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Relationship between organizational learning, innovation capability, and business performance of Indonesian manufacturing SMES

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Abstract
Much research has been done to examine the relationship between organizational learning, innovation capability, and company performance. The results of various studies confirm the existence of a positive relationship between organizational learning, innovation capability, and company performance. However, empirical research that focuses on the relationship between these three constructs simultaneously is still limited. This study explores the relationship between these three constructs using Structural Equation Modeling with data obtained from 62 manufacturing companies located in the eastern region of Jakarta province, Indonesia. The finding supports the notion that learning in organizations can play a role as a driver for improving company performance as well as a determinant of innovation activities. The capability of innovation itself is the main driver for improving company performance. Specifically, the findings indicate that the effect of learning in organizations on innovation capability is higher than its effect on manufacturing performance. The findings reflect that innovation capability is capable of acting as mediators in the relationship between organizational learning and manufacturing performance.

Keywords: organizational learning, innovation capability, manufacturing performance

1. Introduction

Today, companies must face a dynamically changing business environment. Companies must also be able to get around technological changes, product variations, and consumer preferences. On the other hand, companies must face the era of free trade in the world which causes increased global competition. The dynamics of the business environment, rapid technological changes, and high levels of market competition require companies to improve their performance and competitiveness. A higher business performance and competitiveness have been widely regarded as key elements to survive and thrive in an era of global competition (Raymond and St-Pierre, 2010; Wang and Wang, 2012) [19, 24].

Literature shows that business performance of a company is influenced by many factors. One of the factors that has great potential to improve business performance is the capability of innovation. Some experts have mentioned that companies need to conduct a variety of innovations at all levels of organization in order to deal with increasing market competition. Understood as the capability to create and implement new ideas in various business activities of the company, some experts have confirmed that the capability of innovation has a positive impact on improving the business performance and competitiveness (Forsman, 2011; Hult *et al*. 2004) [7, 10].

Another factor that can potentially influence the improvement of business performance is organizational knowledge which is the output of the learning process in the organization. In fact, some experts have suggested that the success of the company is more determined by their ability to create, to manage, and to implement knowledge; not because of their ability in other fields.

Organizational learning is an organization that continuously learns to improve its capability to change. Organizational learning is manifested in the actions of individuals and groups of individuals that can affect organizational capability. Organizational learning is an ongoing development of organizational knowledge that is carried out to achieve higher performance (Baker and Sinkula, 2002; Nonaka and Takeuchi, 1995) [1, 15].

In recent years, several experts conceptually have suggested that organizational learning contributes positively to improving the business performance. In addition, many experts have also emphasized that the capability of innovation has an important role in improving the business performance, which in turn will create a long-term competitive advantage (Brockman and Morgan, 2003) [4]. Furthermore, some previous research shows that organizational knowledge has an important role to enhance the capability of innovation so that companies can develop in an increasingly competitive market competition. Learning in organization can function as a planned and systematic approach to guarantee the application of organizational knowledge for innovation (Gomes and Wojahn, 2017; Skerlavaj *et al*., 2010) [8, 20].

Based on the explanation above, it is logical to assume that organizational learning, innovation capability, and company business performance are three constructs that are positively related. However, empirical research examining the simultaneous relationship between these three constructs is still limited (Jimenez-Jimenez and Sanz-Valle, 2011) [13]. This study aims to examine the simultaneous relationship between organizational learning, innovation capability and manufacturing performance in the context of Indonesian manufacturing SMIs.

2. Literature Review and Hypothesis Development

2.1 Organizational learning, innovation, and performance

Organizational learning can be referred to in different ways. For example, organizational learning can be seen as a process in an organization with the aim of improving organizational performance based on experience and knowledge; as a process in an organization to obtain, transfer, and integrate, and modify knowledge with the aim of improving company performance; or as a process within an organization that allows companies to acquire and revise organizational knowledge and provide direction for better actions for the organization (Tohidi *et al*., 2012) [21]. In addition, organizational learning is also could be referred to as a process within the organization to develop new knowledge and insights that come from the experiences of people in the organization. This organizational learning process has the potential to influence the behavior of people in an organization which in turn will bring about the improvement of company performance (Jimenez-Jimenez *et al*., 2008; Ramirez and Kumpikaite, 2012) [14].

