



System perspective of knowledge management, organizational learning, and organizational innovation

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ABSTRACT

In knowledge economics, enterprises need to adapt and update its knowledge to keep their capability of innovation. Therefore, the relationship between knowledge management and organizational innovation is getting an important issue in research and in practical areas. However, without good capability of organizational learning, one organizational cannot retain some important knowledge management practices in it. This study selects samples based on Common Wealth Magazine's Top 1000 manufacturers and Top 100 financial firms in 2007 by mails. A questionnaire survey was conducted and 327 valid replies were received. This research analyzes the relationship among knowledge management, as well as organizational learning and organizational innovation utilizing structural equation modeling. The results show that organizational learning is the mediating variable between knowledge management and organizational innovation. Just like a system, knowledge management is an important input, and organizational learning is a key process, then organizational innovation is a critical output.

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1. Introduction

Facing this rapid change, enterprises should adapt and update its knowledge to maintain its competitive advantages (Rademakers, 2005). However, past research showed the issues of knowledge management (KM) are complicated. Some researches are related to the competitive advantages, and some are the e-business (Lin & Lee, 2004); some are related to organizational learning, and some are organizational innovation (Darroch, 2005; Davenport & Prusak, 1998). We found that organizational learning is mixed with KM (Victor, Francisco, & Antonio, 2006), and the relationship between knowledge management and organizational learning is not evident.

Reviewing past literatures, many scholars conducted the research to understand the relation among knowledge management, organizational learning, and organization innovation separately. We found few papers discussed the practical results and quantitative numbers (Darroch & MaNaughton, 2002). Based on theory, knowledge management, organizational learning, and organization innovation should not discuss separately (Goh, 2005). The immediate concern, in the relentless pursuit of innovation within a knowledge enterprise, appears to be more than just identifying and resolving issues on KM independently.

This study investigates the relationships among knowledge management, organizational learning, and organization innovation together in knowledge-intensive business. We use LISREL to model the relationships among knowledge management, organizational learning, and organization innovation based on the data sampled from 27 Taiwanese firms. These firms include electronic, and financial insurance industries from which 327 valid samples were received.

The rest of the paper is organized as follows. Section 2 reviews the literature and proposes the research map. Section 3 describes the research methodology including framework and hypotheses. Section 4 describes the data analysis and the results. Section 5 discusses managerial implications and section 6 presents a brief conclusion.

2. Literature review and hypotheses

2.1. Knowledge management

Gold, Malhortra, and Segars (2001) examined the issue of effective knowledge management (KM) from the perspective of organizational capabilities. This perspective suggests that a knowledge infrastructure consisting of technology, structure, and culture along with a knowledge process architecture of acquisition, conversion, application, and protection are essential organizational capabilities or “preconditions” for effective knowledge manage-

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ment. The results provide a basis for understanding the competitive predisposition of a firm as it enters a program of KM.

Cui, Griffith, and Cavusgil (2005) also mentioned that KM capabilities consist of three interrelated processes: knowledge acquisition, knowledge conversion, and knowledge application (Gold et al., 2001). Knowledge is not only an important resource for a firm, but also it serves as a basic source of competitive advantage (Gold et al., 2001; Grant, 1996; Jaworski & Kohli, 1993). Therefore, KM capabilities refer to the knowledge management processes in an organization that develop and use knowledge within the firm (Gold et al., 2001).

From Gold et al. (2001) and Cui et al. (2005), we find the completely knowledge management activities form the perspective of organizational capabilities. They argue that there are three main processes: acquisition, conversion, and application. Although there are still many classifications of KM, this study prefer the viewpoints of organizational capabilities, and be in favor of these three dimensions in our study.

2.2. Organizational innovation

The growth innovation literature provides many alternative conceptualizations and models for the interpretation of observed data. An innovation can be a new product or service, a new production process technology, a new structure or administrative system, or a new plan or program pertaining to organizational members. Therefore, organizational innovation, or innovativeness, is typically measured by the rate of the adoption of innovations, although a few studies have used other measures (Damanpour, 1991).

