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USING THE WORLD WIDE WEB FOR E-COMMERCE: APPLYING THE TASK-TECHNOLOGY FIT MODEL TO CORPORATE BUYERS

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Abstract

The World Wide Web (WWW) has emerged as a new and a promising means for electronic commerce (EC). This paper presents from the perspective of corporate buyers, an application of the task-technology fit (TTF) model to explain the antecedents and the consequences of WWW usage for EC.

Introduction

From the buyer's perspective, EC is the use of telecommunication networks to identify potential suppliers, select one and execute the transaction (Choudhury et al., 1998). A narrow definition of EC suggests that all three activities be conducted online, whereas a wider one suggests that at least one activity be supported electronically. EC is currently receiving much attention from information systems (IS) researchers and practitioners because it can improve the performance of individuals and organizations.

Traditionally, EC has been supported by complex and expensive interorganizational systems. As a result, only a small fraction of business transactions has been conducted electronically. Recently, the WWW has emerged as a new and promising means for conducting EC at little or no cost, as thousands of businesses have set up Web sites to present their products, sell them and offer their customers service and support. Vendors and electronic intermediaries continue everyday to join the WWW to do business over the Internet. From the corporate buyers' perspective, the WWW has several advantages: It is almost free, it is easy to use, it has multimedia capabilities, it offers a round the clock and ubiquitous accessibility to business partners and more importantly, it can support the entire purchasing process in the contexts of both electronic hierarchies and electronic markets.

Two factors justify the focus on business-to-business transactions from buyers' perspective. First, it is estimated that eighty percent of the transactions conducted over the Internet are business-to-business transactions and that their volume will grow dramatically in the near future. Second, the focus on purchasing quality inputs, on cutting costs and on implementing newer management philosophies such as JIT manufacturing, time-based competition and cooperative relationships with suppliers has led top management to

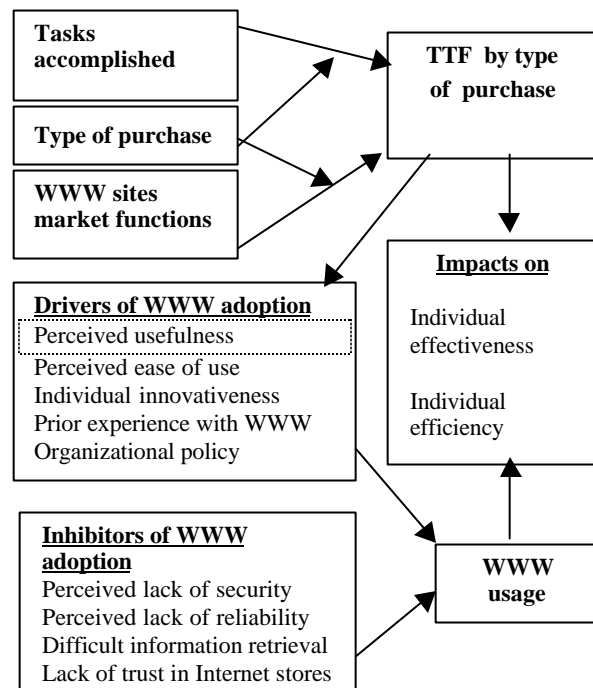
recognize the strategic role of the purchasing function for organizational performance.

To take advantage of the WWW potential benefits, corporate buyers have first to adopt it and use it. It is the intent of this paper to present an advanced version of the task-technology fit (TTF) model to better explain and predict WWW usage and impact on corporate buyers' performance. This model focuses on the tasks accomplished and on the WWW ability to support them. It also focuses on major and specific drivers and inhibitors of WWW usage for EC purposes.

The research Model

The WWW has recently emerged as a promising means for EC, therefore little is known on the antecedents and on the consequences of its usage. To address these issues, we propose a model (see figure 1) adapted from Goodhue and Thompson (1995) to take into account specific issues related to WWW-based EC.

Figure 1 Antecedents and Consequences of WWW Usage (Adapted from Goodhue and Thompson, 1995)



The analysis of fit takes into consideration three dimensions. The first dimension is the type of purchase. Based on Novack and Simco's (1991) purchase typology, this analysis distinguishes straight rebuy (hereafter called routine purchase) from modified rebuy or new buy (hereafter called non routine purchase). The second dimension is the type of activities corporate buyers can perform. These activities are those identified by Choudhury et al. (1998) i.e., the identification of potential suppliers, the selection of one supplier and the execution of the transaction. The third dimension is the type of market functions fulfilled by the WWW. These functions are those identified by Choudhury et al. (1998) i.e., the identification of potential suppliers, the selection of one supplier and the execution of the transaction.