Furthermore, the literature states that the learning process in organizations includes four stages, namely knowledge acquisition, knowledge distribution, knowledge interpretation, and knowledge storage. Knowledge acquisition refers to the process that a company uses to obtain information and knowledge from inside and outside the company. Knowledge distribution refers to the process by which people in a company share information and knowledge. Knowledge interpretation refers to the process by which people in a company give meaning to the information they obtain and turn it into new knowledge. Corporate storage refers to the process by which people in a company store information and knowledge in the company's memory for future use (Jimenez-Jimenez *et al*., 2008; Hung *et al*., 2011) [14, 11].

In addition, the literature suggests that learning in organizations has a positive impact on companies. For example, learning in organizations can act as a driver for companies to improve company performance, examine trends occurring in the market, operate more flexibly and more quickly in response to market changes, and obtain and maintain sustainable competitive advantages. Several previous studies confirm learning in organizations has a positive impact on improving company performance. The positive impact of learning in organizations on improving company performance can be direct or indirect (Brockmand and Morgan, 2003; Jimenez-Jimenez and Sanz-Valle, 2011) [4, 13],

In particular, many previous studies mention that learning in organizations can act as a driver for companies to innovate. Various conceptual models have been developed to examine the relationship between learning in organizations and innovation constructs. According to the model; the acquisition, distribution, development and application of new knowledge are prerequisites for the innovation process (Jimenez-Jimenez *et al*., 2008; Nonaka and Takeuchi, 1995) [14, 15]. Therefore, this study proposes the following hypothesis.

Hypothesis 1

Learning in organizations has a positive and significant impact on improving manufacturing performance

Hypothesis 2

Learning in organizations has a positive and significant impact on improving innovation capability

2.2. Innovation and performance relationship

Many definitions of innovation have been proposed in the literature. For example, innovation can be described as the introduction of new processes, products, or ideas in organizations or different products or services that has potential to create new satisfaction. In addition, innovation can be understood as a process that begins with the generation of an idea. This process continues with the development of an invention so as to produce a new product, process, or service to the market (Battor and Battor, 2010). Furthermore, innovation can be seen as a process of developing and implementing new products, processes, services, organizational structures, and business models; to create new values for customers and to obtain financial benefits for the company (Bigliardi and Dormio, 2009; Omachonu and Einspruch, 2010) [3, 16].

Many researchers consider that innovation can be categorized into four types, namely product innovation, process innovation, organizational innovation, and market innovation. Product innovation refers to any good, service or idea that is felt by consumers as something new. Process innovation refers to the adaptation of new production attributes such as the adoption of new production lines and technologies that enable companies to create new products. Organizational innovation refers to changes in organizational attributes such as new purchasing, sales, administration and management models. Market innovation refers to changes in marketing attributes such as new market exploitation models and penetration of existing market segments. (Bigliardi and Dormio, 2009; Omachonu and Einspruch, 2010; Varis and Littunen, 2010) [13, 16, 22].

Furthermore, many researchers emphasize that the capability of innovation is one of the main drivers needed by companies to compete. In this case, many researchers suggest that companies must master different special abilities to compete, namely the ability to innovate. Innovation plays an important role for companies to achieve their success, even more so for companies that compete in a competitive environment and fast changing market. This is in line with the concept put forward in the literature that companies must do new things or new ways in their business processes to survive and develop in an increasingly global and competitive business environment (Battor and Battor, 2010; Hult *et al*., 2004) [10]. Omachonu and Einspruch (2010) [16] note that innovation has the potential to increase revenue growth by up to 78%, increase customer satisfaction by 76%, increase revenue growth from new products or services by 74%, increase productivity increases by 71%, and increase profit margins by 68 %. Thus, this study proposes the following hypothesis.

