How Using ANT Can Assist to Understand Key Issues for Successful e-Health Solutions

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ABSTRACT

Globally in healthcare, the focus is on designing and implementing national e-health solutions in an attempt to address key challenges that are plaguing healthcare delivery. However, despite the initial euphoria and notwithstanding the significant investments made, to date, many of these e-health solutions have yet to prove their success or have been complete failures. This paper presents the findings from an exploratory study that examined e-health initiatives in five countries Australia, China, Germany, UK and US to understand why these e-health solutions have not as yet delivered the promised results. The paper proffers Actor-Network Theory (ANT) as an appropriately rich theoretical lens that can be used to assist in the understanding of key issues for successful e-health solutions.

Keywords: Actor-Network Theory (ANT), E-Health, Health Information Technology, Healthcare, National

INTRODUCTION

Most if not all countries today are investing heavily in health information technology in general and e-health in particular (Eysenbach, 2001; OECD, 2012; Wickramasinghe & Schaffer, 2010). One of the key reasons for this is due to immense pressures currently facing healthcare delivery caused by a confluence of factors including changing patient demographics, financial implications, work force shortages, advancements in medical technologies and the need to provide efficient and effective patient centric healthcare delivery (Muhammad, Teoh, & Wickramasinghe, 2012; Wickramasinghe & Schaffer, 2010). While logically at least it appears e-health should be part of any healthcare delivery solution, the benefits from such investments are yet to be realized in practice and too often e-health solution implementations have to be abandoned after large investments have been made.

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Data and information permeate all health-care activities (Lubitz & Wickramasinghe, 2006; Wickramasinghe & Schaffer, 2010). Moreover, healthcare processes are complex and more often than not require the extraction of multi-spectral data and information to make unstructured and intricate decisions in compressed time periods. Medical errors that can have detrimental consequences can result when relevant data and pertinent information cannot be easily accessed and integrated (ibid). Hence, a key underlying assumption in support of the introduction of IT (information technology) generally, and e-health in particular, into healthcare service delivery is that it will be possible to realize significant improvements in health outcomes and quality of care (Mort, Finch, & May, 2009; Muhammad et al., 2012). This can be achieved by improving the ways of accessing and sharing data and information across healthcare systems and moving away from pen, paper and human memory towards a new environment, where key stakeholders (for example: service providers, consumers, government agencies and healthcare managers) can reliably and securely share information electronically. IT can also help with cost savings, improve patient involvement and produce useable secondary data for further research and training (Black et al., 2011; Muhammad et al., 2012). Such a transformation though is not a straightforward proposition. This is particularly so in healthcare given the complex and multifaceted environment of healthcare service delivery not to mention the inherent complexities of healthcare operations (Ammenwerth, Iller, & Mahler, 2006; Catwell & Sheikh, 2009; Cresswell, Worth, & Sheikh, 2010; Cresswell, Worth, & Sheikh, 2011; Lorenzi et al., 2009; Lubitz & Wickramasinghe, 2006). Furthermore, it is because of the complex and dynamic nature of healthcare that makes the uses of technology mediated collaborations in healthcare both unique and challenging.

As noted by Wickramasinghe and Schaffer (Wickramasinghe & Schaffer, 2010), among others, because kinds of interventions are intricate and far from simple a critical success factor then becomes the need to have robust and rich theoretically informed techniques (Cresswell et al., 2010; Cresswell et al., 2011; Muhammad et al., 2012). To address this, Ramaprasad and Paul (Paul & Ramaprasad 2012) developed an ontology to help understand the existence of the various IS/IT initiatives in healthcare and the consequent technology mediated collaborations that ensued. Specifically, their ontology includes five key areas; namely: 1. Technology – which is made up of architecture, system and strategy; 2. Partners – which is made up of the web of healthcare players such as providers, healthcare administrators, patients and regulators and their interactions with each other; 3. Content – which consists of data, analysis, diagnosis and treatment; 4. Media – which has the key components of personal e.g., face to face versus an electronic medical record system, social e.g., blogs or chat groups, mass which includes the radio or TV and institutional which includes HIE (health information exchange), and telemedicine; and 5. Purpose – which consists of care as well as research and education. We note that this ontology is sufficiently broad to capture most of the aspects of IS/IT and healthcare interactions in general and e-health initiatives in particular; however, we contend that such an ontology is not sufficient to facilitate an in depth analysis and identification of key success factors, barriers and facilitators necessary to ensure realization of a successful e-health vision. We thus propose that a rich and robust theory is required to meet this apparent need and proffer Actor-network Theory (ANT) as such an appropriate candidate.

The following then, presents the findings from an exploratory research study. The study seeks to understand the technology mediated collaborations connected with e-health initiatives in various contexts and different healthcare systems. It answers the research question of how Actor-network Theory (ANT) can help to provide a robust and rich theoretical lens that in turn will facilitate a deeper understanding of
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