

## Literature Review on Organizational Learning and Technological Innovation and Manufacturing Performance in Malaysia

<sup>1</sup>Ong Choon Hee, <sup>1</sup>Nor Ahlina Ibrahim, <sup>1</sup>Adriana Mohd Rizal, <sup>2</sup>Tan Owee Kowang, <sup>2</sup>Goh Chin Fei

<sup>1</sup>Azman Hashim International Business School, Universiti Teknologi Malaysia, Johor, Malaysia.

<sup>2</sup>Faculty of Management, Universiti Teknologi Malaysia, Johor, Malaysia.

Corresponding Author: ongchoonhee@gmail.com

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### Abstract

This study attempts to examine the effect of organizational learning on technological innovation and also the impact of technological innovation towards the performance of manufacturing companies in Malaysia. Nowadays, firms mostly are operating in business situations which are competitive on one hand but unsteady, dynamic and complex on the other. Those who operate globally, the situation is even unattractive. The resource base view theory was mostly used as an explaining framework for achieving sustainable competitive advantage. Organizations develop competitive advantages through strategically developed resources over the longer period of time. However, heterogeneous results in the data analysis were observed. This paper draws a connection between organizational learning, technological innovation and manufacturing performance more widely via literature review analysis. The findings of this study appeared to be consistent with previous studies where organizational learning has a positive relationship with technological innovation and technological innovation is associated positively with manufacturing performance. Furthermore, it offers greater insights for future researchers to scrutinize in a more specific manner where it assists to groom sustainable manufacturing performance in the organizations.

**Keywords:** Organizational Learning, Technological Innovation, Manufacturing Performance, Sustainable Competitive Advantage.

### Introduction

Most of the companies in Malaysia are in a continuous process of looking for ways that will offer them competitive advantage in the market. According to Grant (2005), the efficiency of stable environments can be achieved by using division of management control of labour and standardization routines. Yet, Chirico & Salvato (2008) stated that current changes in the

industry surroundings will force organizations to look for new approaches for competitive edge as the conventional strategies had happened to be outdated. The economic globalization and advancement in technological innovation are amongst the fundamental forces faced by the existing manufacturing companies (Griffin & Moorhead, 2007). So, to handle the existing external opportunities and threats, manufacturing companies need to obtain new knowledge and expertise which may increase existing and future performance. Besides, the capability of the managers to learn quicker than the competitors is the solitary competitive advantage the firm should have. One of the effective strategies to improve the firm's competitive edge is organizational learning. In order to improve the level of organizational performance and enhance firm's innovative capabilities, firms need to acquire new skills and knowledge by learning. Drucker (2002) indicates that innovation is correlated with the concept of generation, reception and execution of new procedures, ideas, product and services. It is regulated by the organization's learning orientation. It is suggested that the impact of organizational learning on the company performance can be considered as both direct and indirect effects. The formation of innovative organization by learning permits the company to attain superior competitive level and above average performance. Schroeder & Flynn (2001) stated that manufacturing approach can be seen as a model of reliable decisions which encapsulates the manufacturing resources, capabilities and practices aiming at attaining competitive advantage for a business. This paper looks into how manufacturing industry extends its resources and capabilities for higher execution of achieving competitive advantage. Also, this review explored earlier researches throughout the manufacturing strategy literature by investigating whether the capacity to widen technological innovation by organizational learning is linked to the competitive manufacturing performance. Manufacturing firms that can attain technological knowledge should predict the future before it becomes ordinary knowledge. Technological innovation has been assessed as one of the activities that contributes to economic development (Heffner, 2006). It is supported by the study of Rogers (1995) where innovation was always categorized as a type of "capital" for the company and being widely defined as "a thought, a product, procedure or tool that is perceived to be new to an individual, a manufacturing sector or the public as a whole". It can be perceived that technological invention is a way to enhance competitive advantage ever since the beginning of the manufacturing organizational learning which provides a basis for strategic renewal and technology innovation (Jones & Macpherson, 2005). Therefore, organizational learning can be described as a tactic to encourage innovation. In this study, the theoretical framework proposed a company's point of learning contribute to technological innovation and at the same time it will affect the company's manufacturing performance. This paper is expected to contribute towards enhancing manufacturing performance by using organizational learning as a lever to trigger technological innovation where the latter is an essential predictor of firm performance.

### **Organizational Learning**

According to Sarason (1995), organizational members used organizational structure in their daily interaction. In other words, organizational structure is an organized resources and rules. The interaction here can be defined as a learning process where it transfers knowledge in replicating activities to become organizational behaviours and routines. Both behaviours and routines solve all the problems related to technology deployment. In order to perform better than the rivals, Malaysian companies need to learn more successfully especially in the long run. Organizational learning is obviously an aspect in which it will be displayed through the

firms that exhibit excellence in legal transfer of goods towards their clientele (Slater and Narver, 1995). Hence, there is a linkage between organizational learning and performance. The performance dimension gives essential response regarding the efficiency and usefulness of a learning process and finally the firm's strategy will take place in accordance with the accumulated learning. Therefore, incremental learning may constantly contribute towards incremental performance improvements. Exact performance improvements are the results of learning and can be attributable towards hard work of regeneration, imitation and technological growth. Learning is directly linked to the expansion of innovation process technology and in some ways in manufacturing performance. It is also suggested that the capacity of the manufacturing is to blend with internal and external learning to produce technological innovation.