Hypothesis 3

The innovation capability is positively and significantly impacted on improving the manufacturing performance of manufacturing SMEs.

3. Research Methodology

3.1. Data collection and sample

The data for this study comes from a survey conducted on manufacturing SMIs. The sample involved in this study includes 62 companies located in the eastern region of Jakarta province that has 15-100 employees. This study uses a structured questionnaire to collect data. The number of

valid questionnaires was 62.
The results of non-response bias test revealed insignificant differences between respondent and non-respondent companies in terms of general characteristics and model variables.

3.2. Variable Measurement

Following Perez Lopez *et al.* (2004) [17], this study views that organizational learning is a multidimensional construct consisting of five dimensions, namely the acquisition of external knowledge (4 items), acquisition of internal knowledge (3 items), distribution of knowledge (5 items), interpretation of knowledge (5 items), and organizational memory (8 items). All indicators are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The results of the validity and reliability test of organizational learning constructs show good validity and reliability. In this case, the CITC value of the indicator used ranges between 0.46 and 0.53 while the Cronbach Alpha ranges between 0.76 and 0.81.
Referring to Camison and Lopez (2010) [17], this study considers that the capability of innovation is a multidimensional construct. This research focuses on three dimensions of innovation, namely product innovation, process innovation, and organizational innovation. Product innovation is measured using 4 indicators, process innovation is measured by 5 indicators, and organizational innovation is measured by 4 indicators. All indicators are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The results of the validity and reliability test of the innovation extracts show good validity and reliability. The CITC value of the indicator used ranges between 0.41 and 0.67 while the Alpha Cronbach ranges between 0.73 and 0.86
This study focuses on manufacturing performance. Referring to Gunday *et al.* (2011) [9], this study uses four indicators to measure manufacturing performance, namely the conformity of product quality, production costs, flexibility of production volume, and speed of product delivery. All indicators are measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The results of the validity and reliability test on the construct of manufacturing performance show good validity and reliability. In this case, the CITC value of the indicator used ranges between 0.38 and 0.51 while the Cronbach Alpha is 0.83

3.3. Research Model

The main objective of this study is to examine the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance in manufacturing SMIs. Figure 1 presents the conceptual framework of this study. This study assumes that companies need to improve their manufacturing performance to survive and remain competitive. To achieve this goal, it is necessary to improve learning capability in organizations. Learning capability in organizations can be directed to improve the capability of innovation and manufacturing performance.

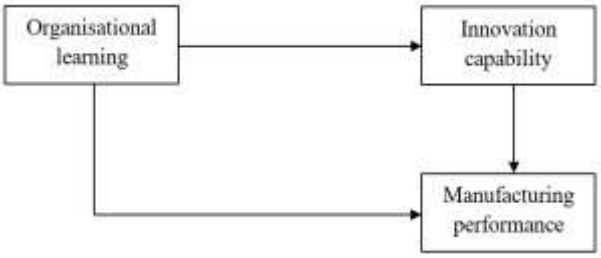

Fig 1: Conceptual model of the study

4. Results and Analysis

4.1. Descriptive analysis

Organizational learning
This section explains the descriptive analysis of organization learning construct. The literature shows that learning in organizations has the potential to increase the capability of innovation. In addition, learning in organizations can play a function as a determinant in improving company performance. This study considers five dimensions to be included in the construct of organizational learning, namely the acquisition of external knowledge, acquisition of internal knowledge, distribution of knowledge, interpretation of knowledge, and organizational memory. Table 1 presents the average score of each dimension of organizational learning construct. As seen in Table 1, the average score of responses related to the five dimensions of organizational learning ranged from 3.34 points and 3.76 points. The average score indicates that organizational learning is considered as an important factor to support manufacturing performance. Specifically, knowledge distribution is seen as the most important organizational learning process (average score = 3.76 points).

