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Electronic Commerce Strategy for Small and Medium Enterprises: Case Studies of Korean Firms

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Abstract

Business firms are increasingly taking part in online business activities through internet as the size of the e-commerce market is rapidly growing in the recent years. Electronic commerce (EC) activities now become an essential part of the business strategy for survival as well as growth for both large enterprises and small- to medium-sized enterprises (SMEs).

Previous studies on e-commerce mostly focused on the adoption of EC by business firms, and also have been carried out with the data from big enterprises. More often than not, the results obtained from the large business firms are used to provide the guidelines for small to medium-sized enterprises (SMEs). SMEs are, however, different from large business firms in many aspects, and need to be studied on their own.

This paper extends the previous research on EC in two aspects. Firstly, we study the e-commerce issues in the area of implementation in relation to the business firm's performance, beyond the adoption and diffusion of IT technology which has been the research issues in many previous research. Secondly, we focus on small and medium enterprises which comprise a large portion of national economy with significant influence.

1. Introduction

Business firms are increasingly taking part in online business activities through internet as the size of the e-commerce market is rapidly growing in the recent years. Electronic commerce (EC) activities now become an essential part of the business strategy for survival as well as growth for both large enterprises and small- to medium-sized enterprises (SMEs). [1][4][7][8][9][11][12]

There has been a lack of empirical research on e-commerce, and those few previous studies on e-commerce mostly focused on the adoption of EC by business firms [3][5][6][10] such as identifying the factors for adopting e-commerce. Nowadays, it is inevitable to use EC in one way or another and the adoption of information technology is accepted as given for most business firms. It is then a time to decide which type of EC system to adopt and how effectively to use them.

Another drawback of previous research on EC is that they have been carried out with the data from big enterprises. More often than not, the results obtained from the large

business firms are used to provide the guidelines for small to medium-sized enterprises (SMEs) as if they are miniature big enterprises. SMEs are, however, different from large business firms in many aspects, and need to be studied on their own.

This paper extends the previous research on EC in two aspects. Firstly, we study the e-commerce issues in the area of implementation in relation to the business firm's performance, beyond the adoption and diffusion of IT technology which has been the main research issues in many previous research. For this purpose, we construct a theoretical model incorporating environmental factors, implementation variables, moderating variables, and the firm performance. Secondly, we focus on small and medium enterprises which comprise a large portion of national economy with significant influence.

2. Research Methodology

2.1 Research Model and Hypotheses

While previous studies focused on the adoption issues (Figure 1), this paper is to investigate the relationship between the factors and the variables that affect the adoption and implementation of the E-commerce by small and medium enterprises as shown in the research model (Figure 2). Table 1 contains the explanations for the variables, and the hypotheses that will be tested are as follows:

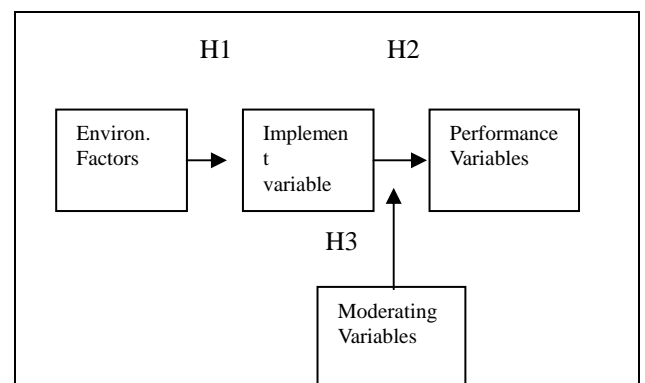


Figure 2. Research model for E-Commerce implementation.

Hypothesis 1: The firm's decision on which type of EC to implement is affected by the environment in which the firm operates.

The industry situation would affect a firm's decision when selecting the type of EC to adopt and implement. For example, those firms in such industries as logistics and

banking industry are more likely to use a Business-to-Consumer (B2C) type of E-Commerce system while manufacturing firms are more likely to adopt a Business-to-Business (B2B) type of EC system.

