

Organizational Learning, Innovation and Performance: A Study of Malaysian Small and Medium Sized Enterprises

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Received: July 18, 2011

Accepted: August 19, 2011

Published: December 1, 2011

doi:10.5539/ijbm.v6n12p118

URL: <http://dx.doi.org/10.5539/ijbm.v6n12p118>

Abstract

This empirical study attempts to investigate the effect of organizational learning on innovation as well as the impact of innovation on company performance. Based on the literature review, two hypotheses are proposed to guide the study: the positive impact of organizational learning on innovation and the positive relationship between innovation and performance. Data was collected via electronic survey from 320 small and medium enterprises operating in the ICT industry in Malaysia. Findings from the study support both the two hypotheses thus providing further evidence that organizational learning contributes to innovation capability, and that innovation is positively related to firm performance. Several guidelines and practical implications from the study are also discussed.

Keywords: Organizational learning, Innovation, Performance, SMEs

1. Introduction

Organizations are in a continuous process of searching for strategies that would provide them with a competitive advantage. Efficiency in stable environments is achieved through standardized routines, division of labor and management control (Grant, 2005). However, recent changes in the business environment have compelled firms to search for new strategies for competitive edge as the conventional strategies have become obsolete (Chirico & Salvato, 2008). Economic globalization, which refers to integration of operations and markets in a borderless economic space (Johnson & Turner, 2003), and advances in information and communication technology (Hanna, 2010); are among the central environmental forces faced by contemporary organizations (Griffin & Moorhead, 2007; Roy, 2005).

In order to cope with the current external opportunities and threats, it is argued that organizations have to learn, that is, acquire new knowledge and skills that will improve their existing and future performance (Child, Faulkner, & Tallman, 2005; DiBella, 1998; Ortenblad, 2001). In fact, it is proposed that the only competitive advantage the company of the future will have is the ability of its managers to learn faster than the competitors (Geus, 1988). Many other researchers suggest that the effective strategy for sustaining and improving a firm's competitive edge and performance is organizational learning (e.g. Mavondo, Chimhanzi, & Stewart, 2005; Senge, 1990; Sinkula, Baker, & Noordewier, 1997).

Scholars also attest that the new knowledge and skills obtained through learning enhance firm's innovative capabilities thus improving the level of firms' competitiveness and performance (Baker & Sinkula, 1999; Huber, 1991; Keiser & Koch, 2008; Nonaka, 1994). Research shows that innovation is linked to the concepts of generation, acceptance, and implementation of new ideas, processes, products and services (Damanpour, 1991; Drucker, 2002), and is determined by the firm's learning orientation (Baker & Sinkula, 1999; Calantone, Cavusgil, & Zhao, 2002). Research also indicates that the effect of organizational learning on firm performance is likely to be both direct and indirect because the creation of innovative culture through learning allows firm to achieve a better competitive position and above-average performance (Baker & Sinkula, 1999; Bates &

Khasawneh, 2005; Huber, 1991).

The study's conceptual framework hypothesizes that a firm's level of learning orientation contributes to innovation, which in turn impacts the firm's organizational performance. An integrative model of organizational learning, innovation and performance, which is based on prior literature, served as the conceptual framework for the study.

2. Literature Review

2.1 Organizational Learning

Traditionally, learning is defined as the process through which an individual acquires knowledge, skills, attitudes and opinions (Illeris, 2004). The literature contains numerous definitions of organizational learning that differ according to the level of analysis as well as the complexity and context in which organizational learning is used. There is no common definition of organizational learning which commands wide acceptance (Miller, 1996). This is because of the influence of various perspectives and disciplines that lead to lack of consensus in understanding.

Learning as a capability is a multidimensional construct that involves knowledge processing for change and improvement (Jerez Gomez, Cespedes-Lorente & Valle-Cabrera, 2005). Based on this, it is proposed that an account of the organizational capability to learn can be made by means of two dimensions underlying the concept: what is learned (knowledge) and how it is learned (learning process) (Lopez, Peon & Ordas, 2005). Senge (1990) describes learning as the means to get to the heart of being human.

From the management perspective, a number of studies distinguish various types and levels of learning. For instance, Fiol and Lyles (1998), distinguish between higher and lower levels of learning. Senge (1990) differentiates adaptive from generative learning. In addition, Dodgson (1991) identifies strategic and tactical learning. From an organization theory perspective, Argyris and Schon (1978) propose a typology of learning which involves single loop, double loop, and deutero-learning.

Senge's (1990) adaptive learning compares with Fiol and Lyles (1998)'s lower-level learning as well as Argyris and Schon's (1978) single-loop learning. It focuses on adapting to and coping with the external environment, and rarely involves the questioning of values. Argyris and Schon (1978) refer to it as 'single-loop learning,' - the process which maintains the central features of an organization's status quo, and restricts itself to detecting and correcting errors within that given system of rules. This level of learning leads to the development of some rudimentary associations of behavior and outcomes that are often short-term oriented, and take place in organizational contexts (Fiol & Lyles, 1998).

