

Dissertation Abstract

Electronic Data Interchange: An Inventory Perspective of Its Economic Viability and Recommendations for Information Technology Driven Implementation

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Electronic commerce (EC) in its various forms is perceived by many organizations as the way that business will be conducted in the future. Much of the current wave of interest in EC is driven by new, readily available technologies like the Internet and the World Wide Web. The excitement regarding Web Commerce has lead many to believe that EC is relatively new. In reality, EC in the form of Electronic Data Interchange (EDI) has existed for 30 years and accounts for far more business than WC. It is the preferred, and often required, way of doing business with many large organizations such as the U.S. Federal Government, Ford, General Motors, and Wal-Mart.

While EDI has existed for 30 years, it has not experienced the rapid adoption rate that Web Commerce has in the last few years. Currently, less than 10 percent of U.S. businesses and less than 5 percent of world businesses utilize EDI. The adoption rates for other recent information technologies, such as the World Wide Web and e-mail, have been much higher in a much smaller time frame which leads to the question of why has diffusion of EDI occurred so slowly compared to other recent information technologies. According to Kalakota and Whinston (1996), it is not due to technology problems with EDI but instead with its benefits. This is in conflict with Emmelhainz (1990) and Sokol (1995) who point out the tremendous benefits to firms that adopt EDI.

This dissertation researches the reasons for the low EDI adoption rate based on financial benefits. It then develops an economic model that computes the cost savings which result when an EDI system is implemented. Sensitivity analysis is performed to understand the economic mechanisms of EDI. Based on the model developed here, recommendations are made for changing EDI to increase its market penetration. Finally, based on the recommendations an alternative EDI system, JEEDI, is developed. The financial effectiveness of the JEEDI system over existing EDI systems is then demonstrated using the economic model developed here.