Hypothesis 2: The performance of a firm is affected by the type of EC which the firm implement.

A firm's performance is generally improved by adoption and implementation of electronic commerce. The magnitude of improvement, however, would be different by the type of EC system implemented by a firm.

Hypothesis 3: The impact of the EC type on the firm's performance would be affected by the moderating variables that show the general condition of the firm's information system such as IS intensity and maturity.

It is suggested that there is a time-lag before any IT system may produce substantial benefits for a firm. [2] Likewise, an EC system would need a lead time before it becomes an effective tool for improving the firm's performance.

Table 1. Explanation of the variables.

Variables	Contents
Environmental Factors	These are the environmental factors that affects a firm's adoption and implementation of the E-commerce such as the size of the and age of the firm, type of industry, competitive pressure, vertical relationship with other firms, environmental uncertainty.
Implementation Variables	These are the possible types of E-commerce that can be implemented by a firm such as: - B2B vs. B2C - Value chain vs. Industry type - Transactional, Strategic, or Informational types
Moderating Variables	These are the general condition of a firm's information system (IS) such as : - IS maturity - IS intensity
Performance Variables	These are the firm's performance in E-commerce area such as: - E-commerce (EC) utilization - EC satisfaction - EC usefulness

2.2 Data Collection and Analysis

For a preliminary test, we circulated questionnaires to 100 small and medium enterprises in Korea and 41 firms have returned the questionnaires. The data collected from the sample of 41 firms are used for analyses. Descriptive statistics are used for this conference paper and we will further use statistical methods such as analysis of variance (ANOVA) and regression to analyze the data for a final

version of the paper.

3. Preliminary Results

3.1 Business Environment and EC Implementation

The effect of the business environment on the firm's decision on EC implementation is measured. Two variables are selected to define the firm's business environment: the degree of competition facing the firm and the degree of information sharing with the suppliers and customers. Two dimensions of the firm's decisions are analyzed: the types of EC and the purpose of EC implementation. The types of EC for firm's selection include Business-to-Business (B2B), Business-to-Customer (B2C), and Business-to-Government (B2G). By the purpose, EC systems are classified into Transaction EC, Information EC, and Strategic EC.

The results from regression analysis show that a firm's decision on EC type selection is affected neither by the degree of competition nor by the degree of information sharing with the suppliers and customers, which are the partners in the firm's supply chain. Regardless of the degree of competition or information sharing, firms adopted fairly equally among the 3 types of EC. Also, the firm's purpose for implementing an EC does not seem to be affected by the business environment.

3.2 EC Implementation and EC Performance

We tested the relationship between the two implementation variables discussed above, EC type and EC purpose, and the EC performance experienced by the firm, utilization, satisfaction and usefulness. The average performance is compared between the groups of firms implementing the same type of EC and with the same purpose.

Among the EC types, those firms adopting B2C expressed the highest level of performance experience in all three measures of utilization, satisfaction and usefulness. The firms' experiences, however, are different between the implementation purposes. Information EC produced the best utilization and satisfaction for the firms, while Strategic EC provided the best usefulness for the firms.

3.3 IS Maturity and EC Performance

The impact of IS maturity, measured by the firm's knowledge and attention for the EC system, on the EC performance is examined. As portrayed in Figure 2, IS maturity is a moderating variable that plays an important role in understanding the relationship between the EC implementation and the firm's performance.

IS maturity is found to have a positive impact on the EC performance. As the level of firm's knowledge and attention for the EC system became higher, all three performance measures of utilization, satisfaction and usefulness increased. A higher level of knowledge and attention for the EC system can be achieved by a sustained investment in information technology by the firm over a long period of time. Therefore, a firm can improve its EC performance by

continued investment in IT system and resource.

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Figures and Tables

Figures and tables are available upon request.