODS

Jember Regency is selected because it has the highest number of SMEs in East Java Province that are sustain in the business. The population of this research are all SMEs in the meubelair, food and beverage specialties, handicrafts, batik and embroidery sectors in Jember Regency consisting of 156 business units. The homogeneity of these five sectors can be seen from several aspects, namely transforming raw materials into finished goods that have a high added value, innovation

is an important part because it emphasizes the element of creativity have the potential to offer goods via information and communication technologies and have the same adaptive response from the external environment.

The sample is determined using proportionate sampling method which is based on the proportion of each sector. The method used to determine the number of samples is slovin formula with an error rate of 5%. It generates a total sample of 113 business units comprising of 33 meubelair sector business units (29.49%), 41 business units of food and beverage specialties sector (35.90%), 30 business units of the craft sector (26.92%), 5 business units of batik sector (4.49%) and the embroidery sector with 4 business units (3.20%).

This study uses a questionnaire with a 5-point Likert scale adapted from the literature. Measurements of leadership variable are from Aslan *et al.* (2011), measurements of technology capabilities variable are from Lin (2007), measurements of learning variables are from Fernandez-Mesa *et al.* (2013), Fernandez-Mesa and Alegre (2015), measurements industry competitive forces variable are from Metts (2007), measurements of innovation variables are from Ar and Baki (2011) and measurements of company performance variables are from Ar and Baki (2011) and McDermott *et al.* (2012).

The questionnaires were distributed to the owner-manager of the SMEs by visiting each of them directly. The distribution and collection of the questionnaires was conducted from July-September 2016.

### RESULTS AND DISCUSSION

Results of instrument validity tests show that all variables have significant correlation values ( $p < 0.05$ ). The reliability tests show that all variables have the Cronbach alpha coefficient  $> 0.70$ . So, the variables meet the validity and reliability requirement.

As described previously, a total of 113 usable questionnaires were examined. The descriptive statistics show that most of the respondents were male (70.8%), most of them aged between 41 and 50 years (50.4%). Almost all of the respondents were married (98.2%). The majority of respondents were high school graduates (64.6%) and 42.5% of them were in the business for 6-10 years.

Results using path analysis of direct effect between independent variables and performance are presented in Table 1. Table shows that three of five hypothesis are accepted. Technological capabilities, learning and innovation are positively related to the performance of SMEs.

Table 1: Direct effect hypothesis testing results

Hypothesis	Path coefficient	
	Estimation	CR
H <sub>1</sub> : Leadership (X <sub>1</sub> )-Performance (Y <sub>2</sub> )	-0.1395	-1.3749
H <sub>3</sub> : Technological capabilities (X <sub>2</sub> )-Performance (Y <sub>2</sub> )	0.4018	5.0928**
H <sub>5</sub> : Learning (X <sub>3</sub> )-Performance (Y <sub>2</sub> )	0.1494	1.8320*
H <sub>7</sub> : Industry competitive forces (X <sub>4</sub> )-Performance (Y <sub>2</sub> )	0.0054	0.0449
H <sub>9</sub> : Innovation (Y <sub>1</sub> )-Performance (Y <sub>2</sub> )	0.5067	5.3867**

\*, \*\*Indicate significant at  $\alpha = 5\%$  and  $\alpha = 10\%$ , respectively

Table 2: Indirect effect hypothesis testing results

Hypothesis	Path coefficient		
	Estimation	SE	CR
H <sub>2</sub> : Leadership (X <sub>1</sub> )-Innovation (Y <sub>1</sub> )-Performance (Y <sub>2</sub> )	0.0400	0.0508	0.7888
H <sub>4</sub> : Technological capabilities (X <sub>2</sub> ) Innovation (Y <sub>1</sub> )-Performance (Y <sub>2</sub> )	0.0808	0.0436	1.8534*
H <sub>6</sub> : Learning (X <sub>3</sub> )-Innovation (Y <sub>1</sub> )-Performance (Y <sub>2</sub> )	-0.0273	0.0415	-0.6589
H <sub>8</sub> : Industry competitive forces (X <sub>4</sub> ) -Innovation (Y <sub>1</sub> )-Performance (Y <sub>2</sub> )	0.3255	0.0809	4.0249**

\*, \*\*Indicate significant at  $\alpha = 5\%$  and  $\alpha = 10\%$ , respectively

Leadership does not have significant effect on the performance of SMEs, even the coefficient is negative. The leadership consists of three dimensions; charisma, intellectual stimulation and individualized consideration. These measures do not affect the measures of performance of the SMEs which consist of market share, sales and profits. The negative coefficient of leadership contradicts with the expectation.

The results of this study do not support previous studies. When observed from the characteristics of the respondents, the age level of SMEs owner-managers are between 41 and 50 years (50.4%). Ozer and Tinaztepe (2014) report that leadership affects the performance of SMEs for a sample of those with average age of 28.

Technological capabilities has positive and significant effect on the performance of SMEs. The finding provides evidence that the technological capabilities consisting of two indicators, namely the usefulness of the technology and the ability to share knowledge through technology have a significant effect on the performance of SMEs. This finding supports those by Huck and McEwen (1991), Olatokun and Kebonye (2010), Hinson (2006) and Antlova *et al.* (2011).

