Chapter 31
How the Rich Lens of ANT Can Help Us to Understand the Advantages of Mobile Solutions

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ABSTRACT

The WHO has labelled diabetes the silent epidemic. This is because the instances of diabetes worldwide continue to grow exponentially. In fact, by 2030 it is expected that there will be a 54% global increase. Thus, it behooves all to focus on solutions that can result in superior management of this disease. Hence, this chapter presents findings from a longitudinal exploratory case study that examined the application of a pervasive technology solution, a mobile phone to provide superior diabetes self-care. Notably, the benefits of a pervasive technology solution for supporting superior self-care in the context of chronic disease are made especially apparent when viewed through the rich lens of Actor-Network Theory (ANT), and thus, the chapter underscores the importance of using ANT in such contexts to facilitate a deeper understanding of all potential advantages.

INTRODUCTION

In today's Information Technology Age one area that has yet to embrace the full benefits of ICT (Information Communication Technologies) to facilitate superior operations is healthcare. Yet slowly, this bastion is beginning to be besieged by numerous tools and solutions which at the surface at least appear to offer a panacea to the current challenges of escalating costs and poor quality.

In such a context then, it becomes important to have an appropriate and rich theoretical lens of analysis so that it is possible to judge and evaluate the true advantages of these potential ICT solutions. The following section serves to proffer that ANT (Actor-Network Theory) is indeed such a lens.

ACTOR-NETWORK THEORY (ANT)

Actor-network theory (ANT) provides a rich and dynamic lens of analysis for many socio-technical situations. Essentially, it embraces the idea of an organisational identity and assumes that organisations, much like humans, possess and exhibit specific traits (Brown, 1997). Although labelled a 'theory', ANT is more of a framework based upon the principle of generalised symmetry, which rules that human and non-human objects/subjects are treated with the same vocabulary. Both the human and non-human counterparts are integrated into the same conceptual framework.

ANT was developed by two French social sciences and technology scholars Bruno Latour and Michel Callon and British sociologist John Law (Latour, 1987, 2005; Law and Hassard, 1999; Law, 1992, 1987; Callon, 1986). It is an interdisciplinary approach that tries to facilitate an understanding of the role of technology in specific settings, including how technology might facilitate, mediate or even negatively impact organisational activities and tasks performed. Hence, ANT is a material-semiotic approach for describing the ordering of scientific, technological, social, and organisational processes or events.

Key Concepts of Actor Network Theory

Central to ANT and relevant for this specific context are the six key concepts as follows:

1. **Actor/Actant:** Typically actors are the participants in the network which include both the human and non-human objects and/or subjects. However, in order to avoid the strong bias towards human interpretation of Actor, the neologism Actant is commonly used to refer to both human and non-human actors. Examples include nurses, doctors, thermometers, electronic instruments, technical artifacts and graphical representations.
2. **Heterogeneous Network:** Is a network of aligned interests formed by the actors. This is a network of materially heterogeneous actors that is achieved by a great deal of work that both shapes those various social and non-social elements, and 'disciplines' them so that they work together, instead of 'making off on their own' (Latour, 2005).
3. **Tokens/Quasi Objects:** Are essentially the success outcomes or functioning of the Actors which are passed onto the other actors within the network. As the token is increasingly transmitted or passed through the network, it becomes increasingly punctualised and also increasingly reified. When the token is decreasingly transmitted, or when an actor fails to transmit the token (e.g., the broadband connection breaks), punctualisation and reification are decreased as well.
4. **Punctualisation:** Is similar to the concept of abstraction in Object Oriented Programming. A combination of actors can together be viewed as one single actor. These sub-actors are hidden from the normal view. This concept is referred to as Punctualisation. An incorrect or failure of passage of a token to an actor will result in the breakdown of a network. When the network breaks down the result is the breakdown of punctualisation and the viewers will then not be able to view the sub-actors making up the actor. This concept can be referred to as depunctualisation.

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