Table 1: Descriptive analysis of organizational learning construct

Organisational learning dimensions	Mean	Standard deviation
Acquisition of external knowledge	3,34	0,85
Acquisition of internal knowledge	3.40	0,87
Knowledge distribution	3,76	0,91
Knowledge interpretation	3,48	1,02
Organizational memory	3,53	0,84

Innovation capability
This section explains the descriptive analysis of innovation capability. Literature shows that innovation capability can serve as a determinant in improving company performance. This study considers three dimensions to be included in innovation capability construct, namely product innovation, process innovation, and organizational innovation. Table 2 presents the average scores from each dimension of innovation capability. As seen in Table 2, the average score of responses related to the three dimensions of innovation capability ranges between 3.84 points and 4.39 points. The average score indicates that innovation capability is considered as an important factor to support manufacturing performance.

In particular, process innovation is seen as the most important type of innovation capability (average score = 4.39 points).

Table 2: Descriptive analysis of innovation capability construct

Innovation capability dimensions	Mean	Standard deviation
Product innovation	4,15	0,89
Process innovation	4,39	1,13
Organizational innovation	3,84	0,93

Manufacturing performance

This section explains the descriptive analysis of manufacturing performance construct. This study selected four items to be included in the manufacturing performance construct, namely conformity of product quality, production costs, flexibility of production volume, and speed of product delivery. In this study, respondents were asked to rate the extent of their company's performance relative to their main competitors. Table 3 presents the average scores from each dimension of manufacturing performance. As seen in Table 3, the average score of responses related to the four dimensions of manufacturing performance ranged from 3.47 points and 4.11 points. The average score indicates that the companies involved in this study achieved a fairly high manufacturing performance on each indicator of manufacturing performance. This result confirms that the reduction in production costs is an indicator of manufacturing performance deemed important to achieve (average value = 4.11 points) in addition to the flexibility of production volume.

Table 3: Descriptive analysis of manufacturing performance construct

manufacturing performance dimensions	Mean	Standard deviation
Conformity of product quality	3,47	1,12
Production costs	4,11	0,83
Flexibility of production volume	3,84	0,85
Speed of product delivery	3,53	0,96

4.2. Measurement Model

This study considers that organizational learning is a multidimensional construct consisting of five dimensions, namely the acquisition of external knowledge, acquisition of external knowledge, distribution of knowledge, interpretation of knowledge, and organizational memory. The results of the measurement model test for organizational learning construct shows good compatibility for all indicators of learning constructs in organizations. The suitability index for the measurement model of organizational learning construct is: GFI = 0.92; TLI = 0.96; RMSEA = 0.04. Furthermore, this study also considers that innovation capability construct is multidimensional in nature and involves three dimensions, namely product innovation, process innovation, and organizational innovation. The results of the measurement model test for innovation capability show good compatibility for all indicators of innovation capability construct. The suitability index for the measurement model of the innovation capability construct is: GFI = 0.91; TLI = 0.95; RMSEA = 0.04. In this study, four indicators are used to measure manufacturing performance; that is, suitability of product quality, production costs, flexibility of production volume, and speed of product delivery. The results of the measurement model test for manufacturing performance construct show good compatibility for all indicators of manufacturing performance constructs. The fit index for the measurement model of manufacturing performance construct is: GFI = 0.92; TLI = 0.97; RMSEA = 0.04.

4.3. Structural Model

Research focusing on examining the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance in the context of manufacturing SMEs is still relatively limited. This study develops a structural model to represents the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance in the context of manufacturing SMEs. Table 4 summarizes the results of the structural model test for the simultaneous relationships between the three constructs. As can be seen in Table 4, the factor loading of all dimension's ranges between 0.64 and 0.88. All of these factor loading values are higher than the recommended minimum value of 0.50. Three individual goodness of fit measures indicates that the structural model is suitable (GFI = 0.95; TLI = 0.98; and RMSEA = 0.04). Furthermore, the results of the discriminant validity test show that the value of AVE square root is greater than all correlations between constructs.