Generative learning as proposed by Senge (1990) is analogous to Argyris and Schon's (1978) double-loop learning as well as Fiol and Lyles's (1998) higher-level learning. Generative learning emphasizes the use of feedback from past actions to create a transformational change that challenges the prevailing status of the organizations. Generative learning encourages changes in values and beliefs that motivate goals, strategies and policies (Rahim, 2001). In this level of learning, questions are not only focused on objective problems of the organizations, but the reasons why these problems occur (Argyris, 1994).

Adaptive learning and generative learning are complementary processes. Generative learning may lead the company to identify new customers and markets to serve and new products and services to offer to them and existing customers. Adaptive learning may lead the company to identify ways to deliver these new products and services to all customers more efficiently and effectively.

SMEs are dominated by informal work-based learning as well as oral and informal communication. This is because flexibility and adaptability are preferred to formal job descriptions and skills while the transmission of tacit knowledge is through ad hoc training. Therefore, adaptive learning is therefore likely to be prevalent in SMEs compared to generative learning (Dalley & Hamilton, 2000; Tsang, 1997).

2.2 Organizational Innovation

Organizational innovativeness is studied in many disciplines, such as management/strategy, entrepreneurship, and marketing. Literature provides two perspectives of looking at organizational innovation. The first perspective argues that innovation is a form of learning (Ries & Trout, 1981) or something new (Gopalakrishnan & Damanpour, 1997). Peters and Waterman (1982) suggest innovation is a means through which organizations respond to a variety of environmental changes while Rogers (2003) and Tushman and Nadler (1986) argue that innovation refers to a new idea, product, method or service adopted in organizations. Another stream of researchers perceives innovativeness as a multi-dimensional organizational trait. For example, Vigoda-Gadot et al. (2005) view innovativeness as including five dimensions: creativity, risk-taking, openness to change, future orientation, and pro-activeness. Similarly, Dundon (2005) proposes that innovation comprises four elements,

namely, creativity, strategy, application, and profitability, thus differentiating it from creativity. Existing literature presents different classifications of organizational innovativeness. A number of researchers suggest a dichotomy of innovation. For example, Subramanian and Nilakanta (1996) classify organizational innovation into two categories: (i) technological innovation, including product, services, and processes; and (ii) administrative innovation, including organizational structure, administrative process, and programs.

3. Method

3.1 Hypotheses

3.1.1 The Influence of Organizational learning on Innovation

Organizational innovation hinges on the knowledge base possessed by the organization and generated by organizational learning (Cohen & Levinthal, 1990; Nonaka & Takeuchi, 1995). Organizational learning is a strategic variable for firms that seek to introduce new products or create new markets because of the need to innovate continuously in order to survive intense competition (Cefis & Marsili, 2005). It is therefore, necessary to stimulate the development of factors that contribute to innovation and enable the introduction of new ideas, products, services, and systems ahead of other competitors in the industry (Lloréns, Ruiz & Garcia, 2005). Organizational learning “supports creativity, inspires new knowledge and ideas and increases the potential to understand and apply them, favours organizational intelligence and (with the culture) forms a background for orientation to organizational innovation” (García, Ruiz & Llorens, 2007, p. 535). High levels of commitment to learning are attributed to greater innovative orientation and activity (Ussahawanitchakit, 2008). Based on these lines of arguments, we hypothesize that:

H₁. *Organizational learning capability is positively related to organizational innovation.*

3.1.2 The Influence of Organizational Innovation on Firm Performance

The diffusion of innovation literature confirms the view that innovation is the most important determinant of firm performance as a result of the evolution of the competitive environment (Wheelwright and Clark, 1992; Bueno and Ordoñez, 2004). Innovation can lead to increased market share, greater production efficiency, higher productivity growth, and increased revenue (Shefer & Frenkel, 2005). According to Zahra, Ireland & Hitt (2000), innovation enables firms to offer greater variety of differentiated products that can improve financial performance. Despite the positive relationship between innovation and performance reported in the previous studies, the link between firm’s innovation capability and performance has no conclusive finding. For example, Kemp et al. (2003) found that innovation was associated with turnover and employment growth, but not profit and productivity among Dutch firms. Similarly, Zhou, Tan and Uhlaner (2007) found no positive effect of innovation (new products and new service) on Dutch firms. Therefore, to further explore the link between firm’s innovation capability and performance, we hypothesize that:

H₂. *Organizational innovation is significantly related to organizational performance.*

3.2 Questionnaire Design

The questionnaire includes four parts: organizational learning, innovation, performance, and personal background including gender (male or female), and age, both collected for demographic data. The questionnaire utilizes a five-point Likert scale with the following main constructs:

