



Adopters and non-adopters of e-procurement in Singapore: An empirical study

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ARTICLE INFO

Article history:

Received 31 March 2008

Accepted 18 November 2008

Available online 27 November 2008

Keywords:

E-procurement

Adoption

Adopters

Non-adopters

Singapore

ABSTRACT

This study examines various factors associated with the adoption of e-procurement. A survey questionnaire was administered to collect data from 141 companies in Singapore. Using logistic regression analysis, we found that firm size, top management support, perceived indirect benefits, and business partner influence are positively and significantly associated with the adoption of e-procurement. Further, industry type does not show any relationship with e-procurement adoption. Implications of our results are discussed.

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1. Introduction

Electronic procurement (e-procurement) has, in recent years, been used as a means to significantly reduce costs, as it enables volume purchases, allows wider choice of buyers and suppliers, brings about better quality, improves delivery, reduces paperwork, and lowers administrative costs [1,2]. In its most basic definition, e-procurement is the streamlining of corporate purchasing processes by eliminating traditional paper-based documents such as purchase orders and requisitions forms. Through an e-procurement system, employees can gain direct access to their suppliers' systems to visually confirm technical specifications and to view product pictures, price points, and detailed product descriptions. The system can also create electronic requisitions for approval, route them through the company's approval process and submit purchase orders electronically to contracted suppliers.

Given the potential benefits of the Internet and other web-related technologies to revolutionize the procurement process, numerous companies worldwide have already adopted e-procurement in an attempt to leverage this

technological infrastructure. In an ISM/Forrester Research Report (2001–2003), seven out of ten firms in the US market were reported to have engaged in online procurement of strategic items and critical services (namely those products and services that are closely linked to the firm's production or service delivery). Survey data from the report also show that organizations have experienced between 11% and 12% business growth due to the adoption of e-procurement tools, and 35% of the survey respondents reported cost reductions after adopting e-procurement. As an example, General Electric estimates that the company has saved more than US\$10 billion annually through its e-procurement activities [3]. Several studies have also been conducted to examine how the implementation of e-procurement benefits organizations [4–6].

However, some studies have highlighted the risks involved in e-procurement [7,8] as well as the failure of several electronic markets [9]. There are also some evidences reporting the failures in e-procurement [10]. Consequently, it is important to examine the various factors associated with the adoption of e-procurement in organizations.

In a similar vein, research has examined the adoption of information systems (IS) such as electronic data interchange (EDI) [11–13], enterprise resource planning (ERP) [14,15], e-commerce, and e-business [16–18]. Although several

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studies have identified factors conducive to the adoption of IS, relatively few attempts have been made to examine whether these factors are associated with organizational adoption of web-based e-procurement (rather than proprietary EDI). Consequently, organizations may find it difficult to determine whether the factors associated with the adoption of e-procurement would be similar to those for the adoption of EDI or other information technology (IT) applications. Understanding the key factors associated with e-procurement adoption is important so that firms adopting or intending to adopt e-procurement, vendors of e-procurement software, industry groups, and government bodies could take appropriate actions to reinforce the factors if they intend to promote the adoption of e-procurement.

The main objective of this paper is to examine the adoption of e-procurement in Singapore. Specifically, we examine the following research question:

What are the key factors (technological, organizational, and environmental) associated with the adoption of e-procurement?

In answering the above research question, this study attempts to bridge several gaps in the literature on e-procurement and the adoption of IS. First, by comparing between adopters and non-adopters, we provide a useful reference on organizational characteristics related to the adoption of e-procurement. In other words, we compare the demographic profile and management support between adopters and non-adopters and provide insights on their organizational characteristics. Second, by examining the relative importance of various factors (technological, organizational and environmental) on the adoption of e-procurement, this study advances knowledge on the contingency factors that could potentially affect the adoption of e-procurement in organizations. Third, while various factors have been examined in prior research on topics related to the adoption of EDI and IS innovation, we empirically test the impact of these factors in a new and different context relating to the adoption of e-procurement. Testing in a different context would help us evaluate the consistency of the impact of various factors on the adoption of IS innovation and consequently aid in empirical generalizations [19]. Fourth, most extant studies on e-procurement are confined to Western countries with a serious lack of Asian focus, given the growing importance of the region as a global procurement base. By examining e-procurement in Singapore (a country in Asia), this study fulfils this gap and also provides some insights as to whether findings applicable to western countries are also relevant in this country. Singapore is an ideal place to conduct this study as it has an excellent technological infrastructure and a government in favor of developing IT. Fifth, previous research has provided some evidence that research findings in western countries and Asia could differ. For example, in a study comparing supply chain management between the US and Taiwan, Chow et al. [20] found that while supply chain competencies have positive effects on organizational performance for both countries, the relationship between supply chain practices and concerns may differ. Hence, it is reasonable to expect

that some factors associated with e-procurement may be more salient in Asia compared to other western countries. Without empirical testing, it may be difficult to identify which factors concerning the adoption of e-procurement should receive more management attention in Asia.

This paper is organized as follows. First, a literature review of previous studies pertaining to e-procurement is presented. Second, the proposed research model and hypotheses are presented, followed by the methodology used for data collection, and the analyses of the study results. The paper concludes with a discussion of the key findings, limitations, and implications for researchers and practitioners.

2. Literature review

Traditional purchasing processes typically involve a large amount of information processing and communication, thereby making it conducive for IT usage in procurement activities [21]. Hence, e-procurement is a powerful business tool that can revolutionize the buying function of an organization by streamlining and automating the labor-intensive procurement routines.

Over the last decade, there has been a significant change in how companies view their purchasing function. One element that has led to the change is the arrival of e-commerce via the Internet. Since the Internet came of age in the late 1990s, new concepts of Internet-enabled procurement had begun to take shape [22]. Out of simple necessity, the procurement function in organizations has transformed to one that is gaining strategic management focus to generate cost and service advantages. The key catalyst in its evolution has been IT, and the time taken to complete routine purchasing tasks such as order processing has been greatly reduced, allowing the procurement function to focus on other more value adding activities such as supplier development [23].

Previously, a significant part of supply chain and business-to-business (B2B) purchasing has been conducted via EDI, proprietary purchasing systems and electronic mail. Because of its proprietary nature, EDI is expensive to implement, with stringent syntax requirements which necessitate a custom integration among trading partners. What makes Internet-based procurement different is that there is a standard, secure, and reliable universal communication system. Companies can use this universal and global connectivity to execute business transactions, instead of using a set of expensive and complicated networks, as is the case with EDI. Consequently, due to these technical and usage differences, the determinants of EDI adoption may not necessarily be the same as that of web-based e-procurement.

E-procurement involves the use of the Internet and related technologies to perform purchasing activities, with the most basic form being merely buying products and services over the Internet. Along with its advancement, e-procurement has evolved to mean “automating the whole purchasing process and making order and requisition information available along the entire supply chain” [24, p. 56]. With the use of e-procurement systems, the time required to generate a manual purchase order, place the order, and follow up with vendors is greatly reduced to a few simple

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