### **Internal Learning**

Internal learning is reliant among the workers who acquire the knowledge required to control and develop the manufacturing facilities. According to Prusk (1997), internal learning is hard to codify and at times might take place in an unexpected way. This condition directly affects the deployment of manufacturing resources. In addition, internal learning is a single resource of sustainable competitive advantage where it leads to flexible job organization and also serves as a competitive edge among manufacturing players in Malaysia. Some of the studies were being alarmed by dissimilar practices for internal learning throughout daily manufacturing experimentation or operations at the plant level. If practices are purposely formed, individuals can be taught during their daily work about 'how' and 'why' the technology is planned and operated in the particular fashion. Garvin (1993) assured that successful examples of experimentation on the source and on-going development programs are related to constant knowledge flow within the firm. This situation suggests that interaction between internal learning mechanisms does matter. In order to promote experimentation, manufacturing firms need to serve a favourable internal environment and mechanism. Many of the mechanisms might directly affect the extent of knowledge that the organization gained internally. For example, the verbal practices, visual reports, training as well as standardization practice. Nonaka & Takeuchi (1995) added that on job training, shared experience along with meetings are associated with internal knowledge acquisition. This follows by internal knowledge integration that encompasses compilation of practices to broaden the knowledge within the firm and deepen its technological capabilities. The standardization of systematic documentation and production practices are ways for internal learning and knowledge codification in some manufacturing firms.

### **External Learning**

Most of the plants which have close contacts with their customers and suppliers might attain an edge in new product introduction. A good customer relationship serves as a basis of obtaining tacit knowledge where it will be hard to imitate or duplicate among rivals. The external learning takes place when a plant is closely working with their suppliers for building up good relation among them. In addition, this long-term relationship with suppliers is able to produce distinctive capabilities for the firm to establish competitive advantage (Gerwin, 1993). Webster (1992) opined that companies may survive in an extremely competitive market circumstances depending on how simply they get to create additional extensive contact with the suppliers and customers. With that, external learning may take place and initiate the beginning of competitive advantage where processes and products are able to be

produced rapidly in Malaysia. Additionally, Cohen and Levinthal (1990) stated that incorporating external knowledge into the organization is crucial for the establishment of innovative capabilities. Other relevant practices for absorbing external technical knowledge may include the interaction between firms and vendors, clients, customers and consultants. By creating technological alliance with companies that have the expertise in a specific area will definitely help to attain specific technical knowledge. Other external learning methods may also include engaging know-how via external corporation such as welcoming those experts to give talks to the employees, hiring experts, rehiring retired workers, promoting 'technological gatekeepers' and interacting with people who may investigate, understand and distribute external knowledge in the public (Leonard & Sensiper, 1998).

### **Technological Innovation**

Ahmad et al., (2010) stated that from the Malaysian perspective, most of the companies are currently facing issues such as inadequate technology adoption, lack of expertise, globalization and rivalry from bigger organizations. Cantwell (1999) proved that a company's technological resources control its competitive success and failure. Strong technological resources will lessen the unit price, improve product values and increases profit margins of the companies comparatively to others. Resources and capabilities of the firms must be difficult enough to be imitated by the rivals in achieving competitive advantage and sustainability. In most cases in Malaysia, the manufacturing organizations may use detailed processes to maintain the confidentiality of operation if the internal works of a manufacturing plant are observable. On the other hand, a state of manufacturing capability can be established by custom-designed equipment, accumulation of incremental practice improvement and employee experience. Generally, the rival's engineer may disassemble an invention in order to expose the information about what the product is and the reason it works, nevertheless they seldom identify how it was made and the stage of effectiveness it was developed. Those underlying uncertainty makes replication complex (Barney, 1991). According to Pratali (2003), the beginning of technological innovation should reap the advantages in conditions of its good quality and set of performance characteristics. It should interpreted into a capacity gap towards rivals or competitors by applying the improved technology. Technological dominance is an imperative measurement of innovation success and must be explored and identified (Weaver et al., 1998). Technology acts as a major function with the capability to innovate and provides an imperative source of fresh product innovation. In order to offer a superior technological innovation, management is required to include all linked parties by dropping bureaucratic issues in business and allow organizational learning. The high level of participation and organizational learning may lower the resistance to change and lead to superior chance for acceptance of new technology. Highly successful Malaysian manufacturing companies mostly exercise decentralization and higher degree of organizational learning among managers. Therefore, organizational learning is crucial in developing technological innovation which in turn will increase manufacturing performance (Ahmed Fadzil, 2001).

