The Study of Influential Adaptation of Information Technology between Buyers and Suppliers

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ABSTRACT

This research explores the mechanism by which the buyers and suppliers adopt different information technologies (IT) as they enter into buyer-supplier relationships. It further studies how buyers’ technology choices influence suppliers’ technology adaptation in an Influential Adaptation model. Using empirical data collected from the Society of Manufacturing Engineer’s executives, a confirmatory factor analysis was used to improve measurement rigors including convergent validity, discriminant validity, and reliability. The Planning IT use sub-construct is developed for this study. The structural model results show that suppliers’ adoption of IT use is largely influenced by buyers’ level of IT use; however, there is no clear relationship pattern relating to suppliers’ IT use.

Keywords: Buyer-Supplier Relationship, Influential Adaptation of IT, IT Use, Structural Equation Modeling, Technology Selection

INTRODUCTION

The key to competitive success in most industries has moved beyond the confines of any single organization. In today’s business environment, competitiveness is heavily influenced by the ability of multiple organizations in a supply chain to synchronize and integrate their business activities. In addition to supply chain relationships, technology is an important complement to supply chain success. Information technology (IT) has been used extensively to help organizations to achieve the highest level of performance for both buyers and suppliers. Wal-Mart, for example, has deployed the RetailLink System to integrate its internal system with all of its supplier systems.
in order to share information regarding new product developments and inventory levels. It has built structural and IT infrastructure that help add key supply chain members such as Proctor and Gamble to its supply base located close to Wal-Mart’s headquarters in Bentonville, Arkansas.

Technology choice is not merely a matter of implementing the latest innovation. Rather, managers must have the ability and bear responsibility to choose technology that not only is efficient but protects the environment and meets the need of society. Technology choice is an extremely important decision and one of the major interests for managers of all functions. Firms choose to implement information technology (IT) to connect with customers to recognize individual preferences, tailor products, improve delivery reliability, and control costs (Lee, Padmanabhan, & Whang, 2004). Analytical models are developed to find the fit between users and IT systems (Cayir, Basoglu, & Daim, 2010). IT allows firms to work closely with suppliers to share accurate and timely information related to product designs, engage in process improvements, and improve delivery to meet strategic goals, operational performance targets, and customization objectives (Tracey, Vonderembse, & Lim, 1999; Dean, Tu, & Xue, 2009). For example, big data technologies are extensively studied and implemented for business analytics purposes (Abdelhafiez, 2014).

The IT enabled organizational capabilities literature suggests that researchers should look beyond the direct effects of IT on firm performance, and unpack ways in which IT enables key organizational capabilities (Rai, Patnayakuni, & Seth, 2006; Pavlou & El Savy, 2006; Benitez-Amado, Llorens-Montes, & Perez-Arostegui, 2010; Ghobakhloo, Sabouri, Tang, & Amirizadeh, 2011; Abo Neama, Ismail, Sobh, & Zaki, 2014). Unfortunately, the existing literature provides limited support of the link between buyers’ technology choices and suppliers’ technology selection; thus, opportunity remains to extend scholarly research to delineate this relationship. The intention of this research is to formulate general ideas portraying the mechanism by which buying firms and suppliers adopt information technology. The results will be useful to provide a new platform for practitioners and academicians trying to gain a deeper understanding of downstream firms influence on suppliers’ technology adaptation.

In the next section of the paper, the literature on IT choices will be reviewed. Based on the literature, the conceptual model will be developed and research hypotheses will be discussed. The data is gathered using a questionnaire survey. Rigorous research methodologies will be employed to ensure measurement reliability and validity. The structural equation modeling (SEM) will be used to test hypotheses. The results will be presented along with implications.

LITERATURE REVIEW

IT Choices

Technology choice is not merely a matter of implementing the latest innovation. Rather, managers have the ability and responsibility to choose technology that is not only efficient but also eco-friendly and meets the need of society. Current literature shows great benefits of having the right technology implementation; however, it provides no clear direction what constitutes technology choices. For example, focusing more narrowly on advanced manufacturing technologies (AMT), Boyer (1998) concluded that “Plants do not have a clear strategic impetus for investing in technologies, such as computer-aided design or computer aided engineering”. Tan and Vonderembse (2006) and Yassine, Kim, Roemer, and Holweg (2004) suggested that IT can have a positive influence on mass customization capabilities. These studies bring valuable understanding to specific IT related activities such as information processing, information coordination, and information integration within the specific context of product development (Yassine et al., 2004). Yen & Sheu (2004) investigated the practices of ERP implementation in many aspects...
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