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Adopters and non-adopters of business-to-business electronic commerce in Singapore

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Abstract

Although there has been an increase in research studies of business-to-business (B2B) electronic commence (e-commerce), most studies were carried out in the United States or Europe. There are very limited studies on B2B e-commerce in the Asian context. Our effort examined Web-based B2B e-commerce initiatives in Singapore, an island of 650 km^2 in South–East Asia. Data were collected from 108 firms using a mail survey, which showed that 52.8% firms have adopted B2B e-commerce; of these, two-third had a formal plan and/or task force for B2B e-commerce deployment. Customer-related applications were generally more common than supplier-related applications. Problems in B2B e-commerce adoption included the difficulty of measuring benefits, fear of granting suppliers and customers access to corporate systems and insufficient time for staff to develop new skills in e-commerce. Implications of the results are discussed.
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1. Introduction

The term "e-commerce" emerged only a few years ago when businesses started to realize the role of the Internet as a powerful medium for conducting business. Researchers believe that e-commerce on the Internet goes beyond simply buying and selling electronically as it involves a wide variety of pre- and post-sales activities, such as advertising, maintaining business relationships, and enhancing business communication [25,43]. At the core of e-commerce, however, is the use of electronic means to expedite commercial transactions and improve efficiencies in business processes within and across organizations [11]. Based on the parties involved in the business transaction, e-commerce can be divided into:

1. business-to-customer (B2C): the sale of products and services to individuals; and
2. business-to-business (B2B): the buying and selling of products and services among businesses.

In this paper, we focus on B2B e-commerce, which has become an increasingly important topic for both researchers and practitioners. Despite the failure of hundreds of B2B exchanges since the dot-com crash in early 2000, businesses are plunging ahead with B2B

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e-commerce [6]. In fact, eMarketer predicted that global B2B e-commerce will reach US$ 2.77 trillion by 2004 [22].

This paper is an exploratory, descriptive study that attempts to understand the current trends and business practices in B2B e-commerce in Singapore. There are at least three distinct motivations underlying our study. First, while there were numerous market research reports and anecdotal case studies on B2B e-commerce [7], there was very limited knowledge on the managerial mechanisms and business practices that firms were using to conduct B2B e-commerce. Second, there were very limited studies on B2B e-commerce that have been conducted in the Asia-Pacific region. Third, our goal was to examine, report, and contribute to the B2B e-commerce practices in Singapore organizations; those adopting B2B e-commerce was increasing and we wanted to document their experiences to provide guidelines to others in their B2B initiatives.

Here, we define *B2B e-commerce* as the use of the Internet and Web-technologies for conducting interorganizational business transactions. Our focus was on initiatives of traditional brick-and-mortar firms and we sought to understand how they apply Web technologies for conducting inter-organizational business transactions. We did not explicitly focus on independent e-marketplaces or exchanges operated by pure dot-com players. Therefore, our study focused on initiatives by traditional firms in Singapore rather than pure "Internet" dot-com players. Singapore was an ideal location to examine this, as its technology infrastructure was well developed [41] and ideal for B2B e-commerce adoption. Singapore also has one of the highest Internet penetration rate in the world, since more than half the population is "Internet savvy." Further, the Singapore government had been very active in promoting the adoption of e-commerce among government agencies and businesses.

2. Method

2.1. Instrument

Data were collected using a questionnaire-based survey. The survey was prepared using items and questions found in prior literature. It was pretested with six academic experts and iterative refinements were

made. Subsequently, the survey was pretested with eight senior IT managers and consultants who had considerable experience in e-commerce. They were asked to comment on the survey and provide suggestions. Interviews were then carried out to gather their opinions on various issues and problems that firms face in adopting and conducting B2B e-commerce. The list of items was expanded, refined, and iteratively validated based on this feedback. Specifically, we captured the following information in our survey by developing and adapting scales from previous research:

1. extent of B2B adoption;
2. demographic profile;
3. presence of champion for e-commerce efforts;
4. formal plan and task force for e-commerce;
5. years of e-commerce experience;
6. customer- and supplier-related B2B e-commerce activities;
7. expected and realized benefits from B2B e-commerce;
8. management support for B2B e-commerce efforts;
9. risk orientation and cost–benefit perceptions; and
10. problems in deploying B2B e-commerce.

2.2. Data collection

A field survey method was adopted. The sample was derived from the Corporate 1000 directory, which lists the top 1000 companies in Singapore. A total of 600 organizations were randomly selected and survey questionnaires were sent soliciting their participation. Two follow-up mailings were carried out to increase the response rate. Eighteen firms declined participation, citing reasons such as: a policy not to respond to surveys, firm undergoing restructuring, etc. Seven questionnaires were eliminated due to missing responses. A total of 108 usable responses were obtained, giving an overall response rate of 18.8%.

3. Results

Out of 108 valid responses, 45 firms (41.7%) are currently using B2B e-commerce applications while 12 (11.1%) were then in the process of implementing one or more B2B applications (Table 1). Twelve firms (11.1%) indicated no intention, while 39 (36.1%)