Chapter 4.2

Wireless Handheld Device and LAN Security Issues:
A Case Study

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ABSTRACT

The application of WLAN (Wireless Local Area Network) technology in the healthcare industry has gained increasing attention in recent years. It provides effective and efficient sharing of health information among healthcare professionals in timely treatment of patients (Collaborative Health Informatics Centre, 2000; Whetton, 2005a). However, there is still a concern among healthcare professionals whether health information is shared safely with WLAN technology. The primary aim of this study is to explore factors influencing healthcare professionals' adoption of WLAN security technology. This study was conducted in regional health settings in Queensland, Australia using a focus group discussion and a questionnaire survey in a mixed research methodology. The outcomes indicate that learning support, user technology awareness, readiness of existing system, and social influence, are four important factors in healthcare professionals' adoption of WLAN security technology. The findings suggest that healthcare professionals prefer to be more informed and prepared on knowledge of WLAN security technology before they decide to adopt it in their work environment. Therefore, their awareness of what the technology can do and cannot do for them, and the support they could get in learning to use the technology, play a crucial role. The healthcare professionals are concerned with how readily their existing system could support WLAN security technology and how people important to them would influence their decision in adopting WLAN security technology. Future research should extend the study in three areas. Firstly, future study should examine factors in this study with more regional areas of Australia. Secondly, future research

should also examine the relationship between the factors and the demographic variables. Finally, there is also the possibility of examining the adoption factors with other security technology in healthcare, such as the pairing of WLAN technology and biometric security.

INTRODUCTION

Information and communication technologies (ICT) have been a key driving force in reshaping and improving our quality of life (Whetton, 2005b). ICT is perceived to have the potential of breaking down communication barriers across nations and geographical locations, and bringing about economic growth and prosperity (Burke & Weill, 2005; Whetton). The concept of information and communication technology could be explained as electronic devices that are used in the organization and management of data and information (Burke & Weill, 2005). The term *communication* is included in the concept because information by itself is of little use to people unless it is shared and utilized among people. Communication technologies refer to devices that are used in the exchange of information between two or more sources (Burke & Weill; Khan, 2005; Yang & Zahur, 2005).

Communication technologies are divided into wired and wireless technologies. Wired technologies consist of cables, twisted pairs and fiber optics, whereas wireless technologies consist of microwave, radio waves, infrared, and laser beam (Alesso & Smith, 2002; Burke & Weill, 2005; Jamalipour, 2003). Recently, radio wave technology, in particular, has received a great amount of attention and growth over the local area network deployment (Collins, 2005; Havenstein, 2005; Sciannamea, 2005). The same infrastructure can also be described as a wireless local area network (WLAN). This technology is known to promote mobility and reduce the deployment cost of physical equipment, in comparison to a wireless infrastructure (Aktar, 2005; Alesso & Smith; Kong, Gerla, Prabhu, & Gadh, 2005; Quaddus,

Fink, Gururajan, & Vuori, 2005; Rehman, 2005; Wong, 2005).

Wireless devices have a lot to offer to for-profit and nonprofit organizations. For example, in the healthcare industry, it has the potential to offer many interesting possibilities to improve old legacy systems (Coakes, 2003; Coiera, 2004; Ilyas & Qazi, 2005; Whetton, 2005a; Whetton & Showell, 2005). The idea of sharing health information effectively and efficiently among healthcare professionals would enable timely and effective treatment of patients, better quality of care, error reduction, and improved resource management (Versel, 2008; Wu & Wu, 2007; Gururajan, 2007). However, there are still concerns and issues in the capability of WLAN to secure sensitive health information during the exchange of information (Baker, 2003; Coiera, 2004; Johnson, 2002; Oleshchuk, 2003; Stanford, 2001; Zeeshan, 2003; Hamalainen, Pirenen, & Shelby, 2007).

In a series of workshops with healthcare professionals in Queensland and Western Australia by one of the authors, it was discovered that the major barrier to the uptake of wireless technology appears to be user concerns over various security issues including physical, logical and data security (Gururajan, Rai, & Edward, 2003; Quaddus et al., 2005). This is further supported in studies by Misra, Wickramasinghe, and Goldberg (2003), Maine Medical Center (2002), and Stanford (2001).

Quaddus et al. (2005) conducted interviews in the 2004-2005 period with the Queensland Nursing Council staff, and these clearly demonstrated concerns about the loss of equipment in a wireless domain, the security of data due to unexpected breakage in wireless communication, and the privacy legislation when data are transmitted

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