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The Role of Organizational and Interorganizational Factors on Planned Adoption of Electronic Commerce

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Abstract

Internet technologies, especially the World Wide Web, are predicted to lead to changes in the transfer of information between trading partners. This paper focuses on identifying organizational and interorganizational factors which will impact the planned adoption of electronic commerce. The interorganizational system will become successful only if those factors which are found to have an impact on the adoption of the innovation are handled effectively by the system. Prior to the planned adoption these factors need to be evaluated and managed to ensure a successful adoption.

Introduction

Interorganizational business transactions have a significant amount of information flow through such vehicles as requests for proposals, estimates of goods and services, purchase orders, sales invoices, shipping notifications, billing information, etc. Electronic data interchange (EDI) has changed how documents are transmitted by moving them from a paper-based one to an electronic one. The Internet technologies, especially the World Wide Web (or the Web), is predicted to lead to additional changes in the transfer of information electronically [Jarvenpaa and Ives, 1996]. Interorganizational systems employing these technological innovations will have a significant impact on the relationships between members of the distribution channels [Johnston & Vitale, 1988 and O'Callaghan, Kaufmann, & Konsynski, 1992].

The general objective of this research is to establish key determinants of planned use of electronic commerce for upstream component specifications and deliveries. The specific objective of this study is to explore the implementation of the Web technology in interorganizational systems through investigating several variables and their relationship to the adoption of the Web technology.

Organizational Factors

Organizations have been found to adopt technologies based purely on their size, because size leads to volume of transmissions, economies of scale, and/or capital accumulation [Williams, 1994]. Although larger organizations have substantial capital and process numerous transactions which justify the adoption of technology, smaller organizations may not be reasonably expected to benefit from such adoption [Williams, 1994].

The organizational structure has been found to be important in the adoption of an innovation. A centralized decision-making structure may facilitate the interorganizational adoption of electronic commerce faster, as the senior managers can make the decision to adopt the innovation despite any resistance from managers lower in the structure. In a decentralized decision-making structure, the adoption process may be slower as managers at a lower level attempt to influence those managers at a higher level. Unfortunately, they do not have the same impact as a higher level manager would in a centralized environment.

The degree to which an innovation is perceived as being better than the idea it supersedes has a direct impact on the likelihood of adoption [O'Callaghan, Kaufmann, & Konsynski, 1992]. Electronic commerce allows for faster transmission of data that is inherent in the business processes of the trading firms. More complete information with fewer instances of inaccuracies will be an additional advantage of electronic commerce. Quick response to customer needs, which is afforded through the adoption of the electronic commerce innovation, builds a better rapport between the parties involved in the transactions. Additional relative advantage concepts include the ability of the innovation to cut costs in operations, provide clerical efficiency, provide timely and accurate decision making information, and aid in service differentiation [Premkumar and Ramamurthy, 1995].

The more an innovation is perceived as consistent with present systems, values, practices, procedures, etc., the more likely it is to be adopted [O'Callaghan, Kaufmann, & Konsynski, 1992]. With electronic commerce, if the system characteristics, such as message formats, closely match existing system characteristics which are currently in place, the more likely the interorganizational system will be adopted. Organizational incompatibility is a major impediment to the adoption as it will necessitate attention to the defining of the system, possible maintenance and upgrade issues, coping with exception situations, possible training and handling user frustration during the learning phase.

Support by top management has been found to lead to adoption of interorganizational systems. Top management needs to be willing to take the risks involved with the adoption and be committed to provide adequate financial and other resources for the development and operation of the system. Additionally, when a champion of the adoption is committed to the project inside the organization, the interorganizational adoption is much more apt to be successful. Finally, the information system's infrastructure needs to have the availability to incorporate the demands of the interorganizational system for the innovation adopted [Premkumar and Ramamurthy, 1995].

Interorganizational Factors

External influences may affect a firm's decision to adopt interorganizational systems. If similar firms have adopted a similar system, pressure may be placed on the firm to adopt. Channel partners who have previously adopted a similar system may place additional pressure on the adopting company. Finally, formal industry structures (such as publications and organizations) whose principals endorse the benefits of the system may affect adoption [O'Callaghan, Kaufmann, & Konsynski, 1992].

The dependence of the trading partners upon each other may affect the adoption of the interorganizational system [Premkumar and Ramamurthy, 1995]. Possibly the adoption could be slower if there is a great deal of dependence, as the partners may not foresee a need to make a change in the current system (EDI) which encourages the interdependence to a new one which breaks down many barriers that prevents other firms from entering the competition. A key factor in the determination of the variable's impact may be the power exercised by one of the trading partners.

Another interorganizational factor may be the transaction climate [Premkumar and Ramamurthy, 1995]. The adoption of the innovation may allow the partners to better align the goals of the innovation with those of the current information system. Through beneficial interaction between the partners to develop the system together, to help each other solve problems which arise, and to share clear documentation of procedures, the transaction climate can be determined to be a positive influence on the adoption of the innovation.

The Research Project

This research project will include structured interviews with personnel from different organizational areas of several firms, focusing on the buying processes. Questions will focus on whether those variables identified above have an impact on the determination to adopt electronic commerce in upstream relationships. Additional factors may be uncovered as the research is conducted, such as the power and

politics of the organization which can have an impact on successful implementation [Markus, 1983], which will need to be addressed through structured interviews. Managers at various levels within each organization will be interviewed to determine if organizational position influences the perception of the impact of variables. During the interview process additional variables may be introduced. If so, additional questions will need to be voiced to those who had been interviewed at an earlier time.

During the gathering of information, one or two suppliers for each organization will also be interviewed to determine if additional variables influence the decision to adopt based on external forces not perceived by the original interview candidates. After the interviews have been conducted, an analysis of the data gathered will include a paring down of influences which lead to planned use of electronic commerce for upstream component specifications and deliveries.

Conclusions and Future Research

Upon completion of the research, the key determinants should be listed in order of importance as determined in the initial interviews. Future research will include developing questionnaires based on these findings which can then be submitted to additional firms to see if the determinants are valid on an industry-wide basis.

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