



The Post-Adoption Phase of Broadband in Small Businesses

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ABSTRACT

In spite of the increasing significance of broadband, many small and medium enterprises (SMEs) are unaware of or unappreciative of its benefits. This is potentially a problem for governments, Internet Service Providers and other supply side institutions. The current study empirically verifies applicability of an extended IS continuance model controlling for organizational variables based on the Technology-Organization-Environment framework to examine factors influencing broadband post-adoption behavior of SMEs in Singapore. Strong support for the model has been manifested by the results, providing insight into influential factors. Results of the study suggest that perceived usefulness is a strong predictor of users' continuance intention, followed by satisfaction with broadband usage as a significant but weaker predictor. SMEs in a more competitive business environment and whose key executive possesses greater IT knowledge are more likely to use broadband.

Keywords: Broadband, IS Continuance Model, Post-adoption, Small to Medium Sized Enterprises, Survey

INTRODUCTION

Small and medium-sized enterprises (SMEs) have always played an important role in the economy. For instance, SMEs in the U.S. have created 60% new jobs and half of nonfarm private GDP annually (U.S Small Business Administration Office of Advocacy, 2008). The Internet has revolutionized many businesses and the way society functions. More specifically, broadband¹, being significantly faster than dial-up technologies, serves as a key instrument to bring the Internet to many organizations.

SMEs are poised to benefit from the adoption of broadband. Among the advantages are efficiency gains, streamlining of production and supply processes, and competitive advantages (Levy, Powell, & Worrall, 2005).

Although broadband and other Internet technologies appear to be an attractive option for businesses, the take up by smaller companies has been limited (Fillis & Wagner, 2005). SMEs are unlikely to recognize the benefits of broadband adoption and change current business models (Levy *et al.*, 2005). Morgan, Colebourne, and Brychan (2006) claim that Internet technology adoption is actually declining within smaller companies. Thus, it appears that adoption of

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broadband may present specific challenges for smaller companies but this is not well researched (Bruque & Moyano, 2007; Dardan, Kumar, & Stylianou, 2007; Morgan *et al.*, 2006; Premkumar, 2003). It is then important to examine broadband adoption issues for SMEs.

Moreover, in the Information Systems (IS) literature, there seems to be an emphasis on pre-adoption and adoption of technology (e.g. Benamati & Rajkumar, 2008; Venkatesh *et al.*, 2003). In contrast, limited research addresses issues pertaining to post-adoption behavior. The implementation of IT can truly be considered 'a success' when a significant number of users have moved beyond initial adoption and use the system on a continued basis (Adams, Nelson, & Todd, 1992; Bhattacharjee, 2001). Examining the determinants of IT post-adoption and continuance by users is essential for ensuring productivity payoffs from IT investment. In an attempt to fill the gap in the literature, the current study utilizes the IS continuance model (Bhattacharjee, 2001) to examine the post-adoption behavior of SMEs with regards to broadband usage.

In addition, to shed greater light on the post-adoption environment, this paper will examine organizational aspects that affect the post-adoption behavior of SMEs. Guided by the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990), the study theorizes that firm size, cost, industry sector, competitive pressure and key executive's IT knowledge affect continuance intention. In this regard, the paper extends the IS continuance model to an organizational context where both continuance behavior and organizational factors are pertinent. It is similar to how studies of adoption have extended existing adoption models (e.g. Benamati & Rajkumar, 2008).

The research questions guiding the current study are: (1) What are the factors affecting broadband continuance intention after its initial adoption? (2) Does the Post-Acceptance model of IS continuance hold up in the SME context? Understanding how broadband is adopted and used is important for researchers, practitioners and policy makers, particularly those who intend

to encourage greater broadband and Internet-based technologies adoption and usage, and assess the impact of its adoption.

THEORETICAL BACKGROUND AND RESEARCH MODEL

Characteristics of SMEs

SMEs are firms that have fewer employees, lower annual turnover and assets than large firms such as multi-national companies. SMEs also differ from large organizations in five key areas. First, decision-making is centralized in a reduced number of people (Thong, Hong, & Tam, 2006). Key decisions such as IT adoption are made solely by high authority individuals in the firm, such as the CEO or IS manager. Second, SMEs have constrained resources which limit their application of IT compared to large firms (Teo, 2007). Third, there is limited long-term planning (Premkumar, 2003) as a result of their highly competitive business environment. Fourth, there is greater dependence on external expertise and services for IS (Premkumar, 2003). Fifth, SMEs face larger risks in IS implementations than large firms due to less resources and limited education about IS (Bruque & Moyano, 2007).

Post Adoption and the IS Continuance Model

Previous research has shown that consumer adoption and continuance behavior is influenced by different factors (Karahanna, Straub, & Chervany, 1999; Limayem, Cheung, & Chan, 2003). Many researchers have focused on the adoption decision through 'intent to adopt' (Venkatesh *et al.*, 2003). Although this may be useful, more is needed to understand the actual usage of IT. For instance, actual usage could facilitate IT value, which is lacking in literature (Porter, 2001). Karahanna *et al.* (1999) developed and compared a model of pre-adoption and post-adoption. They found that pre-adoption attitudes were affected by perceived usefulness, ease of use, result demonstrability, visibility,

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