



Chapter XIII

Adoption of Electronic Data Interchange in Small- and Medium-Sized Enterprises

Patrick Y.K. Chau, University of Hong Kong, Hong Kong

Vanessa Liu, City University of Hong Kong, Hong Kong

ABSTRACT

As more and more small- and medium-sized enterprises (SME) adopt information technology (IT) in their daily business operations and even in their strategic planning, the positive impacts of IT are no longer a privilege of large organizations. However, there has been little research conducted and published on the adoption of electronic data interchange (EDI) in SME. Most previous studies on EDI in SME used the case study approach, thus limiting the generalizability of their findings. This study adopts the survey approach to conduct a large-scale empirical study of the key factors that influence EDI adoption in the SME context. A research model consisting of seven factors under three categories, namely characteristics of innovation, organizational context and external influence was proposed and tested against data collected from 644 SME using logistic regression analysis. The findings indicate that the critical factors that determine EDI adoption in the SME context are perceived direct benefits, perceived cost, IT knowledge, government incentives and enforcement, and trading partners' influence. Implications for both research and practice are discussed.

INTRODUCTION

Nowadays, information technology (IT) expenditure has become indispensable in organizations. Consequently, an increasing number of small and medium enterprises (SME) are adopting IT, but the adoption rate of SME still lags behind that of large organizations. Slow IT adoption rates of SME may in fact lower their power to compete with large organizations. The slow rates may also result in a failure to maintain competitive advantage in a particular country if SME constitute a large proportion of organizations there (for example, close to 98% of the organizations in Hong Kong are SME). Consequently, the slow adoption rate of IT in SME cannot be ignored.

The rapid development of the telecommunication infrastructure in recent years has provided broad network coverage with high quality and fast transmission. This factor has facilitated the development of inter-organizational systems (IOS). Electronic data interchange, or EDI for short, is one type of IOS that enjoys the above benefits. EDI is a system that transmits electronic information via telecommunication links in a structured format. By establishing links between different parties, EDI provides a speedy, accurate and efficient means to exchange information. Many benefits such as increasing accuracy, improving productivity and reducing transmission time can be obtained from the adoption of EDI. Notwithstanding these attractive benefits of EDI, adoption rates of EDI are slower than expected (Swatman & Swatman, 1991). One possible explanation is the low adoption rate by SME (Iacovou et al., 1995). However, only a few studies related to the adoption of EDI in the context of SME have been conducted (e.g., Iacovou et al., 1995; Raymond & Bergeron, 1996). There appears to be insufficient understanding of EDI adoption in SME. In other words, study of both EDI adoption and the IT adoption behavior of SME is needed. The present study fills this gap by providing an extensive analysis of EDI adoption in SME in Hong Kong.

The major objective of this study is to investigate and determine what factors would influence EDI adoption decisions in SME. As mentioned above, EDI adoption in SME is not as popular as it is in large organizations. Despite the abundance of the attractive benefits of adopting EDI, SME are still reluctant to use the system. SME contribute the gross domestic product (GDP) and employment rates and thus play an important role in the economy. The overall lack of EDI capability of SME is a serious issue and may very well have a negative impact on the economy of a country. Moreover, owing to the networking nature of the technology, the more organizations that adopt EDI, the higher the benefits are to all adopters. The fact that few SME are joining the EDI community significantly affects the benefits of EDI-capable organizations inside the network. Clearly, recognizing the factors that influence EDI adoption will be useful in suggesting strategies to overcome the constraints that inhibit adoption. This line of inquiry benefits both researchers and practitioners. Researchers will benefit from the study's theoretical insights and explore further EDI adoption and diffusion patterns. Practitioners who learn why organizations adopt EDI and what the related factors are that influence the adoption process will make better strategic decisions concerning the adoption of EDI.

PRIOR STUDIES

Many studies on EDI have been conducted that provide useful knowledge and insights. However, most of them focused on large organizations and have identified

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