Chapter 7.18
An Evidence-Based Health Information System Theory

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ABSTRACT

The aim of this chapter is to bridge the gap between what is known about IS theory and the specifics characteristics of health to develop an evidence based health information systems theory. An initial background first sets the significance for the need to have a solid information systems theory in health and then argues that neither the information systems literature nor the health sector have been able to provide any satisfactory pathway to facilitate the adoption of information systems in health settings. The chapter further continues by reviewing the common pathway to develop information systems theory and the knowledge foundations used in the process, and then proceeds to highlight how this theory was developed. Subsequently, the building blocks (constructs, premises, supporting evidence and conclusions) that underpins the constructs and a brief explanation of the relationships between them is included. A discussion and limitation section is then followed by a conclusion.

BACKGROUND

The importance of having information systems theories that will be conducive to the adoption of new technologies in health settings cannot be underestimated. To place it in context, the health-care sector is not only one of the world's most knowledge-intensive industries but also one of the largest employers; for example the National Health Service (NHS) in the UK is the largest employer of staff in Europe and third largest in the world (Herzlinger & Ricci, 2002; Leitch, 2008).

More important is the worldwide, current and urgent need to improve the uptake of technology in health settings to improve clinical care and associated costs through the use of technology, as clearly defined in the literature (AIHW, 2006; Department of Health and Aged Care, 2003; Grol et al, 1998; Gross et al., 2003; HealthConnectSA, 2007; Nader, 2007; Schuster et al., 2003; WHO, 2008). This is currently occurring despite mounting evidence suggesting positive clinical care improve-

ments due to the introduction health information systems (Celler et al., 2003; WHO, 2008).

This current failure to adopt technology in health settings appears to point to gaps in the understanding of technology implementation and adoption in the health sector.

The current literature on health information systems implementation and adoption suggests that perhaps the health sector suffers from a fixation with 'technology driven implementations' to the detriment of other factors (Aarts et al., 2004; Bates, 2005; Chaudhry et al., 2006; Humber, 2004). That is, the focus of change management strategies to implement these technologies in health settings is seen almost exclusively as a technical (computer/technology system) issue. Moreover, most information technology applications have centered on administrative and financial transactions rather than on the core business of health: the delivery of clinical care (Audet et al., 2004). The concept of clinical care is the central principle associated with the field of health and known these days as Evidence-Based Medicine (EBM). The most important aspect associated with Evidence-Based Medicine is the measure of clinical improvement on patients or a term also known as health outcomes (Heckley, 2004).

In summary, the health sector appears to lack solid theoretical knowledge in organizational change, workflow redesign, human factors, and project management issues involved with realizing benefits from health information technology to tackle the clinical and financial burdens in current health systems (Chaudhry et al., 2006). Moreover, and central to this paper, the health specific literature on information systems implementations appears to fail to acknowledge the role of Evidence-Based Medicine (and health outcomes specifically) in the implementation process.

Perhaps, the solution is to consult the information systems literature in search for theoretical foundations that would support the adoption of technology in health settings.

The Information Systems (IS) literature on the other hand, mainly focused on the business sector and having left much of the 'technology-driven' approaches failures behind, has long benefited from a much more humanistic and contextualized appreciation of non-technological factors (i.e. Human, environmental, Social, etc) to improve adoption; However, in spite of the availability of more than fifty information systems theories and many others form other fields to inform practitioners, implementation failures in health settings still continue unabated to this day (HealthConnectSA, 2007; Schneberger & Wade, 2006). It would appear that even the existing broad knowledge in the IS sector is still not enough to affect effective technological uptake in health settings. What appears to be missing is 'specific' knowledge that would support the adoption of technology in health settings.

As a conclusion, the preceding and very brief literature review suggests that neither the health nor the information systems sectors have succeeded in developing solid theoretical knowledge that would lead to the successful implementation and adoption of information systems in health settings.

This chapter will advance some theoretical constructs regarding observed phenomena that might help bridge the gap between existing knowledge and new knowledge gained in the field and through relevant information systems research in health settings by the author. This examination leads the author to believe that perhaps there is a misalignment in the understanding of current information systems theories and health constructs; more specifically, that existing theories do not specifically focus on the 'core businesses of health' (Evidence-Based Medicine).

It must be also noted that this paper is not meant produce a definitive full-fledged theory, but contribute to the beginning of a theoretical discourse in information systems for health specific settings. Although initially built from