Performance and IT Implementation Effects of Process Innovation: Does IT Effect Exist?

Chulmo Koo, Inha University, Korea; E-mail: koo@marshall.edu

Dale Shao, Marshall University, USA; E-mail: dshao@marshall.edu

Kichan Nam, Sogang University, Korea; E-mail: knam@sogang.ac.kr

Geunsik Jo, Inha University, Korea; E-mail: gsjo@inha.ac.kr

ABSTRACT

This study is to investigate the process of innovation capability effects on both technological innovation adoption and firm performance directly and examine the intermediate effect of technology implementation process model and its impact on firm performance.

1. INSTRUCTION

Senior managers have paid attention to focus on whether the process of innovation can directly influences firm performance and implements IT properly in organization. The innovation studies have studied the relationship between nature, type, and process of innovation in organization and its innovative adoption and performance effect. However, in spite of a variety of innovation researches have been carried on, this mainstream of innovation has been little research on the process of innovation capability how this method affects technological innovation (Benner and Tushman, 2002; Edmondson et al., 2001), in turn, whether the technological innovation leads firm performance (Garvin, 1995; Harrington and Mathers, 1997; Harry and Schroeder, 2000). The objective of this study is to investigate the process of innovation capability effects on both technological innovation adoption and firm performance directly and examine the intermediate effect of technology implementation process model and its impact on firm performance.

2. LITERATURE REVIEW

The Process of Innovation Capabilities

The process of innovation is occurred through fourth phases: idea generation, problem solving, response and implementation. (1) organization-wide generation of technical, product, process, and administrative kinds of innovative idea toward current and future organization need (Van de ven 1986). Ideas are generated by monitoring activities such as political, social, competitive and cultural elements that influence the needs and preference of its organization. (2) Organization-wide dissemination is the innovation into organizations by pushing and leading over time (Van de ven 1986). Rogers (1985) argues that an innovation mainly occurred through communication channels and messages through near peers, salespersons or advertising. Interfunctional coordination gives a chance to communicate or exchange regarding new idea. (3) Organization-wide responsiveness. Decision process can formulate positive attitude or negative attitude the innovation and lead directly a possible choice of adoption or rejection. (4) Organization-wide application actual usage, which means practically flow the innovation into physically implementation.

A Model of the IT Implementation Process

The IT implementation process is developed by Zmud and Apple (1989) and examined empirically by Cooper and Zmud (1990). The IT implementation process proceeds as follows:

- Initiation process: Search or scan problems or opportunities in organization and suggest IT solution. Initiate technology innovation from the organizational needs and wants.
- Adoption process: Implement IT application by political and rational negotiation entailing organizational support and assistance.
- Adaptation process: Developed, installed, test, and maintained the IT application. Revised organizational procedures and re-developed with the IT application. Then, train employees for the procedures and the IT application.
- Acceptance process: Employees accept the IT application and use it
- Routinization process: The IT application is used as a normal base.
- Infusion process: Organizational process effectiveness is achieved by the IT application usage.

Figure 1. Research model
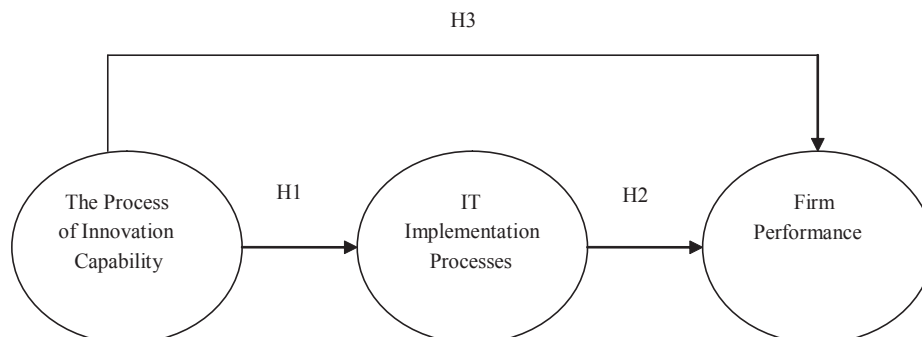
3. RESEARCH MODEL AND HYPOTHSES

Based on the process of innovation theory, we suggest the process of innovation capability model shown in Figure 1.

Process of Innovation Capability and IT implementation Processes

The process of innovation capability helps firms to explore and recognize the significant of external innovation (Iansiti and Clark, 1994), subsequently, lead new technology adoption (Cohen and Levinthal, 1990; Edmondson et al., 2001). Several studies have found the positive relationship between innovation characteristics and implementation processes (Cooper and Zmud, 1990, Premkumar et al., 1994). Therefore, we assume that the process of innovation capability positively influences the IT implementation processes. Thus, we hypothesize as follow:

H1: The process of innovation capability will positively influence the IT implementation processes.

IT Implementation Processes and Firm Performance

Hitt and Brynjolfsson (1994) also found a mixed result of IT investment. Firm sales are positively related to the IT investment, whereas the total shareholder return, ROA, and ROE is not found any significance level. Controversially, Several studies have found that IT investments and firm profitability appear mixed results in IS literatures (Alpar and Kim, 1990; Barua et al., 1995; Bharadwaj et al., 1999, Cron and Sobol, 1983, Weill, 1992). In this study, again, we investigate the relationship between IT implementation processes and firm performance. Hence, we hypothesize as follow:

H2: IT implementation processes will positively influence firm performance.

The Process of Innovation Capability and Firm Performance

Benner and Tushman (2003) stressed the importance of process management and activities of process are positively related to organizational effectiveness in their conceptual paper. Ittner and Larcher (1997) found that process management is positively related to the firm performance in automotive industry. Thus, the process of innovation including organization learning, process management, and market orientation appears to be robust into firm performance. Therefore, we provide the following hypothesis:

H3: The process of innovation capability will positively influence firm performance directly.

4. RESEARCH METHODOLOGY

Sample and Data Collection

We collected data using survey questionnaire for a wide range of firm and industries from South Korea. We took three months for gathering data based on Web survey and paid 1, 500 U.S dollars for the collection. A total of 160 useable surveys were collected, and a response rate is 16 percent.

Analysis

We will analyze this data by structural equations methodology. We will check for the presence of a mediating effect, first, the direct relationship between process of innovation and firm performance, second, the process of innovation and IT implementation process, third, IT implementation process and firm performance. IT implementation will be a mediator between the process of innovation and firm performance.

5. EXPECTED RESULTS

Our study has focused on the process of innovation toward IT implementation and firm performance. We expect the capability of innovation lead IT innovation as well as firm performance. Most importantly, IT implementation by the process of innovation will affect positively firm performance.

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