3.3 Operationalization of Research Constructs

To test the proposed research hypotheses, multi-item scales were adopted from previous studies for the measurement of the research constructs. They are operationalized as follows:

3.3.1 Organizational Learning Construct

Following Calontone et al (2002), organizational learning is operationalized as second order construct. Its first-order indicators are commitment to learning, shared vision, open-mindedness, and intra-organizational knowledge sharing. Commitment to learning is the degree to which an organization promotes learning and is willing to foster a learning climate (Calontone, et al., 2002). Shared vision interconnects the activities of employees and develops relationships based on the exchange of information and shared mental models (Akgun, Keskin, Byrne, & Aren, 2007). Open mindedness refers to the ability of firms to accept new ideas, and the willingness to question long-held assumptions about behavior and events (Akgun, et al., 2007; Santos-Vijande et al., 2005). Finally, Intraorganizational knowledge sharing refers to collective beliefs or behavioral routines that are linked to the spread of learning within an organization (Moorman & Miner, 1998).

3.3.2 Innovation Construct

For measuring innovation, this study adopts Popadiuk and Choo’s (2006) scale consisting of: technological, market, and administrative innovation. Technological innovation refers to product, process, and service

innovation. Market innovation refers to price, promotion, and place innovation. Administrative innovation refers to strategy, structure, systems, and culture innovation.

3.3.3 Organizational Performance Construct

Based on the literature review, organizational performance is examined using two aspects: financial performance and market performance. Financial performance refers to the extent to which the organization performs in relative profitability, return on investment, and total sales growth. Market performance refers to the extent to which the organization performs in market share, profit ratio, and customer satisfaction.

3.4 Research Sample

The sampling frame consists of 1488 small and medium-sized firms listed in the National ICT Association of Malaysia's (PIKOM) directory. The sampling frame is restricted to include content and software providers for service platforms, communication networking, and internet-based businesses. Hardware manufacturers and companies providing consultancy and educational services are therefore not included in the study. This resulted in a sample size of 320 firms from the sampling frame.

The study administered 200 survey questionnaires. 102 valid responses were returned which account for a response rate of 51 percent. The result from non-response analysis ensures the absence of non-response biases. The results show that difference exists between respondents and non-respondents. Table I illustrates the descriptive statistics for the three constructs.

3.5 Reliability and Validity Tests

Reliability and validity tests are conducted for each of the constructs with multivariate measures. To measure the internal consistency of the multivariate scales, Cronbach's alpha is used (Nunnally, 1978). In this study, the Cronbach's α of each constructs is greater than 0.8 (Table I), suggesting a strong reliability for our survey instrument (Cuieford, 1965). In addition, measures with item-to-total correlations larger than 0.6 are considered to have high criterion validity (Kerlinger, 1999). In our study, the item-to-total correlation of each measure is at least 0.56 suggesting that the criterion validity of each scale in this study is considered to be satisfactory.

In addition, an exploratory factor analysis is performed to ensure that the instrument has reasonable construct. Using principal component analysis and varimax rotation, factors with eigenvalues greater than one were retained. Each variable's Cronbach α coefficient has surpassed 0.8 (Table 2), which manifests a relatively good reliability.

4. Results and Discussion

The study incorporates two sets of analyses. First, Pearson correlation analysis examines the correlation between organizational learning and innovation as well as organizational innovation and performance. Next, multiple stepwise regression analysis will be performed to establish the predictive power of organizational learning on innovation, and the predictive power of innovation on performance. The factors of organizational innovation are the dependent variables while the factors of organizational learning are the independent variables in the linear regressions. The resulting linear regression and their corresponding adjusted R^2 with standardization beta are presented in Table 3.

In the technological innovation factor of OI, only three factors of OL are significant in the regression model: commitment to learning, shared vision and intra-organizational knowledge sharing. This implies that commitment to learning has the greatest impact on technological innovation among the remaining types of innovation. For the market innovation, only two factors are significant: commitment to learning as well as intra-organizational knowledge sharing ($R^2 = 0.059$) with the former being more significant and the latter marginally significant ($R^2 = 0.059$).

Finally, for administration innovation, statistical results show all the four variables of organizational learning are significant, the most important of which is commitment to learning ($R^2 = 0.492$). The analysis therefore supports H1 that organizational learning is significantly related to innovation.

Using multiple stepwise regression analysis, the study also explores the effects of OI (the independent variables) for each type of OP (the dependent variables). The resulting regression analysis and the corresponding determination coefficients (R^2) with standardized beta are presented in Table 4.

