

Chapter 22

Adoption of Mobile Technology by Public Healthcare Doctors: A Developing Country Perspective

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ABSTRACT

Doctors working in the South African public healthcare sector are faced with the unique resource constraints prevalent in a developing country. Mobile information and communication technologies (ICTs) hold the promise of improving the quality of healthcare, but this potential can only be unlocked if individuals decide to adopt the new technologies. Understanding the factors that influence the doctor's adoption of a technology is therefore vital. This chapter reports on an investigation into the factors influencing the adoption of mobile devices by doctors in the public healthcare sector in the Western Cape, South Africa. The research methodology was shaped by qualitative enquiry and described through thematic analysis. The authors confirmed the key adoption factors identified in prior research: job relevance, usefulness, perceived user resources and device characteristics. However, some additional adoption factors were uncovered in this research, namely patient influence, support structures from national government and hospital administration, and unease in respect of malpractice legal suits.

BACKGROUND

Healthcare in South Africa

Healthcare is a key component of South African society, socially and economically (Chiasson *et al* 2004). Total healthcare spending in South Africa is 8.7% of GDP which is substantially above the norm

of 5% recommended for developing countries by the WHO (Chetty, 2007). The *public* healthcare budget alone totalled R47.8 billion (approximately US\$ 6.7 billion) in 2006, representing 4.27% of GDP. This represents a substantial growth compared with 1995 when it stood at only 1.84% of GDP. However, despite these efforts by the new democratically elected government, huge inequalities remain. The budget of the private sector, which services less than 8 million people, exceeds that of the public sector servicing

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38 million (Chetty, 2007). Much of this remains a legacy of the pre-1994 apartheid era inequalities institutionalised through labour laws and highly unequal provision of services for different racial groups (Department of Health, 2004). There is still a movement of skilled resources from areas of poverty and low socio-economic development to more wealthy areas. Doctors who have recently qualified and completed their compulsory two years working for the public healthcare sector are either moving into private practice or leaving South Africa to work in other countries (Padarath *et al* 2003). This results in a scarcity of skilled clinical resources in the public healthcare sector.

Although doctors working in the public healthcare sector are highly skilled, their available time is preciously sliced to try and diagnose and care for as many patients in a day as is possible. 80 to 85% of the South African population has access to public healthcare facilities only (Chetty, 2007). A doctor in the public day hospital environment is expected to diagnose, treat and manage about 40 patients during an 8-hour shift. This means that the doctor spends an average of only 12 minutes with each patient. Doctors in public healthcare also have to work extremely long shifts of sometimes more than 30 hours. Due to this extreme pressure, doctors can easily make an incorrect diagnosis or prescribe the incorrect patient management routine. Patients attending these public hospitals have to wait in long queues to be seen by the doctor. When they finally see the doctor, the visit is rushed. A full examination of the patient is not always possible and this could result in inadequate care of the patient.

ICTs offer tremendous potential in supporting the public healthcare function in the South African society. Although administrative healthcare information systems have been implemented, the shift to systems that support the clinical work performed by healthcare professionals directly has been slow to take off (Andersen 1997). Better ICT support would, in turn, enable doctors to facilitate the provision of high quality, better

informed and cost-effective public healthcare to all the citizens of South Africa.

Mobile Technologies in Healthcare

Mobile technologies can bring immense benefits to the healthcare environment (Varshney 2006), because it is so information intensive (Li, Chang, Hung & Fu 2005). Doctors do most of their work at the point of care, which is the patient. This means that they move around between wards, outpatient clinics, diagnostic and therapeutic departments and operating theatres. This movement, together with the fact that most South African public hospitals usually only have one central computer terminal per ward, makes it extremely difficult to service all the needs of the doctor. The use of ICTs in support of this point of care activity of the doctor is what is relevant to this research. Mobile device technologies are quite suitable for supporting the doctor at the point of care. They are small, lightweight, can be carried around with the doctor and usually come with some form of networking protocol built into the device (Porn & Patrick 2002). Mobile devices are also becoming more affordable and offer more processing power and storage capabilities (Varshney 2006). Mobile technology ranges from cellular telephones, pagers and PDAs, to very sophisticated tablet computers. Key benefits, as summarized from a large number of studies, include a reduction in medical errors, time savings, better quality care and higher productivity (Lu, Xiao, Sears & Jacko 2005).

A number of studies have looked at adoption of mobile computing devices. An excellent, systematic analysis of surveys of healthcare providers' PDA adoption is given by Garritty & Emam (2006) who found adoption rates in developed countries to vary between 45% and 85%. For instance, in a longitudinal study of mobile technology 33% of Canadian doctors reported use of a mobile device in their clinical practice in 2003, up from 19% in 2001 and 28% 2002 (Martin 2003). By contrast, a similar study at selected healthcare institutions

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