A routine purchase is a straight rebuy that requires little or no additional information to be completed (Novack and Simco, 1991). In this case, the "electronic hierarchy" hypothesis (Malone et al., 1987) will prevail because searching the market for potential suppliers would be too time consuming (Choudhury et al., 1998). Moreover, issues of quality, costs and coordination in the case of routine purchases would be best solved in the context of partnership between buyers and suppliers (Rosenthal et al., 1993). Therefore, corporate buyers can log onto their usual supplier's WWW site to execute the transaction online if the merchant's Web site supports online transactions. Using the WWW for the execution of the transaction (such as online ordering or online bidding) helps the corporate buyer reduce the costs of processing the execution of the transaction by eliminating paperwork, reducing data re-entry and improving information accuracy (Emmelhainz, 1987).

A non routine purchase is a modified rebuy or a new buy that involves some complexity and therefore would require corporate buyers to search information about the input, about its price and about potential suppliers (Novack and Simco, 1991). Corporate buyers can use the WWW to lower the search costs incurred during the process of identification and selection of suppliers (Bakos, 1997; Barua et al., 1997). Using the WWW for the identification and the selection functions can help them take advantage of lower prices because lower search costs for buyers increase competition among suppliers - specially in commodity markets- (Bakos, 1997). However, using the WWW to select a supplier is possible only when pricing information is made available on the WWW site. When a corporate buyer has selected the supplier that satisfies the new need and when the merchant's Web site supports online transactions, the purchase can be executed electronically.

The fit between task and technology alone can not explain the usage of WWW by corporate buyers. However, it will have a positive impact on how corporate buyers perceive the usefulness of the WWW (Goodhue and Thompson, 1995). Drawing upon theories of attitudes and behavior, MIS literature has shown that perceived usefulness, perceived ease of use, personal innovativeness, prior experience with the technology and

the social norm (here labeled organizational policy) are important driver to a new technology usage. One can hypothesize that they would apply in the case of WWW usage. The fit between the task and the WWW should help corporate buyers better evaluate the usefulness of the technology (Goodhue and Thompson, 1995). However, WWW has some limitations that could inhibit its adoption. The major concerns are about the perceived security of transactions, the perceived reliability and the congestion of the networks, the retrieval of information over the WWW and the lack of trust in an Internet store.

The drivers of WWW usage, the perceived reliability and the congestion of the networks and would apply in all cases. The perceived security would be an issue only when transactions are executed through the WWW. The retrieval of information and the lack of trust in an Internet store would be an issue when corporate buyers deal with a non-routine purchase and log onto a WWW site for the first time.

WWW usage can help corporate buyers improve their efficiency and their effectiveness. WWW usage for the identification and the selection functions can help reduce the corporate buyer's search costs and would help individual buyers accomplish their tasks more quickly and/or better select business their suppliers (Bakos, 1997; Barua et al., 1997). WWW usage for the execution of the transaction (i.e., online ordering, electronic request for quotes, online bidding, etc.) helps the corporate buyer reduce the costs of processing the execution of the transaction by eliminating paperwork, reducing data re-entry and improving information accuracy (Emmelhainz, 1987).

Conclusion and Implications

The objective of this paper was to present a framework that (i) predicts and explains the usage of the WWW for EC and (ii) analyzes its impact on corporate buyers' performance. This present paper has several implications for research. First, it presents a model that identifies key independent variables that may influence WWW usage. The framework implies that WWW usage and benefits are not straightforward. Rather, they are essentially contingent on the type of purchase, on the type of function the suppliers' WWW sites allow and on corporate buyers' attitudes and behavior towards the technology.

The present paper has also some implications for practice. First, the proposed framework can help practitioners increase the chances for a successful usage of WT by addressing the issue of its adoption. Second, it gives an important criterion for the evaluation of WT that is based on the extent to which (i) it meets buyer's needs and (ii) help reduce the processing costs incurred during the purchase process. Finally, it can give suppliers an indication on how to use the WWW for better service. An empirical study will test the validity of that framework.

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