Learning has positive and significant effect on the performance of SMEs. Learning consists of experimentation dimension, risk taking, interaction with the external environment, dialogue and participatory decision-making. These measures have direct effect on the performance of SMEs as measured by market share, sales and profits. These dimensions lead to a better

performance of SMEs. This study supports previous researches (Sok *et al.*, 2013; Kitapci dan Celik, 2014; Delen *et al.*, 2013; Ahmad *et al.*, 2010).

Industry competitive forces do not have significant effect on the performance of SMEs. This means that the degree of competition between the competitors, barriers to new entrants, the threat of substitute products, bargaining power of buyers and the bargaining power of suppliers does not make SMEs to have higher performance. The results of this study do not support previous studies. Previous studies using financial and non-financial performance indicators (Ahmad *et al.*, 2010) and balanced score card (Sami, 2014) were able to prove the effect of industry competitive forces on the performance of SMEs because performance indicators are measured in a comprehensive manner involving financial and non-financial.

Innovation has positive and significant effect on the performance of SMEs. The finding provides evidence that innovations consisting of two indicators, namely product innovation and process innovation have a significant effect on the performance of SMEs. This finding supports those by Keskin (2006), Iscan *et al.* (2014), Sok *et al.* (2013), Ar and Baki (2011), Ndubisi and Agarwal (2014), Thakur and Hale (2013) and Al-Ansari *et al.* (2013).

Results using path analysis of indirect effect between independent variables and performance are presented in Table 2. The table shows that two of four hypothesis are accepted. Technological capabilities and industry competitive forces are positively affects the performance of SMEs through innovation.

Leadership has not significant effect on the performance of SMEs through innovation. A close examination of Table 1 and 2 shows that the indirect effect of leadership on the performance of SMEs is lower than the direct effect (0.0400 compared to -0.1395). This means that meaning contribution of innovation on the relationship between leadership and performance is diminishing.

Technological capabilities have significant effect on the performance of SMEs through innovation. The indirect effect of the technological capabilities on the performance of SMEs is smaller than the direct effect (0.0808 compared to 0.4018). Innovation mediates the relationship between technological capabilities and the performance of SMEs. This finding supports Han (2001).

Learning does not have significant effect on the performance of SMEs through innovation. The indirect effect of learning on the performance of SMEs is smaller

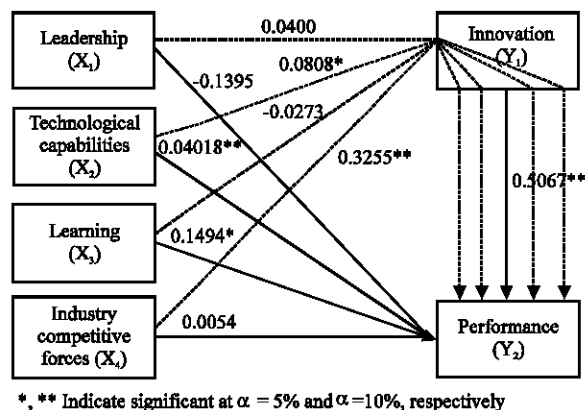


Fig. 2: Model of research results

than the direct effect (-0.0273 against 0.1494). Innovation is not capable in mediating the effect of learning on the performance of SMEs.

Industry competitive forces have positive and significant effect on the performance of SMEs through innovation. Table 1 and 2 shows that the indirect effect of the performance of the industry competitive forces of SMEs have a greater value than the direct effect (0.3255 against 0.0054). Thus, innovation stimulates the SME's performance. Innovation is able to mediate the effect of industry competitive forces on the performance of SMEs. This finding support those by Lumpkin and Dess (2001), Chang *et al.* (2011) and Keskin (2006). The model of the findings of this study is shown in Fig. 2.

### CONCLUSION

This study aims to examine the influence of leadership, technological capabilities, learning and industry competitive forces on the performance of SMEs, either directly or indirectly. Five hypothesis were accepted. Technological capabilities, learning and innovation have direct effect on the performance of SMEs. Technological capabilities and industry competitive forces are mediated by innovation to affect the performance of SMEs.

### LIMITATIONS

Three issues are worth to consider as the limitations of the study. First, the samples of study were taken from five sectors, namely meubelair, food and beverage specialties, handicrafts, batik and embroidery since these sectors produce goods and prioritize the elements of creativity. Thus, heterogeneity of data may affect the ability of variables to explain the variation of the

performance of SMEs. Future studies may take a more specific sector to obtain relatively homogeneous data.

This study only examines three dimensions of transformational leadership, namely charisma, intellectual stimulation and individualized consideration. It excludes inspirational motivation as examined by Winkler (2010). Subsequent research may add inspirational motivation, so that all dimensions of transformational leadership are examined. This study was conducted specifically in the local context of SMEs of Jember Regency, so it may not represent nation wide condition.

### SUGGESTION

Future study is expected to use more samples and cover a wider area so that the results can be generalized nationally.

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