Chapter 6

Radio Frequency Identification Technology in an Australian Regional Hospital:
An Innovation Translation Experience with ANT

Chandana Unnithan
Victoria University, Australia

Arthur Tatnall
Victoria University, Australia

ABSTRACT

Australian hospitals had begun exploring Radio Frequency Identification, a wireless automatic identification and data capture technology for improving the quality of their services towards the end of 2000s. After many an unsuccessful pilots, a breakthrough for large hospitals came in 2010, with a key learning rendered by a large regional hospital that not only experimented with the technology, but also have made it all pervasive in their operations. In this chapter, we present the case study, through an innovation translation perspective, focusing on the socio-technical factors captured through elements of Actor-Network Theory.

INTRODUCTION

Healthcare has become a large part of expenditure in Australia, as in the case with many economies (Wamba, Anand & Carter, 2013). Using the Organisation for Economic Co-operation and Development's (OECD) methods, in 2011–12, Australia's health expenditure to GDP ratio was marginally above average compared with other OECD countries (AIHW, 2014). In 2010, the overall private and public spending on health was estimated at about 10% of the country's GDP or approximately about A$ 65,000 million in annual spending (GS1-Australia, 2010). In 2011-12, A$ 140.2 billion was spent on health, which is

approximately 1.7 times higher in real terms (inflation adjusted) than in 2001-02 or expenditure has increased from A$ 4,276 per person in 2001-02 to A$ 6,230 in 2011-12 (AIHW, 2014).

Amongst the main stakeholders in Healthcare are large hospitals, which are trying to influence policies and governments to leverage the effective use of Information Communication Technologies (ICTs) to enable better quality of service (Payton et al, 2011). In the last decade, radio frequency identification (RFID) technology has captured the interest of hospitals worldwide (Ngai et al., 2009, Oztekin et al, 2010). Considered as a non-disruptive, open innovation, it is a technology that enables wireless automatic identification and data capture (Fosso Wamba et al., 2008, Foss Wamba, 2011).

RFID offers an improved means of reducing errors in patient care, such as adverse drug effects, allergies, patient–medication mismatches and medication dosage errors (Tu et al., 2009). Conversely, it promotes better management of critical healthcare assets (e.g., infusion pumps, wheelchairs) by enabling real-time identification, tracking and tracing (Bendavid et al., 2010). The capabilities of RFID technology have resulted in its potential to create value in health care (Dominguez-Péry et al., 2011). For example, (Najera et al., 2011) purports that the technology can enable healthcare stakeholders to monitor all steps related to the patient blood collection and transfusion process. This may include the identification of blood bags at the collection point, the tracking and tracing of products from the collection point to the hospital, and blood transfusion to a dedicated patient.

The value of RFID in the market rose from US$ 5.63 billion in 2010, to almost US$ 5.84 billion in 2011 (Das and Harrop, 2011). According to Pleshek (2011), there were approximately 150 million RFID tags in use within healthcare worldwide. It is no doubt, evident that the technology has high operational efficiencies and strategic potential in healthcare for improvement of quality services. A research conducted by Fosso Wamba et al (2013) found that the highest number of published research focuses on the technology issues of implementing RFID in hospitals (39.27%) . The research also found that organisational issues, focused on finance, was 37.24%, followed by data management, security and privacy issues that constituted 23.48%. These results are indicative of the fact that the focus is still remaining on the technical issues regarding RFID implementation, even in the year 2013.

Technical issues in implementing RFID had remained the main focus in many Australian hospitals (Unnithan and Tatnall, 2014). While adoption of this mobile technology has been investigated over a decade in hospitals (Coustasse et al., 2013), the focus is on using economic models (Yao, Chu and Li (2012) that try to explore the cost-benefits of the technology in relation to its rate of adoption. Conversely, RFID had only begun to be explored in Australian hospitals (Chowdhry & Khosla, 2007) since 2006, typically with vendor driven implementations that suited the cost-benefit analysis of hospitals (Chen, Wu, Su, & Yang, 2008; Unnithan and Tatnall, 2014).

In this chapter, we present the experience of a regional hospital in Australia, which focused on visualizing socio-technical factors that seem germane for the effective translation of RFID into hospital operations, through elements of Actor-Network Theory (ANT). This hospital has successfully jump-started the innovation translation of RFID in the regional public hospitals, while many pilots had been rendered unsuccessful.

HEALTHCARE CONTEXT IN AUSTRALIA

Prior to 2001, Australian health context was slow in adopting technologies in hospitals (Whetton, 2005; Duckett, 2007). As technologies had evolved over decades with patchy funding from government, hos-

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/radio-frequency-identification-technology-in-an-australian-regional-hospital/137580

Related Content

Overview and Analysis of Electronic Health Record Standards
Spyros Kitsiou (2010). *Health Information Systems: Concepts, Methodologies, Tools, and Applications (pp. 374-392).*
www.irma-international.org/chapter/overview-analysis-electronic-health-record/49875

Innovating Healthcare through Remote Monitoring: Effects and Business Model
Faustina Acheampongand Vivian Vimarlund (2018). *Health Care Delivery and Clinical Science: Concepts, Methodologies, Tools, and Applications (pp. 247-268).*
www.irma-international.org/chapter/innovating-healthcare-through-remote-monitoring/192675

A SOA Based System Development Methodology for Cloud Computing Environment: Using uHealthcare as Practice
Weider D. Yu, Ashwini Sathyanarayana Adiga, Srivarsha Raoand Miby Jose Panakkel (2012). *International Journal of E-Health and Medical Communications (pp. 42-63).*
www.irma-international.org/article/soa-based-system-development-methodology/73706

Big Data Classification and Internet of Things in Healthcare
Amine Rghioui, Jaime Lloretand Abedlmajid Oumnad (2020). *International Journal of E-Health and Medical Communications (pp. 20-37).*
www.irma-international.org/article/big-data-classification-and-internet-of-things-in-healthcare/246076

Blockchain in Smart Healthcare Systems: Hope or Despair?
Shilpa Mahajan (2022). *Prospects of Blockchain Technology for Accelerating Scientific Advancement in Healthcare (pp. 1-20).*
www.irma-international.org/chapter/blockchain-in-smart-healthcare-systems/298563