RFID Implementation in Australian Hospitals: Implications for ICT Sector and Health Informatics

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ABSTRACT

Radio Frequency Identification (RFID) is a mobile technology that was explored in hospitals in the last decade for improving process efficiencies. However, in the Australian context, this technology is still regarded as an innovation that health ICT practitioners and hospitals are reluctant to trial. This technology, although non-intrusive, is perceived as disruptive by hospitals. Information Systems professionals in the ICT sector and Health Informatics practitioners in Australia are exploring best practices for implementation. In this research paper, I report on findings from empirical research that was conducted in Australia, based in two large hospitals, to better understand the factors involved in the successful implementation of RFID in Australian hospitals. Findings from this study are presented and endorsed by health ICT practitioners and informatics professionals as current implications for the field.

Keywords: Australia, Health Informatics, Hospitals, Information Communication Technologies (ICT), Radio Frequency Identification (RFID)

1. INTRODUCTION

Information communication technologies (ICTs) have infused the world, in almost every industry sector and many daily lives, over the past two decades. Technological innovations are also being adopted by the complex health care sector, particularly in large hospitals for improving efficiency. The research reported in this paper is situated mainly in the ‘emergency’ areas of hospitals, and related interconnected areas, within two large hospitals of Australia, where a relatively new Radio Frequency Identification technology (RFID) was implemented for process efficiencies.

Australian government is now spending almost $42 billion more on health in 2013 than they did a decade ago (McGowan, Gregory & Atkinson 2013). In Australia, the Medicare system provides free access to Public Hospital services and assists with the costs of a range of medical services. While the Commonwealth government has the role of developing policies, research funding, national and international

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health issues, State and Territory governments manage public health services, deliver public acute care, psychiatric hospital services, community care and public health. Majority of doctors and allied health professionals are self-employed, Private Hospitals are owned by both profit and not-for-profit organisations (Whetton 2005; Whetton & Georgiou 2010). In 2013, The Ministry of Health and Ageing, a Commonwealth government department (Healthgov 2013), started to administer national health policy at the federal level. The Commonwealth government provides about 70 per cent of health sector finance (Duckett 2007; Duckett & Wilcox 2011). The other 30 per cent is made up from funding agencies and not-for-profit organisations that service hospitals.

In recent years, Australian hospitals have introduced medical technologies such as radiological scanners and biological therapeutics, which have increased the costs of health care to average citizens (Novak & Judah 2011; Productivity Commission 2006). Some studies in the latter half of the last decade in Australia (Productivity Commission 2006, Gabbitas & Jeffs 2007; Novak & Judah 2011) indicate considerable variation in hospital costs across Australia, with scope for significant improvements in efficiency. Historically in Australia, the legal environment has restricted technology implementation within hospital environments, particularly innovative technologies (Crompton 2002; Duckett & Wilcox 2011). The rationale ranges from provisions in the Privacy Act (1988) to hospitals’ inability to bear the upfront costs of implementing innovative technologies. While working in a regulated environment of hospitals, technology needs economic viability for long term sustainability (Cavoukian 2008; Productivity Commission 2006).

Conversely, Public and Private Hospitals in Australia traditionally have used different criteria for assessing new technologies (Duckett 2007). This unbalanced approach has encouraged the interplay between legacy systems and innovations (Duckett & Wilcox 2011). While Private Hospitals are burdened with the costs of deploying ever-changing technologies, Public Hospitals (often large hospitals) have to obtain funding and acceptance by government departments (Novak & Judah 2011). As a result, large hospitals are often reluctant to trial an innovation that may not integrate smoothly into their framework.

2. RESEARCH MOTIVATIONS

Technology adoption in hospitals is always challenging. From seminal academic literature that synthesises technology implementation topics from the last few decades (see for example Coustasse, Tomblin & Slack 2013; Yao, Chu & Li 2012), problems impeding technology implementation in hospitals can be broadly classified into technical, economic, social, legal and other minor issues. Conversely, academics have long examined the limiting factors of technologies impeding implementation, and the rate of adoption in hospitals for different technologies. Notably, academics have used technology adoption models, such as the technology acceptance model (TAM), which evaluates user acceptance of computer-based information systems (Davis 1986); or diffusion of innovation (Rogers, 1995, 2003). Economic and legal issues in implementing technologies within hospitals have been debated in relevant forums (Duckett & Wilcox 2011; Taylor, Foster & Fleming 2008; Whetton 2005).

I have taken an alternative view that technology implementation in hospital contexts involves a different challenge. Hospitals are chaotic environments where regular scheduled processes undergo rapid changes in case of emergencies. There is a scheduled set of regular processes, such as operations or outpatient treatment during stipulated hours. The pharmacy area may supply medication as required during scheduled procedures. However, one area that distinguishes this environment from others is the emergency department (ED), where processes are often frenzied. ED also disrupts other scheduled workflows and human resources (staff) in the hospital. For example, in case of an emergency it is not uncommon to
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