

The mediating effect of organizational innovation in the relationship between eBusiness use and firm performance in SMEs

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Abstract: This paper contributes to existing literature on electronic business (eBusiness) by analyzing factors that influence its organizational use and the effect on innovation and firm performance in Small and Medium-Size Enterprises (SMEs). In addition, the mediating effect of organizational innovation on the relationship between eBusiness and firm performance is analyzed. Based on the Technology-Organization-Environment (TOE) theory and the Knowledge-Based View (KBV), the paper develops an integrative research model to assess those relations using partial least squares (PLS) structural equation modeling on a dataset of 175 Spanish SMEs. Results suggest that eBusiness use emerges from technological and internal organizational resources rather than from external pressure. In addition, results show that eBusiness use contributes positively to firm performance through organizational innovation.

Keywords: eBusiness, innovation, firm performance, SMEs, TOE, KBV, PLS.

1. Introduction

With the technological revolution brought by the Internet, firms are migrating toward electronic business (eBusiness) technologies in order to lower their operating costs, raise productivity and respond rapidly to their customers' and other business partners' requirements [1,2]. As a result, effective adoption and use of eBusiness technologies have become major management concerns [3,4]. However, although firms have extensively adopted eBusiness technologies, research has shown that actual use is an important link to business value [5,6] and such link is sometimes missing especially in SMEs [6]. Moreover, studies in the literature tend to examine eBusiness in large businesses, with very few recent studies analyzing SMEs [7]. Furthermore, much of the existing research focuses on a single view of eBusiness use [7,8], with very few studies examining the use of eBusiness along the whole value chain. Thus, it is important to understand the key factors that facilitate and motivate the use of eBusiness along the value chain within SMEs. To respond to these gaps in the literature, this paper develops a research model, grounded on the Technology-Organization-Environment (TOE) framework and the Knowledge-Based View (KBV), to analyze the key factors that facilitate eBusiness use and its effect on organizational innovation and firm performance within manufacturing SMEs.

2. Theoretical background and hypotheses

TOE framework [9] has been extensively used as the theoretical framework to analyze factors which affect the adoption and use of different eBusiness technologies. This theory considers the context of adoption and implementation of technological innovations as consisting of three factors: (1) the technological context which refers to the characteristics of the technological innovation; (2) the organizational context that describes characteristics

of the organizations; and (3) the environmental context that implies characteristics of the environment in which the adopting organizations operate [9]. Based on the TOE framework, this paper analyzes factors that influence eBusiness use.

KBV is an extension of the Resource-Based View (RBV) that regards knowledge as the most strategic resource of a firm and, therefore, with potential to generate sustained competitive advantage and superior corporate performance [10]. Based on KBV this paper studies the relationship between eBusiness use, organizational innovation and firm performance as well as the mediating effect of organizational innovation in the relationship between eBusiness and firm performance.

2.1 TOE framework and eBusiness

In the actual scenario, Information Technology (IT) integration plays a pivotal role in supporting organizational eBusiness processes. Technology integration refers to a firm ability to effectively transform common technologies into capabilities [4]. Information Systems (IS) integration has been found significant in studies using the TOE framework [5]. The following hypotheses incorporate our expectations:

Hypothesis 1: There is a positive relationship between IS integration and the extent of eBusiness use.

Technology enablers are a necessary but not sufficient condition for employees to collaborate through eBusiness technologies. Besides technology applications, employees need to be willing to collaborate and share knowledge [11]. Thus, building a positive social climate may be crucial to motivate employees to work together through electronic networks. In this sense, previous research has found that commitment-based HR practices are determinant to create an appropriate social climate for collaboration and knowledge sharing [12]. Based on this discussion, the following hypothesis is proposed:

Hypothesis 2: There is a positive relationship between Commitment-based HR practices and the extent of eBusiness use.

Competition intensity has been found to be an important driver of Internet technologies adoption [13,14]. However, research [7,14] has also shown that competition may detract firms from using Internet technologies. Too much competitive pressure leads firms to change rapidly from one technology to another without sufficient time to infuse the technology into the company [14]. This discussion leads to the following hypothesis:

Hypothesis 3: There is a positive relationship between horizontal competition and the extent of eBusiness use.

2.2 E-business, organizational innovation and firm performance

The ability to innovate, especially in dynamic environments, results from the collective ability of employees to share and combine knowledge. Internet technologies can be used to distribute and share individual experience and knowledge throughout the organization [15] and offer the chance of applying knowledge for the creation of new products, services or processes. In sum, the benefits from eBusiness use, which include efficient knowledge sharing as well as working with no distance limitations, are expected to be positively related to innovation. Thus, the following hypothesis are formulated:

Hypothesis 4: There is a positive relationship between the extent of eBusiness use and organizational innovation.

Furthermore, research has found a positive link between Internet technologies and firm performance [3,5,6,16] while other studies have found that knowledge sharing is an antecedent of innovation [17]. The ability to create new knowledge through Web knowledge sharing may enable firms to improve firm performance through innovation. In this sense, the following hypothesis is formulated:

Hypothesis 5: Organizational innovation mediates the relationship between the extent of eBusiness use and firm performance.