### **Manufacturing Performance**

From the past studies, it can be concluded that higher manufacturing performance may transform the firms into high profits, market shares and volume of sales (Hayes, Wheelwright & Clark, 1988). Normally, the usual dimensions of manufacturing performance include price, quality and flexibility. Inventory, delivery, manufacturing cost and flexibility were used by

Maani et al. (1994) as manufacturing performance dimensions and linked them to the whole industry performance. Delaney and Huselid (1996) engaged various methods to determine organization performance among their rivals. The methods used were products quality, innovation of new products, capability to hold necessary workforce, capability to pull necessary workforce, client's contentment, management and worker relationship, connection among workers, growth of sales, profitability and market share. As the manufacturing plant may not have definite measures to provide market outcomes, the dimensions of price, quality, delivery, flexibility and cycle time will generally be used as manufacturing performance dimensions. These dimensions were contingent upon the development of technological innovation. Hence, it is perceived that technological innovation is able to predict manufacturing performance.

### **Theoretical Framework**

From the literature review, the variables that influence manufacturing performance in Malaysia are organizational learning which consists of internal and external learning and technological innovation. The proposed theoretical framework is established as shown in Figure 1. Three propositions were developed based on the theoretical framework:

- P1: There is a positive relationship between internal learning and technological innovation.
- P2: There is a positive relationship between external learning and technological innovation.
- P3: There is a positive relationship between technological innovation and manufacturing performance.

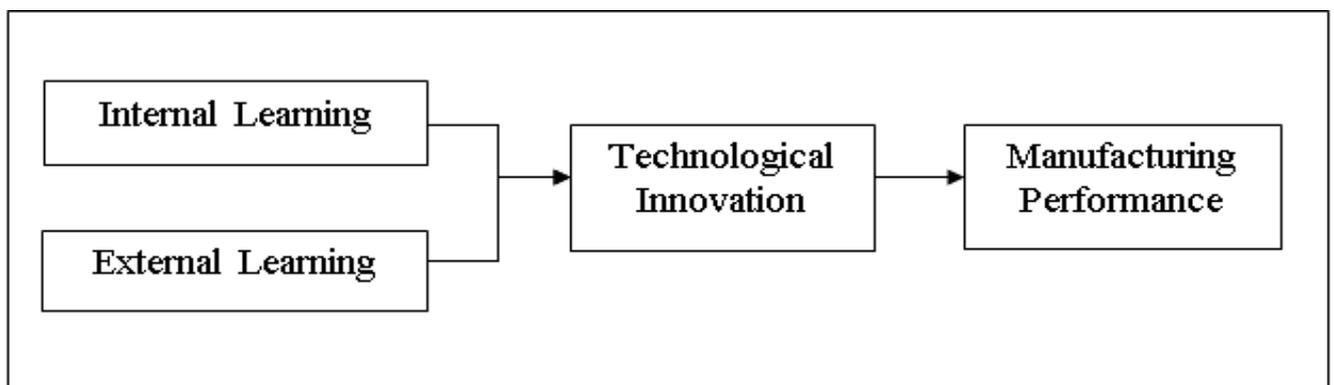


Figure 1: Theoretical Framework

### **Research Implications**

The literature on manufacturing performance and its strategies is limited in Malaysia. Most of the studies highlighted the impact of manufacturing practices such as Just-In-Time (JIT) performance, Total Productive Maintenance (TPM) and Total Quality Management (TQM) System. There are very few studies on how manufacturing industry in Malaysia is expanding its capabilities in a way of improving performance and gaining competitive advantage. The study provides insights for manufacturing managers who look for improvement at the line performance by leveraging the advantages of information-based economy. The research implications are vital for manufacturing firms which are operating in a vastly competitive and technology-focused environment. This study also provides both practical and theoretical implications. Firstly, this paper demonstrates how organizational learning and technological

innovation lead to enhanced manufacturing performance. From the literature review, the findings found that internal and external learning are essential in producing technological innovation. Secondly, this study offers several helpful information for Malaysian manufacturing managers to formulate plan and approach in achieving better manufacturing performance. It is important for the managers to familiarize with the usefulness of organizational learning and technological innovation as well as the manufacturing capabilities in which directly associated with the level of manufacturing performance. With organizational learning, workforce can be equipped with basic knowledge and skills so that they are able to contribute towards technological development and use their innovation capabilities to improve manufacturing performance.

### **Conclusion**

This study intends to investigate the outcome of organizational learning and technological innovation towards manufacturing performance in Malaysia. Organizational learning capability contributes towards the way organization learns via internal and external occurrence in tandem with surrounding changes. The function of organizational learning is imperative for firms to produce technological innovation. Organizations with high knowledge-based highlight the importance of learning and technological innovation. Alavi and Leidner (2001) concurred that firms may not able to take advantage of the technological innovation to attain higher manufacturing performance if they are lacking of knowledge application. With the most recent knowledge and technological innovation, it does help organizations to stay ahead of its competitors and subsequently increase manufacturing performance.

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