

## Chapter XXVIII

# A Survey on the Adoption and Usage of Broadband Internet

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### **ABSTRACT**

*In spite of the increasing significance of broadband Internet, there are not many research papers explicitly addressing issues pertaining to its adoption and postadoption. Previous research on broadband has mainly focused on the supply side aspect at the national level, ignoring the importance of the demand side which may involve looking more deeply into the use, as well as factors impacting organizational and individual uptake. In an attempt to fill this gap, the current study empirically verifies an integrated theoretical model comprising the theory of planned behavior and the IS continuance model to examine factors influencing broadband Internet adoption and postadoption behavior of some 1,500 organizations in Singapore. Overall, strong support for the integrated model has been manifested by our results, providing insight into influential factors. At the adoption stage, perceived behavioral control has the greatest impact on behavioral intention. Our findings also suggest that, as compared to attitude, subjective norms and perceived behavioral control more significantly affect the broadband Internet adoption decision. At the postadoption stage, intention is no longer the only determinant of broadband Internet continuance; rather, initial usage was found to significantly affect broadband Internet continuance.*

## INTRODUCTION

There has been a recent surge in interest in high-speed, always-on broadband Internet connectivity both in industry and academia (Choudrie & Lee, 2004; Choudrie, Papazafeiropoulou, & Lee, 2003; Dutton, Gillett, McKnight, & Peltu, 2004; Middleton, 1999; Oh, Ahn, & Kim, 2003; Sawyer, Allen, & Lee, 2003; 2002a; 2002b; 2003), as narrowband technologies cannot meet the high bandwidth requirements for emerging applications that combine voice, video, and data. It is widely recognized that the next phase in the evolution of the Internet is broadband, including wireless and mobile Internet which will enable applications and services in relation to economy, education, entertainment, health care, government, patterns of the computer use, social and work interactions, and consumer behaviors (Sawyer et al., 2003).

Economists and policy makers around the world believe widespread broadband deployment can broaden the ICT revolution and improve national productivity resulting in robust economic growth. They consider broadband connectivity as an important means to increase the international competitiveness, development of e-commerce and information economy. Not surprisingly, many industrialized countries are implementing a wide range of national broadband strategies trying to accelerate the deployment of broadband networks (Sawyer et al., 2003). Singapore, South Korea, and Malaysia are among the highly motivated nations to deploy broadband networks to create competitive advantage in attracting foreign direct investments by multinational corporations.

One of the key objectives of IS research is to measure the value of ICT investment and to understand the determinants of this value. Understanding ICT adoption and usage is important because the expected benefits of ICT (e.g., improvements in efficiency, effectiveness, or productivity) cannot be realized if individual users do not accept and use these systems for task performance in the first place. It is evident that true business value from any ICT can only be derived through appropriate use by its target user group (Agarwal, 2000). Information systems (IS) adoption is just the first step toward overall IS success. An IS implementa-

tion can truly be considered as “a success” when a significant number of users have moved beyond initial adoption and used the IS on a continued basis (Bhattacharjee, 2001; Davis & Venkatesh, 2004; Limayem & Hirt, 2003; Lyytinen & Hirschheim, 1987). However, previous research on broadband has mainly focused on the supply side such as pricing, promoting infrastructure, building, and establishing right policies, ignoring the importance of the demand side issues such as looking more deeply into the use and factors impacting organizational and individual uptake (U.S. Department of Commerce, 2002).

This chapter tries to identify the key drivers of broadband adoption and continuance (after initial adoption) in Singapore. The Singaporean government is strongly committed to making Singapore one of the most connected cities in the world and offers aggressive plans to boost broadband penetration. As a developed city, Singapore provides a suitable setting for the purpose of the current research. The findings of the current research will have important policy implications for governments, ISPs, and other supply side institutions responsible for enhancing broadband and provide lessons that may be applicable to similar developments elsewhere. The pioneering experience of Singapore should also be useful in guiding comparable efforts.

## THEORETICAL BACKGROUND

There exists an interesting phenomenon that while ICT is increasingly used in organizations, unsuccessful adoptions of ICT are not uncommon. The importance in understanding the factors determining success or failure of ICT adoption cannot be overemphasized. The research stream examining the adoption and usage of new ICT has evolved into one of the richest and most mature in the IS field for over two decades (Venkatesh, Morris, Davis, & Davis, 2003). In order to study determinants of ICT adoption and usage, intention-based theories such as the theory of reasoned action (TRA), the theory of planned behavior (TPB), and the technology acceptance model (TAM) seem to be

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