

Chapter XV

Electronic Data Interchange (EDI) Adoption: A Study of SMEs in Singapore

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ABSTRACT

A review of the literature showed that there appears to be very little research undertaken on Electronic Data Interchange (EDI) adoption by small to medium sized business (SMEs) particularly in Singapore. This study is a preliminary attempt to quantify this area. Using a survey-based methodology, the research examined EDI adoption. Results indicate that Singapore SMEs confirm findings by some researchers that EDI adoption is significantly associated with a firm's annual sales but is not significantly associated with employee size as other studies have shown (Rogers, Daugherty, & Stank, 1992). This study is at odds with previous single-dimension EDI adoption studies indicating a significant relationship between firm size (annual sales) and EDI depth (Williams, Magee, & Suzuki, 1998). Organization size showed a significant relationship with the volume and diversity of EDI use but not with the depth and breadth. The most important reason for Singaporean SMEs to adopt EDI was pressure from their EDI-capable trading partners, treating pressure from their competitors as the least important.

INTRODUCTION

Electronic Data Interchange (EDI) can be defined as the transmission of standard business documents in a standard format between industrial

trading partners (Walton & Marucheck, 1997). Tingle (2000) points out that electronic commerce applications are moving toward EDI by using standards from Extensible Markup Language (XML) applications while EDI is moving toward

e-commerce (EC) by becoming Web-enabled. The Internet platform makes the facilitation of cross-border trade documents commercially more feasible. With the problem of security and interoperability being solved, traders have confidence in Internet-based EDI (Tan, Thio, & Wei, 2003).

In addition, many firms that are pursuing electronic commerce with business partners on the World Wide Web are maintaining existing EDI relationships and using the Web to investigate alternative suppliers or buyers. Others have begun to move away from the traditional Value Added Network (VAN)-mediated, proprietary EDI framework to use Web-based EDI. Many believe they will use both VAN-based EDI and Internet-based EDI as e-commerce tools (Jones & Beatty, 2001). Therefore, EDI still has a place in the e-commerce arena, even after more than 20 years of research and use (ASC X12 Group, 2002).

However, Chong, Lim, and Wong (1998) reported that Singaporean small to medium sized businesses (SMEs) were still in the infant stage of EC but they do not explain why SMEs were still at this stage. Most research on EC inhibitors explored EC's usage for all sizes and types of organizations, or investigated issues at a macro multicountry level (OECD, 1998). Furthermore, these researchers have focused on general EC adoption; they have not identified factors that influenced EDI adoption in particular. There appears to be very little research investigating EDI adoption by SMEs and particularly in Singapore. This study, focusing on EDI adoption by SMEs, is a preliminary attempt to quantify this area.

OVERVIEW OF IT AND E-COMMERCE

Information Technology (IT) has been fundamentally changing the way organizations conduct their businesses and compete in the market place. Using IT, firms can link up with their suppliers

and customers located in any part of the world, and employees can consult with each other on a real time basis. IT can expedite responses to customers' orders and queries, reduce inventory, shorten production cycle time, improve quality, enhance the efficiency of delivery of products and services, and strengthen in-company coordination (Takashi, 2001)

Electronic commerce is the use of inter-networked computers to create and transform business relationships. E-commerce can be defined as including any form of commercial transactions of any kind of goods and services, conducted over computer networks, whether they are open or closed networks (Wong & Lam, 1999). In the knowledge-based economy, IT and e-commerce play a vital role in world-class organizations globally, regionally, and in Singapore.

IT and E-Commerce Globally and Regionally

The business environment has changed in the second half of the 20th Century and IT is a key driver. The pace of change continues to accelerate and corporations around the world will seek to revitalize and reinvent their business in the 21st Century. IT has contributed to GDP growth in three ways. The first is the rapid growth of IT-producing industries; the second is the capital deepening of IT facilities to enhance business efficiency in all industries; the third is GDP growth by the creation of new businesses with the use of IT. The adoption of IT should not be imagined merely as a technology issue, but as the propulsive force of a new social revolution or "destructive" constructor (Takashi, 2001).

E-commerce has changed and is changing the way business is conducted around the world. It was estimated that by the year 2005, the value of worldwide electronic commerce will reach U.S. \$ 8.5 trillion, while the Asia Pacific region will have electronic commerce revenue of U.S. \$ 2.4 trillion (Gartner Group, 2000). Another

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