

Internet Adoption by Small Firms

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INTRODUCTION

Research shows that small firms make significant contributions to their economic environment. With the significant advances being made in Information and Communication Technologies (ICTs), the Internet has become very important to many small firms, enabling them to overcome various inadequacies attributed to factors such as firm size, availability of resources and other technological, operational and managerial shortfalls. Despite the contributions that the adoption of Internet technology can make to the well being of such firms, research shows that many small firms have not yet embraced the technology in ways that will allow them to capitalise on potential benefits. It is therefore important for firms and researchers to understand the factors that enable (or hinder) the adoption of various technologies.

BACKGROUND

The adoption of a technology (in this case, the Internet) can be viewed as an *innovation* for a firm, where that technology represents something that is new to the adopting organization (Damanpour, 1991). Thus, adopting the Internet for e-mail could be seen as an innovation, so too Web browsing and engaging in electronic commerce (e-commerce) to sell or purchase goods. Innovation theory suggests that the adoption of an innovation may have a number of stages. For example, Zaltman, Duncan and Holbek (1973) suggested the adoption of an innovation may take place in two stages: the *initiation* stage, involving knowledge and awareness of the innovation, the formation of attitudes toward the innovation and decision making (i.e., whether to adopt the innovation); this is followed by the *implementation* stage, when the actual implementation of the technology

takes place. Rogers (2003) proposed a similar view of adoption; namely, the *innovation-decision* process, which comprises the stages of *knowledge*, *persuasion*, *decision*, *implementation* and *confirmation*. It is at the *decision* stage that the organization determines whether to accept or reject the innovation.

An adoption can also be examined in terms of the ways in which the technology has been used. This view is especially relevant to Internet adoption, which can include simpler forms such as e-mail adoption and Web searching (without a Web site presence); or a firm's Internet presence, whether the firm has a Web site that provides general information only or information pertinent to customers; or one in which Internet activity is an integral part of the firm's business processes (e.g., Teo & Pian, 2003).

INTERNET ADOPTION

Whether one views the adoption of an innovation in terms of stages or the way in which a technology is used, such adoption is influenced (i.e., enabled or inhibited) by various classes of factors, *innovation (technological) factors* (e.g., perceived benefits, complexity and compatibility, including business strategy), *organizational factors* (e.g., firm size, technological readiness, IT support, management support, financial readiness) and *environmental factors* (e.g., pressure from clients, competitors and trading partners). Similar frameworks have been successfully used to identify factors that influence the adoption of various ICTs by small firms, including electronic data interchange (EDI) (Chwelos, Benbasat & Dexter, 2001; Iacovou, Benbasat & Dexter, 1995), the Internet (Mehrtens, Cragg & Mills, 2001; Poon & Swatman, 1999; Teo & Pian, 2003; Walczuch, Van Braven & Lundgren, 2000),

e-commerce (Pearson & Grandon, 2004; Kendall, Tung, Chua, Ng & Tan, 2001; Raymond, 2001) and other ICTs (Thong, 1999). The following sections discuss these influences in more detail.

Innovation (Technological) Factors

Innovation factors include *perceived benefits* and *compatibility* (McGowan & Madey, 1998). *Perceived benefits* refers to the direct (e.g., operational savings related to internal efficiency of the organization) and indirect benefits (opportunities derived from the impact of the Internet on business processes and relationships) that a technology can provide the firm (Iacovou et al., 1995). Research shows that small firms expect to derive various benefits, such as improved communications, cost savings, time savings and increased market potential from Internet adoption, direct and indirect advertising, and internationalization (Chwelos et al., 2001; Iacovou et al., 1995; Kendall et al., 2001; Mehrrens et al., 2001; Poon & Swatman, 1997; Pollard, 2003; Walczuch et al., 2000).

For example, Mehrrens et al. (2001) identified the *relative advantage* of the Internet as a communication and business tool when compared to traditional methods of communication (such as telephones and faxes) as a key decision factor. The opportunity to present information on a Web site was also seen as an advantage over traditional forms of advertising and retailing. The concept of global sourcing of information also forms part of the relative advantage of the Internet.

On the other hand, concern that expected benefits (such as lower costs or greater efficiency) would not be achieved, mismatch between business strategy and Internet technology, and lack of direct benefits were factors that inhibit adoption among small firms (Chan & Mills, 2002; Cragg & King, 1993; Walczuch et al., 2000).

Compatibility describes the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of a potential adopter (Rogers, 2003). For example, research shows that compatibility with existing systems is positively associated with technology adoption (e.g., Duxbury & Corbett, 1996). Compatibility also includes the extent to which a technology aligns with the firm's needs, including the alignment of a firm's IT strategy

with its business strategy (King & Teo, 1996; Walczuch et al., 2000). For example, research has shown that business strategy directly influences the adoption and integration of IT into the organization (Teo & Pian, 2003), and that without a corporate e-commerce strategy for guidance, firms may adopt non-integrated information systems with conflicting goals (Raghunathan & Madey, 1999).

Teo and Pian (2003) identified alignment with business strategy as the most important factor impacting the level of Internet adoption. For example, Walczuch et al. (2000) found that small firms were reluctant to adopt particular Internet technologies (e.g., Web site) where the firm believed that the technology was not compatible with its business purpose. Similarly, Chan and Mills (2002) found that small brokerages were reluctant to adopt online (Internet-enabled) trading where this was not regarded as compatible with business strategy. Firms that believed Internet-enabled technologies yielded *benefits* and were *compatible* with the firm's values and needs were found to be earlier adopters of the technology, while firms that were not convinced regarding benefits and compatibility aspects of the technology tended to be later adopters, or reject the technology or perceive these factors as key inhibitors of adoption (Chan & Mills, 2002; Walczuch et al., 2000). Similarly, Pearson and Grandon (2004) found that compatibility was a key factor distinguishing adopters from non-adopters.

Organizational Factors

Organizational factors address the resources that an organization has available to support the adoption (McGowan & Madey, 1998). These include firm size, financial and technological resources (including IT support), and top management support. While some studies have focused on individual factors, some recent research has emphasized all of these organizational factors under the title of "dynamic capabilities" (Helfat & Raubitschek, 2000). Dynamic capabilities are firm-level attributes that enable firms to be innovative, for example, by introducing new products and processes and adapting to changing market conditions. Adopting new technologies like the Internet is one example of innovative activity. Firms with superior dynamic capabilities are better able to introduce and assimilate new technologies. Both Daniel and

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