

# Determinants of website development: a study of electronic commerce in Singapore

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## Abstract

The website is the portal through which most of the electronic transactions are conducted today. The site's development provides a glimpse of the firm's electronic commerce (E-commerce) strategic objectives. Yet, few studies on E-commerce have related the firm's website to its strategy. This paper examined the relationships between the strategic variables of competitive intensity, existing competencies of the firm, firm size, and strategic commitment on the one hand, and the development of the firm's website, on the other. We developed a model based on existing literature in E-commerce and strategy. The study was conducted with 135 firms from the travel, financial and information technology (IT) sectors in Singapore. Results show that competitive intensity, firm size and existing competencies positively influence the firm's strategic commitment to E-commerce. The commitment in turn affects the website development. We also show that websites can be classified according to their developmental level. © 2001 Elsevier Science B.V. All rights reserved.

*Keywords:* Internet; E-commerce; Website development; Electronic commerce strategy

## 1. Introduction

Although there has been a rush by most firms to establish some presence on the Internet, not all firms seem to pursue electronic commerce (E-commerce) with the same vigor. Some surveys suggest that only about 29% of all sites in the population actively engage in basic transactions or more complex exchanges [16]. A cursory inspection of the World Wide Web (WWW) reveals a wide variety of species. Some firms have chosen to develop their sites to a high level of sophistication and integration whereas others

appear to be content to maintain mere informational sites over the years. Firms' online business models can be significantly different even within the same industry [37]. Some writers have argued that the sophistication and complexity of the firm's website reflects the strategic priorities of the firm since the website is the portal through which most of the electronic transactions are conducted [3]. Several authors have also proposed an evolutionary scheme of site development in recent years.

This paper asks two questions. If the website indeed reflects the firm's E-commerce strategy, how are strategic variables related to the development of a firm's website? Can websites be empirically classified on the basis of their complexity and sophistication? The determinants of the firm choices for E-commerce have not yet been formally identified. Few authors

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have linked the firm's E-commerce objectives and strategies to the firm's website. In this paper, we identify some of the determinants and explore the relationships between these determinants and website development.

A second question pertains to the meaning of website development. Huizingh [26] recently proposed a useful framework for distinguishing between the content and design aspects of websites. His framework, however, does not classify websites on the basis of this framework. A secondary aim of this paper is to examine if websites can be classified according to their developmental level. An understanding of website development and the underlying strategic factors can throw some light on the firm's strategic choice and implementation.

Our review of literature on E-commerce (e.g. [62]), the resource-based perspective on strategy (e.g. [7]), first mover advantages (e.g. [31]), entry timing and complementarities (e.g. [24]), and information technology (IT) adoption (e.g. [28]) suggests a few potential determinants of site development. Specifically, we investigated the association between firm size, website age, firm age, competitive intensity, existing competencies and strategic commitment on the one hand, and the development of the firm's website, on the other. The study was conducted with 135 firms from the travel, financial and IT sectors in Singapore. In the literature review that follows, we first present a brief summary of the relevant practitioner literature on E-commerce to establish our deduction of critical strategic factors. This is followed by an explanation of website development, and the development of a causal model linking the strategic factors to website development.

## 2. Literature review and hypotheses

There is no consensus in the field over the definition of E-commerce. We have adapted a more general usage of E-commerce as any business that is transacted electronically, whether the transaction occurs between two business partners, or a business and its customers [13]. This would allow the inclusion of business-to-business (B–B), business-to-consumer (B–C), and business-to-government (B–G) transactions.

### 2.1. Factors affecting the adoption of E-commerce

From published accounts of E-commerce, three factors seem to consistently influence the development of E-commerce and websites. Broadly, these factors are the competitive environment, strategic commitment of the firm and the required competencies.

In the highly volatile E-commerce environment, an aggressive posture, agility and flexibility are often said to help the firm [67]. Often, competitor moves are either imitated or taken as the benchmark in E-commerce adoption decisions [19,34]. Thus, the intensity of competition seems to be a catalyst for the firm's decision to go online. For instance, Dell's proactive move into E-commerce has put pressure on competitors such as Compaq to follow suit not only in the consumer retail market but also in the corporate client segment. Many firms, however, are still wary of the numerous unresolved issues of E-commerce transactions, such as security, accessibility, and the possible returns on investment [18]. In addition, the rapid evolution in technology has exacerbated the problems associated with adaptation. This could be due to two other related factors: strategic inertia [23,41] and firm competencies [52].

Strategic inertia has been witnessed before in the IT sector [53,60], and it holds for E-commerce too. Ash [5] identified lack of management commitment and proper strategic objectives as two of the reasons for Internet project failures. Moreover, the firm's current product or business strategy may not allow a diversion to E-commerce with any immediacy, since all products do not lend themselves to E-commerce applications [30,59]. The move from conventional channels to the web is also fraught with its own riddles. Managers, for instance, have to evaluate the long run implications and the involved trades-off in replacing conventional channels with a new sales model [21]. In many instances, they will also have to find new reliable partners who are also operating on the web [8,48]. In addition, many firms simply lack the competencies to operate an electronic channel.

Critical competencies required for successful E-commerce implementation have less to do with the technology itself. They lie in the managerial domain, comprising supply chain management, value chain identification, management of logistics alliances, and customer-driven enhancement of business features

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