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# **Impact Of IS Planning And Training On Involvement And Implementation Success Of EDI Systems**

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## **Introduction**

With the proliferation of telecommunication technologies, the traditional internal focus of information systems (IS) has shifted to entities beyond the organization's boundaries, such as customers, suppliers, and even competitors. This type of IS is described as an inter-organizational systems (IOS). A special class of IOS, is the Electronic Data Interchange (EDI) system. According to EDGE: Work-Group Computing Report ( 1994), studies conducted by industry analysts predict worldwide business demand for electronic commerce services such as EDI will more than double in the next four years.

Though the importance of the business strategy is true for any information system development effort, it takes up a special role in the EDI context because of the requirement to integrate other information systems components and of the consequent changes in business processes that are needed to reap the maximum benefit from an EDI system. In addition, the interorganizational nature of the system builds an extra layer of complexity by requiring the incorporation and elicitation of cooperation and involvement of people from various levels within trading partner firms. All of these calls for an effective and elaborate information systems (IS) plan which, in addition to being tightly aligned with the business plan, provides for a mechanism such as elaborate EDI training for effective involvement of people from all participating firms to make EDI implementation a success.

With applications of EDI growing at a surprising rate, there is a great need for systematic research to understand how information systems planning and EDI training relate to involvement in and success of EDI implementation. Additionally, a natural question that needs addressing is as to whether the planning and training relate differently to EDI involvement and implementation for different classes of participants such as supplier and customer-linked firms.

## **Literature Review**

Carter et. al (1987) focused on EDI education and training for successful EDI implementation. O'Callaghan et. al (1992) examined the adoption of EDI by insurance carriers and addressed adoption considerations and postadoption effects. Grover (1993) investigated Customer-based Interorganizational Systems (CIOS) and derived an empirically based model for such a system where a proactive technological orientation and an internal push for the system were identified as the two most significant sets of facilitators. Banerjee and Golhar (1994) examined the positive and negative impact of various factors on the EDI selection decision, and the impact of EDI on the firm's employees. The objectives of their study was to: (1) develop EDI user and nonuser profiles; (2) examine the influence of various factors on a firms' EDI selection decision; (3) evaluate EDI performance; (4) discuss realized benefits of EDI; and (5) examine effects of EDI on human resource requirements. Kannan et. al (1994) investigated the degree to which increasing vertical information integration using EDI technology enhances shipment performance of suppliers in a Just-in-Time environment. Ramamurthy and Premkumar (1995) examined the impact of various innovation and organization factors on EDI diffusion and its relation with organizational outcomes.

This study examines how IS planning and EDI training affect and facilitate involvement in and implementation success of electronic data interchange (EDI) systems. We focus on customer-linked and

supplier-linked firms. In this study, customer-linked firms are those firms that use EDI linkage with a major trading partner: its customer. Supplier-linked firms are those firms that use EDI linkage with a major trading partner: its supplier.

## **Research Model**

Based on information technology research on implementation, related studies on customer oriented information systems, information systems planning, and EDI training as well as innovation studies, a conceptual research model was developed. The model posits that there is relationship between IS planning and EDI training and that these two variables have bearing on involvement in and implementation success of EDI.

The *a priori* research model was applied to all customer-linked firms, customer-linked hub firms, all supplier-linked firms and supplier-linked hub firms to determine the fit of the model and to understand how the model approximated the real world phenomena in each case. We investigated all customer-linked firms and all supplier-linked firms in order to gain insight into what, if any, differences exist between these two categories of companies in terms of how IS planning and EDI training relate to EDI involvement and implementation success. Additionally, we focused on hub firms under each of these broad categories as hub firms are the initiators of EDI development and implementation in a hub and spoke-like architecture.

## **Instrument Development, Pilot Study And Data Collection**

In this paper, we have used LISREL to test our *a priori* conceptual model. A questionnaire instrument was constructed and was reviewed by three IS faculty through an iterative process. The reviewed questionnaire was then tested with three IS executives of local firms. This process conforms with Cronbach's (1971) suggestion of a review process whereby experts in the field familiar with the content universe evaluate versions of the instrument again and again until a form of consensus is reached. Data for this study was obtained from primary sources through a mail survey. A total of 924 questionnaires were mailed out. A total of 280 responses were returned, representing a response rate of 30.3 percent. The target respondents were people in the highest managerial position, who had been involved in the implementation and who were responsible for managing the EDI system. The sample also covers diverse industries in terms of EDI utilization. Companies in industries known to be well established in EDI utilization, such as those in the automotive, grocery, transportation, and chemical industries, comprise about 40 % of the sample. About 10 % of the sample are from telecommunications and electronics industries.

## **Results And Conclusion**

The results indicate that IS planning has a significant relationship with EDI training and plays a significant role in the determination of implementation success, especially in the case of customer-linked hub firms. The analysis points to and corroborates previous research that EDI training is the key determinant of EDI involvement and implementation success regardless of customer or supplier-linked status. Hub firms are the initiators of EDI systems, they are more proactive and more involved in the implementation process. Being initiators they have to develop broad and much more comprehensive IS plans to ensure that system implementation will be a success. They need to carefully consider the overall impact of the system not only on their own firm but also on their trading partners who are also their customers. These firms have to conscientiously orchestrate the overall proliferation of EDI systems in their market segments. Hub companies must involve their trading partners in EDI development and provide them with the appropriate training. Additionally, EDI adoption must not be a unilateral decision on the part of the hub company. Only through such cooperation can the trading partners improve their ties to each other as well as enhance the functionality of their EDI systems. Further, all trading partners must attempt to fully integrate EDI with existing internal applications. This significantly reduces cost paving the way to competitive impact.

## References

- Cooper, R. D., and Zmud, R. W., "Information Technology Implementation Research: A Technological Diffusion Approach", Management Science, Vol 36, No 2, February 1990, pp 123-239.
- Delone, W. H. and McLean, E.R., "Information Systems Success: The Quest for the Dependent Variable", Information Systems Research, 3:1, pp. 61-95.
- Grover, V., Factors Influencing Adoption and Implementation of Customer Based Inter-Organizational Systems, Unpublished Ph.D. Dissertation, University of Pittsburgh, 1990
- Hayduk, L.A., Structural Equation Modeling with LISREL, The Johns Hopkins University Press, Baltimore and London, 1987.
- Ives, B and Olson, M.H., "User Involvement and MIS Success: A Review of Research", Management Science, 1984, pp. 586-603.
- Nelson, R. R., and Cheney, P.H., "Training End Users: An Exploratory Study", MIS Quarterly, December, 1987, pp. 547-559.
- Neo, B.S., "Managing new information technologies: Lessons from Singapore's experience with EDI", Information and Management, 26 (1994), pp. 317-326.
- Reich, B.H. and Benbasat, I., "An Empirical Investigation of Factors Influencing the Success of Customer-oriented Strategic Systems", Information Systems Research, Vol. 1, No. 3, September 1990, pp. 325-347.
- Srinivasan, K., Kekre, S., and Mukhopadhyay, T., "Impact of Electronic Interchange Technology on JIT Shipments", Management Science, Vol. 40, No. 10, October, 1994, pp. 1291-1304.