Table 4 shows that technological (product and process) innovation and market innovation are two critical factors on both financial and market performance. While the most influencing factor for financial performance is technological innovation ($R^2 = 0.082$), the most significant factor for market performance is market innovation with an R^2 of 0.426. This is consistent with previous studies such as Van Auken, Madrid-Guijarro and García-Pérez-de-Lema (2008), who investigated the relationship between the degree of innovation (measured as innovation in products, processes and administration systems) and performance among a sample of 1,091

Spanish manufacturing SMEs. Their study indicated that innovation positively impacts SMEs performance in low and high technology industries.

5. Conclusion and Implications

In this study, a framework for studying organizational learning, innovation, and firm performance was developed, and tested using data collected from small and medium sized firms operating in the ICT industry in Malaysia. The empirical results provide support for the first hypothesis and reveal that organizational learning is critical for innovation. This finding is in line with previous empirical studies that show positive relationship between firm's learning orientation and its innovation capability. For example, Calantone et al (2002) studied the impact of learning orientation using the four variables on several US firms. Their findings suggest a positive impact of learning orientation on firm innovation using path analysis. Similarly, Ussahawanitchakit (2008) found that shared vision, open-mindedness, and intraorganizational knowledge sharing have significant positive and direct effects on Thai accounting firms' innovation orientation.

Regarding the importance of organizational learning to innovation, a number of guidelines can be offered to researchers and practitioners. An organization committed to learning attempts to deeply understand its environment, which includes the customers, competitors, and emerging technology. Innovation also involves the desire to adopt new ideas. This means that a positive learning climate is valuable for firms that seek to outperform its competitors through various innovation processes. Managers should therefore, create and promote the eagerness to learn among their employees so that they develop new skills and share existing knowledge.

The study also confirms the positive relationship between firm innovation capability and its performance. This finding is consistent with previous theoretical studies (e.g. Cohen & Levinthal, 1990; Hedlund, 1994; March, 1991) and empirical research (e.g. Carol & Mavis, 2007; Jiménez-Jiménez & Sanz-Valle, 2010; Pett & Wolf, 2011; Terziovski, 2010). These results may be useful in helping firms to understand the crucial link between innovation and performance. Since performance is a central concern to all firms, understanding the relationship between performance and innovation may help firms develop better competitive strategies. Our findings may also be of interest to consultants and support agencies that provide assistance to SMEs. The more the understanding of the importance of innovation, the greater would be the insight into how firms can achieve better competitive strategies and performance. The results of this study confirm that the importance of innovation is not limited to well established and large firms which enjoy substantial economies of scale.

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Table 1. Descriptive statistics for the three constructs

Dimension	Number of items per dimension	Mean	SD	Cronbach's α
Organizational learning	17	3.4	0.45	0.87
Organizational innovation	34	3.6	0.44	0.96
Organizational performance	8	3.5	0.53	0.90

Table 2. Factor analysis and internal consistency values for the questionnaire

Dimension	Factor	Variance (%)	Cumulative (%)	Item-to-total correlations	Cronbach's α
Organizational learning	Commitment to learning	42.38	42.38	0.64	0.92
	Shared vision	7.62	50.00	0.81	0.95
	Open mindedness	6.03	56.03	0.70	0.91
	Intra-organizational	5.39	61.42	0.72	0.90
	Knowledge sharing				
Organizational innovation	Technological	47.55	47.55	0.74	0.97
	Market	14.08	61.63	0.76	0.96
	Administration	7.10	68.73	0.74	0.94
Organizational performance	Market performance	68.44	68.44	0.78	0.93
	Financial performance	16.01	84.45	0.81	0.92

Table 3. Regression Analysis for Organizational Innovation with Respect to Organizational Learning

ORGANIZATIONAL LEARNING	Dependent Variable: ORGANIZATIONAL INNOVATION					
	Technological Innovation		Market Innovation		Administrative Innovation	
	Adjusted R ²	Standardized Coefficient b	Adjusted R ²	Standardized Coefficient b	Adjusted R ²	Standard Coefficient b
Commitment to Learning	0.117	0.228*	0.255	0.228 *	0.492	0.426 **
Shared Vision	0.087	0.176*			0.332	0.165*
Open mindedness					0.214	0.045*
Intra-organizational knowledge sharing	0.065	0.184*	0.059	0.239 *	0.051	0.224 *

Notes: * Significant at $p < 0.05$; ** Significant at $p < 0.001$.

Table 4. Regression Analysis for Organizational Performance with Respect to Organizational Innovation

ORGANIZATIONAL INNOVATION	Dependent Variable: ORGANIZATIONAL PERFORMANCE			
	Financial Performance		Market Performance	
	Adjusted R ²	Standard coefficient b	Adjusted R ²	Standard coefficient b
Technological Innovation	0.082	0.288 *	0.051	0.215 *
Market Innovation	0.014	0.181 *	0.426	0.359 **
Administration Innovation	0.067	0.368 *		

Notes: * Significant at $p < 0.05$; ** Significant at $p < 0.001$.