



Electronic commerce adoption: an empirical study of small and medium US businesses

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Abstract

By combining two independent research streams, we examined the determinant factors of strategic value and adoption of electronic commerce as perceived by top managers in small and medium sized enterprises (SME) in the midwest region of the US. We proposed a research model that suggested three factors that have been found to be influential in previous research in the perception of strategic value of other information technologies: operational support, managerial productivity, and strategic decision aids. Inspired by the technology acceptance model and other relevant research in the area, we also identified four factors that influence electronic commerce adoption: organizational readiness, external pressure, perceived ease of use, and perceived usefulness. We hypothesized a causal link between the perceived strategic value of electronic commerce and electronic commerce adoption. To validate the research model, we collected data from top managers/owners of SME by using an Internet survey.

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1. Introduction

Electronic commerce (e-commerce) has been defined in several ways depending on the context and research objective of the author. For this study, we have taken two definitions of e-commerce [44,58] and adapted them in a B2C context: “the process of buying and selling products or services using electronic data transmission via the Internet and the www.” E-commerce provides many benefits to both sellers and buyers; e.g. Napier et al. [43] pointed out that by implementing and using e-commerce sellers can

access narrow markets segments that are widely distributed while buyers can benefit by accessing global markets with larger product availability from a variety of sellers at reduced costs. Improvement in product quality and the creation of new methods of selling existing products are also benefits [13].

The benefits of e-commerce are not only for large firms; small and medium sized enterprises (SMEs) can also benefit from e-commerce [52]. In addition, it can “level the playing field” with big business, provide location and time independence, and ease communication [16,29,38,50]. However, in spite of the many potential advantages of e-commerce, its adoption by SMEs remains limited. For example, a survey conducted by Verizon [20] found that 36% of small businesses established web sites primarily to advertise

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and promote their business, compared to 9% who established one to sell or market online. Similarly, in a survey of 444 SMEs during 2002, Pratt [47] found that many SMEs were reluctant to conduct transactions on line; more than 80% were only using the Internet to communicate (via e-mail) and gather business information. Does this mean that top managers/owners of SMEs do not realize the strategic value e-commerce to their business or does this mean that they encounter significant barriers to implementing it?

Here, we focused our attention on this “understudied” segment of business organizations [19] where research findings on large businesses cannot be generalized; e.g. Welsh and White [66] identified important differences in the financial management of small and large businesses while Ballantine et al. [5] identified unique characteristics of SMEs as lack of business and IT strategy, limited access to capital resources, greater emphasis on using IT and IS to automate rather than informate, influence of major customers, and limited information skills. Similar assertions and findings are given in other papers [14,18,32,40,46,51].

2. Literature review

This study represents a fusion of two independent research streams: the strategic value of certain information technologies to top managers and factors that influence the adoption of IT. The former has been studied by Subramanian and Nosek [60] and others (e.g. [6,11]) while the latter has been investigated by Davis [21] and others (e.g. [1,30,35,65]) primarily through the technology acceptance model (TAM).

2.1. *Perceived strategic value of IT*

Many studies have focused on the relationship between IT investment and firm’s performance in large corporations. For example, Hitt and Brynjolfsson [27] investigated how IT affects productivity, profitability, and consumer surplus. They found that IT increases productivity and consumer surplus but not necessarily business profits. Barua et al. concluded that the productivity gains from IT investments have generally been neutral or negative, while Tallon et al. [62] measured IT payoffs through perceptual measures

and argued that executives rely on their perceptions in determining whether a particular IT investment creates value for the firm.

The majority of the research has proposed a direct causal link between IT investment and firm performance. However, Li and Ye [37] empirically tested the moderating effects of environmental dynamism, firm strategy, and CIO/CEO relationship on the effect of IT investment on firm performance and found that IT investment appears to have a stronger positive impact on financial performance when there are greater environmental changes, the strategy of the company is more proactive, and closer CIO/CEO ties. In a similar line of inquiry, Lee [36] created a multi-level value model that connects the use of IT to a firm’s profit; she pointed out that the effect of incorporating IT should not be considered alone and argued that there are other variables that can influence the relationship. Her IT business value model incorporated other variables, such as origination cost, cycle time, loan officer retention, control over external partners, and marketing effort and she found that IT can reduce cycle time and cost, and change the way business is run. She concluded that “one has to know what other variables to manage and how to manage them in order to make IT investments profitable.”

Few studies have focused on the perceptions of top management regarding the strategic value of e-commerce. Amit and Zott [4] is one of the few that has tried to deal with this and even though they focused on e-business, their results can be generalized to e-commerce [28]. They examined how 59 American and European publicly traded e-business firms create value. Approximately, 80% were SMEs (with less than 500 employees). They developed a value-drivers model which included four factors found to be sources of value creation: transaction efficiency, complementarities, lock-in, and novelty. Some of these factors are also found in Saloner and Spence’s [56] work.

Through an empirical study of 73 firms (some of them SMEs), Subramanian and Nosek identified three factors that were found to create strategic value in IS: operational support, managerial productivity, and strategic decision aid. In each of these factors they utilized different items that were found to have high convergent validity and reliability. Their factors seem to be applicable to e-commerce. Due to a lack of research in identifying factors that create strategic value of

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