3. Methodology

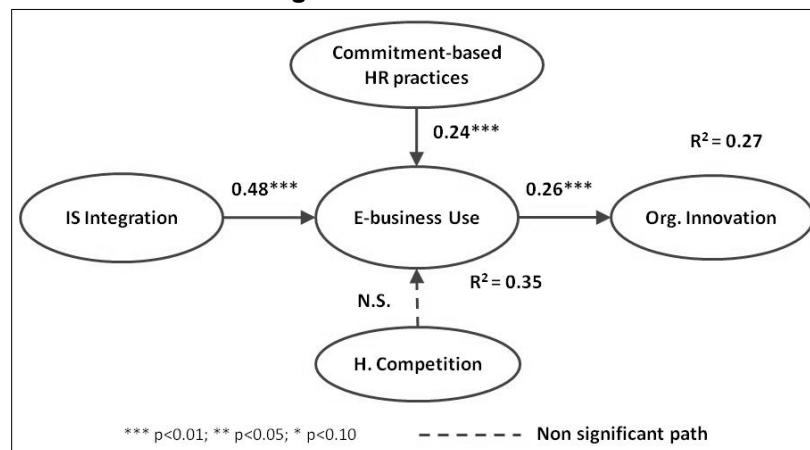
Hypotheses are tested using Partial Least Squares (PLS) structural equation modeling. The population considered in the study was the set of all Spanish enterprises, with at least 15 employees, located in the southeast of the country whose primary business activity is manufacturing. A total of 1291 were identified and contacted for participation. The survey was administered to the CEO of the companies via personal interview. In total, 175 valid questionnaires were obtained, yielding a response rate of 13.55 percent

Measurement items were introduced on the basis of a careful literature review. Scales were measured on a 5-point Likert scale with anchors from strongly disagree (1) to strongly agree (5). Variables were operationalized as multi-item constructs. Before testing the proposed model, we have tested and confirmed the reliability and validity of the measurement model.

4. Results

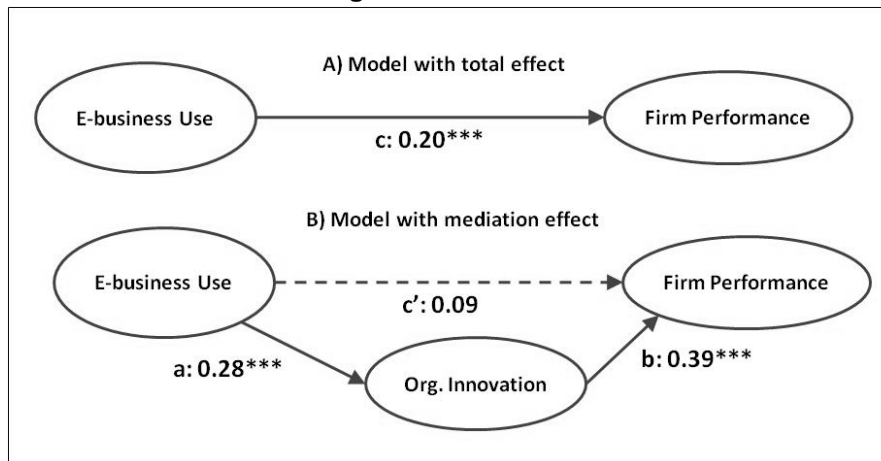
Figure 1 displays the results of hypotheses H1 to H4, showing the path coefficients along with their significance levels. The results of the statistical model offer support for H1, H2, and H4, and fail to corroborate H3.

Figure 1. Results H1-H4



Similarly, figure 2 shows the results for hypothesis H5. We conducted three tests to examine the mediating effect of organizational innovation: the Sobel test, the Aroian test, and the Goodman test. The three tests were significant at the $p < 0.05$ level and, thus, corroborating the mediating effect. Our finding supports a partial mediation effect of organizational innovation between eBusiness use and firm performance since the effect of eBusiness use on firm performance shrinks upon the addition of organizational innovation to the model. Thus, results offer partial support for hypothesis H5.

Figure 2. Results H5



5. Conclusions

This study, grounded in the TOE theory and the Knowledge-Based View (KBV), shed lights on the factors that affect eBusiness use and its effect on organizational innovation and firm performance within manufacturing SMEs. The empirical results reveal that technological, organizational and environmental factors affect differently eBusiness use, being commitment based HR practices the strongest factor in our model, while horizontal competition has no significant effect on eBusiness use. Furthermore, results show that eBusiness use contributes positively to organizational innovation, while organizational innovation mediates the relationship between eBusiness use and firm performance. This finding supports existing literature suggesting positive direct and indirect links between IT and firm performance [3,16].

As any other research, ours suffers from some limitations which can be addressed in future research. First, the key informant method was used for data collection. Future studies could consider research designs that allow data collection from multiple respondents. Second, future research designs could consider other important organizational context factors such as organizational strategy and culture. Three, this research takes a static, cross-sectional picture of contextual factors affecting eBusiness use, which makes it difficult to address the issue of how contextual factors and their importance may change over years. A longitudinal study could enrich the findings. These suggestions should be taken into account in future studies to increase the validity of our findings.

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