Past research has argued that different types of innovation are necessary for understanding and identifying in organizations. Among numerous typologies of innovation advanced in the relevant literature, three have gained the most attention. Each centers on a pair of types of innovation: administrative and technical, product and process, and radical and incremental. In Wang and Ahmed (2004), they identified organizational innovation through an extensive literature. A final 20-item measurement construct is validated through FAME Database which contains information for companies in the UK and Ireland. FAME contains information on 3.4 million companies, 2.6 million of which are in a detailed format. These five dimensions are tested from component factors and a three-step approach. They are product innovation, market innovation, process innovation, behavioral innovation, strategic innovation. Because this measurement is tested by extensive literature collection, and precisely statistical testing, this study prefers their work to test the similar samples in Taiwan to compare the results.

Very little empirical research has specifically addressed antecedents and consequences of effective knowledge management (Darroch & MaNaughton, 2002). The management of knowledge is frequently identified as an important antecedent of innovation. Effective KM has been presented in the literature as one method for improving innovation and performance. While many studies have reported that KM as antecedents of innovation, none has explicitly examined the relationship between the two constructs. In Darroch (2005), we got the result that KM process would positively affect innovation. Therefore, it is fair to conclude that the relationship between KM and innovation is close related. Thus, this study propose,

H1: Knowledge management will affect organizational innovation positively.

2.3. Organizational learning

In this rapid change economics volatility and uncertainty, many organizations are striving to survive and remain competitive. In or-

der to develop and perform, organizational learning (OL) has been regarded as one of the strategic means of archiving long-term organizational success (Senge, 1990).

One of the traditional ways to measure learning has been to use so-called “learning curves” (Lieberman, 1987; Yelle, 1979) and “experience curves” (Boston Consulting Group, 1968). However, these curves are “incomplete measuring tools” (Garvin, 1993, p. 89). OL is a complex “multidimensional construct . . . encompassing multiple sub processes” (Slater & Narver, 1994, p. 2). So, Pilar, Jose, and Ramon (2005) considered OL to be a latent multidimensional construct including managerial commitment, systems perspective, openness and experimentation, and knowledge transfer and integration.

Facing the current uncertainty environment, business must keep learning to maintain its competitiveness. And, OL will develop well based on well structured knowledge in organizations. In other words, business could have OL capabilities underlying well individual learning (Takeuchi & Nonaka, 1995).

The experimental experience of English enterprises, Garratt (1990) found that a learning organization is the application of organizational development and learning. In order to satisfy consumers’ capricious demands, organization should develop personal or group learning abilities. In order to develop learning abilities, organization should complete well KM process. Without KM, one organization can’t develop personal or group learning abilities (Garratt, 1990; Su, Huang, & Hsieh, 2004).

Pilar et al. (2005) also argued that knowledge and, more specifically, its acquisition or creation, along with its dissemination and integration within the organization, become a key strategic resource to OL. OL is seen as a dynamic process based on knowledge, which implies moving among the different levels of action, going from the individual to the group level, and then to the organizational level and back again (Crossan, Lane, & White, 1999; Huber, 1992).

As a viewpoint of system, Ke and Wei (2006) have discussed and identified knowledge is the antecedent and base of OL. Thus, this study propose,

H2: Knowledge management will affect organizational learning positively.

The firm’s learning capabilities play a crucial role in generating innovations (Sinkula, Baker, & Noordewier, 1997). Innovation implies the generation, acceptance, and implementation of new ideas, processes, products, or services. Organizational innovation is defined as the application of ideas that are new to the firm, whether the newness is embodied in products, processes, and management or marketing systems (Weerawardena, O’Cass, & Julian, 2006). It is obvious that an organizational learning is closely related to organizational innovation.

In Calantone, Cavusgil, and Zhao (2002), we got the conclusion that the higher the level of learning orientation, the greater the degree of firm innovativeness in American R&D managers. In Weerawardena et al. (2006), they concluded the higher the learning the greater the organizational innovation.

What one may see as drivers of the innovation processes within firms is their learning. After empirical test, they indeed verified the relationship between learning and organizational innovation. In other words, learning will influence organizational innovation positively. Therefore, this study propose,

H3: Organizational learning will influence organizational innovation positively.

From literature review, knowledge management will affect organizational learning positively (Garratt, 1990; Su et al., 2004). And organizational learning will influence organizational innovation

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