



Chapter XIII

**Linking Technological
Compatibility and
Operational Capacity
Constraints to
Communication
Technology Adoption**

Elliot Bendoly, Emory University, USA

Frederick Kaefer, Loyola University Chicago, USA

ABSTRACT

Two interacting issues have recently been shown to theoretically impact communication technology adoption: the willingness of business partners to use various communication technologies and a firm's operational capacity to accommodate the product/service demands of these potential partners. This study examines the relationship between these two issues and Electronic Data Interchange (EDI), a long standardized communication technology that has been underutilized by business organizations. Our findings suggest that the technological compatibility concerns of firms considering EDI adoption differ depending on if they are product or service oriented. Capacity limitations are found to significantly moderate these compatibility effects. The implications for managers of electronic commerce technologies are discussed.

INTRODUCTION

Developments in the Internet and new communication technologies for business transactions have been rapid, though widespread adoption has not. Vollmer (2001) writes that one of the most commonly specified reasons for delaying the implementation of such e-business technologies is the lack of standards typically associated with them. At the same time established standards for e-business have been in wide use for over 20 years—those associated with electronic data interchange (EDI). Yet, even though the use of EDI has been shown to have many benefits, only a relatively small percentage of firms have adopted the technology (Turban et al., 2002). This under-utilization of a very beneficial electronic commerce technology indicates that management requires more guidance and support for decision-making when considering whether or not to use EDI technologies to communicate with their business partners.

Recently published research has identified several factors that impact the potential benefits that EDI can have for a given organization (Kaefer & Bendoly, 2000). The conclusion of that research was that the simultaneous consideration of the interacting factors was important to reach the correct decision regarding the adoption of EDI technology. One of the relevant factors to emerge from that study was based on the idea that a variety of fundamentally different EDI and non-EDI options remain available to organizations and their business partners. Another factor stemmed from the belief that operational capacity can directly impact the extent to which modes of communication may effectively be used. That is, the greater the number of business partners the supplier can service, the greater need to accommodate transaction requirements through multiple modes of communication if such requirements vary among these business partners. The purpose of this research is to validate the usefulness of such complex considerations in real-world settings by empirically studying the relationship between technological compatibility constraints and operational capacity constraints on EDI adoption. In doing so, we hope to make a contribution that will support managers faced with these and other technology adoption decisions.

The structure of this paper is as follows. Following a more in depth discussion of related literature, we outline the various hypotheses of interest and the factors critical to their examination. The structure of the empirical study, nature of the data collected and methods used in analysis are provided and the findings of this analysis as it relates to the hypotheses proposed in this research are described. A discussion of implications and suggestions for future work are presented in closing.

BACKGROUND

In a recent survey, distributors and manufacturers reported that they still see EDI as an effective e-commerce tool for sending and receiving transactions, despite the growing popularity of the Internet and other available technologies (Avery 2001).

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