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Chapter VI

Determinants of User Acceptance for RFID Ticketing Systems

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Abstract

RFID ticketing systems constitute a particular type of pervasive information systems providing spectators of sports events with a transparent mechanism to validate and renew tickets. This study seeks to investigate the factors that influence user acceptance of RFID ticketing systems. The theoretical background of the study was drawn from the technology acceptance model (TAM) and the innovation diffusion theory (IDT), and enhanced with factors related to privacy and switching cost features. The research model was tested with data gathered through a lab experiment (N=71). The participants perceived the system as useful and easy to use, and expressed the willingness to adopt it should it become commercially available. Moreover, the results of ANOVA tests suggest that the age and education of users influence their perception towards the usefulness of the system and its subsequent use.

Introduction

The advent of mobile and wireless technologies such as Wi-Fi, ZigBee (Geer, 2006), and RFID (Smith & Konsynski, 2003) have inspired new research fields that challenge our existing view of Information Systems (IS) and their use by envisioning new ways of interacting with them away from the boundaries imposed by the desktop computer. The gradual miniaturisation of electronic components, the massive reduction of their production and operation costs, and their ability to communicate wirelessly, contributed to the design and development of systems that are capable of being embedded in objects, places, and even people (Roussos, 2006). Information Systems scholars have named this new phenomenon using such terms as *nomadic computing* (Lyytinen & Yoo, 2002), *ubiquitous computing* (Weiser, 1993), and *pervasive computing* (Saha & Mukherjee, 2003). These terms share the common denominator that Information Technology pervades the physical space, operates in the periphery of humans' world, and supports a variety of applications and services in a context-aware and passive manner. Birnbaum (1997) identified these novel characteristics in the IS discipline by defining a new IS class entitled *pervasive information systems (pervasive IS)*.

Pervasive IS may support both personal and business activities. Kourouthanassis and Giaglis (2006) provide a taxonomy of pervasive IS and their features by identifying four pertinent application types--personal, domestic, corporate, and public. Personal pervasive IS rely on wearable hardware elements to provide a fully functional computing experience on the direct periphery of the user. Typical examples include biomedical monitoring systems (Jafari, Dabiri, Brisk, & Sarrafzadeh, 2005), human detection systems (Smith et al., 2005), and remote plant operation systems (Najjar, Thompson, & Ockerman, 1997). Domestic pervasive IS primarily automate tasks that otherwise require human supervision in the household (e.g., heating and lightning control, monitoring the home inventory, etc.). Typical examples include MIT's Home of the Future initiative (Intille, 2002) and the Aware Home (Kidd et al., 1999). Corporate pervasive IS may support enterprise-wide activities, such as supply chain management (e.g., warehouse management (Prater, Frazier, & Reyes, 2005)), workforce management (e.g., sales force automation (Walters, 2001)) and office support (Churchill, Nelson, & Denoue, 2003; Greenberg & Rounding, 2001), and customer relationship management (Kourouthanassis, 2004). Finally, public pervasive IS may provide interactive environments in public places. Examples include wireless museum guides (Hsin & Liu, 2006) and mobile information devices in hospitals (Xiao, Lasome, Moss, Mackenzie, & Faraj, 2001) to name a few popular applications.

RFID ticketing systems fall under the umbrella of public pervasive IS by providing spectators of sports events with a technology-augmented method for renewing and validating their tickets. The underlying technology is radio-frequency identification