

## Chapter 4

# Wireless Technology and Clinical Influences in Healthcare Setting: An Indian Case Study

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### ABSTRACT

*This chapter argues that current techniques used in the domain of Information Systems is not adequate for establishing determinants of wireless technology in a clinical setting. Using data collected from India, this chapter conducted a first order regression modeling (factor analysis) and then a second order regression modeling (SEM) to establish the determinants of clinical influences as a result of using wireless technology in healthcare settings. As information systems professionals, the authors conducted a qualitative data collection to understand the domain prior to employing a quantitative technique, thus providing rigour as well as personal relevance. The outcomes of this study has clearly established that there are a number of influences such as the organisational factors in determining the technology acceptance and provides evidence that trivial factors such as perceived ease of use and perceived usefulness are no longer acceptable as the factors of technology acceptance.*

### INTRODUCTION

In the last few years, high expectations, technological developments, and effective and efficient

services have been shown to be prerequisites for improvements in the healthcare domain (Rogoski, 2005; Versel, 2008). Latest trends in the healthcare sector include the design of more flexible and efficient service provider frameworks aimed at providing health services to all stakeholders.

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In order to implement such frameworks, wireless technology is increasingly being used in the healthcare sector. A decrease in the cost of wireless devices and improved awareness of the benefits by using related wireless applications are two of the contributing factors towards the increased use of wireless technology in this sector (R. Gururajan, Hafeez-Baig, & Gururajan, 2008; R. Gururajan, Quaddus, Fink, Vuori, & Soar, 2005). Even though the future of this technology and its usability is promising, its adoption is still in its infancy, which is attributed to the complex and critical nature of the healthcare environment. In the current competitive and complex business environment, technology developments have played a critical role in delivering high quality of care (Reinecke, 2004). However, there is limited knowledge and empirical research on the effectiveness and adoption of wireless technology in general, and in the Indian healthcare system in particular.

Recent research has established that investment in emerging Information Technology (IT), including Information Systems (IS), can lead to productivity gains only if they are accepted and effectively used by respective stakeholders. Consequently, acceptance and utilization of IT/IS in the healthcare environment have been central themes in the information systems literature. Therefore, the fundamental focus of this research is to investigate and examine the influence of internal and external determinants on the usefulness of wireless technology. Further, this research also assesses how its acceptance contributes to the adoption of wireless technology. We believe that this research is the first of its kind attempted in the Indian healthcare domain and it employs empirical evidence to explore the impact of wireless technology and its usefulness in the Indian healthcare system. The Indian healthcare domain is at the forefront in adopting the latest medical technologies and applications, as evidenced by media reports and, as such, it constitutes an excellent context for validating existing adoption theories and extending them.

The main contribution of this research includes the identification of a set of drivers and barriers to using wireless technology in a given Indian healthcare setting. In addition to this, for the first time, a set of clinical factors influencing the adoption of wireless technology has been identified and validated using a second order regression model.

## **LITERATURE REVIEW**

The concept of wireless technology in healthcare is discussed in many studies (Dyer, 2003; Hu, Chau, & Liu Sheng, 2002; Sausser, 2003; Simpson, 2003; Siracuse, Pharm, & Sowell, 2008; Versel, 2008; Wisnicki, 2002; Wu & Wu, 2007; Zhang, 2007). For example, Wisnicki (2002) provides details of how broadband technology, an essential component of wireless technology, can be used in healthcare. While prior studies agree that wireless applications have the potential to address the endemic problems of healthcare, very limited information can be found about the determinants of such applications (Raj Gururajan, Clint Moloney, & Don Kerr, 2005; Raj Gururajan, Toleman, & Soar, 2004). In general, the majority of the works reviewed are descriptive about the benefits of wireless handheld devices in healthcare in general, and medicine in particular. There are only a small number of studies that provide evidence-based information concerning these devices in healthcare (Fischer et al. 2003; Sax et al. 2005) (Hafeez-Baig, 2007). Furthermore, five major studies in the area of healthcare (evaluated by (Spil & Schuring, 2006) testing the Technology Acceptance Model (TAM) produced findings which were inconsistent with the body of knowledge in non-healthcare settings. With 'Perceived Ease of Use' and 'Perceived Usefulness' as the major TAM attributes, these studies found that in the health environment, 'Perceived Usefulness' is an important attribute in technology adoption, while 'Perceived Ease of Use' was found to have no effect (Spil & Schuring, 2006). This is differ-

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