Table 4: Test results of the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance constructs

Relationship		Regression weight
Organisational learning	Manufacturing performance	0,341**
Organisational learning	Innovation capability	0,562***
Innovation capability	Manufacturing performance	0,287**
Organisational learning	Acquisition of external knowledge	0,76
Organisational learning	Acquisition of internal knowledge	0,72
Organisational learning	Knowledge distribution	0,88
Organisational learning	Knowledge interpretation	0,64
Organisational learning	Organizational memory	0,78
Innovation capability	Product innovation	0,71
Innovation capability	Process innovation	0,86
Innovation capability	Organizational innovation	0,77
Manufacturing performance	Conformity of product quality	0,73
Manufacturing performance	Production costs	0,82
Manufacturing performance	Flexibility of production volume	0,80
Manufacturing performance	Speed of product delivery	0,66

4.4. Hypothesis testing

The first hypothesis of this study is about the relationship between learning in organizations and manufacturing performance of manufacturing SMEs. This study hypothesizes that learning in organizations will have a positive effect on manufacturing performance. The analysis showed that learning in organizations had a positive influence on manufacturing performance ($\beta = 0.341$; $p < 0.05$). The second hypothesis of this study is about the relationship between learning in organizations and the capability of manufacturing SMI innovation. This study hypothesizes that learning in organizations will have a positive effect on the capability of innovation. The analysis shows that learning in organizations has a positive influence on the capability of innovation ($\beta = 0.562$; $p < 0.01$). The third hypothesis of this study is about the relationship between innovation capability and manufacturing performance of manufacturing SMIs. This study hypothesizes that the capability of innovation will have a positive effect on manufacturing performance. The analysis

showed that the capability of innovation had a positive influence on manufacturing performance (β = 0.287; p <0.01).

This finding supports the idea that learning in organizations can play a role as a driver for improving company performance (Brockman and Morgan, 2003) [4] as well as a determinant of innovation activities (Baker and Sinkula, 2002) [1]. The capability of innovation itself is a major driver for improving company performance (Calantone *et al*., 2002) [5]. Specifically, the findings of this study indicate that the effect of learning in organizations on innovation capability is higher than the effect on manufacturing performance. Considering the findings that innovation capability themselves also encourage improvements in manufacturing performance, these findings seem to reflect that innovation capability are capable of acting as mediators in the relationship between organizational learning and manufacturing performance.

Many experts argue that organizational learning, innovation capability, and company performance are positively related. However, empirical study analyzing the relationship of the three constructs together in a single model is still limited (Jimenez-Jimenez and Sanz-Valle, 2011; Wang and Ellinger, 2011) [13, 23]. This study contributes to the literature by examining the simultaneous relationship between organizational learning, innovation capability, and company performance in the context of Indonesian manufacturing SMIs. The findings of this study indicate that there is a positive and significant relationship between organizational learning and company performance. This finding provides additional evidence for previous literature that organizational learning has a positive effect on firm performance.

5. Conclusions

This study contributes to the literature by examining the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance in the context of manufacturing SMIs. This study provides support for a positive and significant relationship between the three constructs. The sample involved in this study was Indonesian manufacturing SMIs. This is a context in which empirical studies of the simultaneous relationship between organizational learning, innovation capability, and manufacturing performance are still limited.

Although the idea of the positive impact of innovation capability on company performance has gained wide recognition among academics and practitioners, the extent to which innovations carry out this role remains unclear. This study shows that organizational learning has a positive impact on improving innovation capability. Therefore, a company needs to improve the quality of organizational learning. Improving the quality of organizational learning will increase the capability of innovation, which in turn will improve company performance. The findings of this study imply that companies must [1] increase the acquisition of new knowledge, [2] increase the distribution of knowledge, [3] improve interpretation within the company, and [4] update the company's database.

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