Healthcare Technology Adoption at the Group Level

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INTRODUCTION

While past research has contributed to an understanding of how organizations or individuals use healthcare technologies, little is known about the key components that influence acceptance of healthcare technologies from a group perspective. Understanding the structure that determines how these technologies are embraced by organizational groups is critical because it recognizes the role of group members' agreement and mutual understanding to predict whether or not the group will decide to use a technology.

This study developed an integrative model of healthcare technology adoption by explicitly examining the interactions of group technology bias, general technology self-efficacy, specific task self-efficacy, task technology fit, group valence, along with their combined impact on health care technology adoption. Specifically, the following research question is addressed: *What are the mechanisms that influence healthcare technology adoption at the group level?*

BACKGROUND

Healthcare technologies are playing a dual role improving productivity of hospitals, clinics, and health administration services and enhancing access to and quality of healthcare (Devaraj, Ow, & Kolhi, 2013; Sun et al., 2013). Examples of such technologies include healthcare information management systems, healthcare document management, healthcare business intelligence software, electronic medical records, mobile health services, and patient monitoring systems, to name a few.

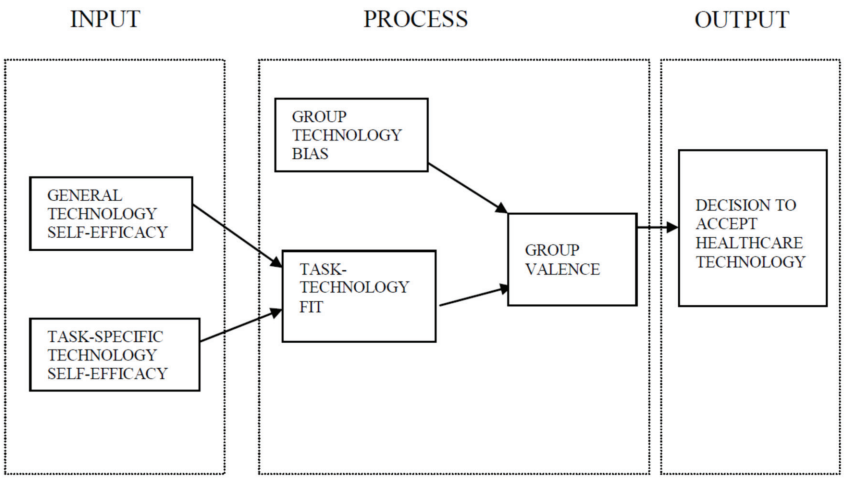
In recent studies, scholars have reported challenges such as underuse, resistance, workarounds and overrides, sabotage, and even abandonment of healthcare technologies (Chang et al., 2007, Holden & Karsh, 2009, Yi et al., 2006). Paradoxically, however, healthcare technologies are critical for enhancing organizational productivity and the quality of healthcare (Devaraj & Kohli, 2010). Thus, it is of utmost importance the understanding of the factors behind their user acceptance.

A great deal of research in this area has focused on theories such as technology acceptance model (TAM), protection motivation theory (PMT), theory of planned behavior (TPB), and the unified theory of use and acceptance of technology (UTAUT) (Sun et al., 2013). Typically these studies tend to adopt an individual level of analysis while little attention has been given to the factors that influence acceptance of healthcare technologies from a group perspective. Examining the acceptance of these technologies at the group level may help explain some of the organizational challenges highlighted above. For instance, understanding the structure that determines how these technologies are embraced by organizational groups is critical because it recognizes that "group members' individual a priori attitudes about a technology cannot be simply aggregated to predict whether or not the group will decide to adopt a technology, unless every member is in agreement" (Sarker et al., 2005). This is critical since work groups in large organizations are usually given the autonomy to adopt a specific IT based on how it may better support their task needs (Bajwa & Lewis, 2003). In other words, it is both characteristics of the individuals and group interaction processes that unfold over time that determines adoption of healthcare technologies.

We examine the key components of healthcare technology adoption using a group level analysis. The main components of our research model and its relationships are depicted in the figure below. In the following sections we describe the research model, its components, and their combined impact on healthcare IT adoption (Figure 1).

DOI: 10.4018/978-1-4666-5888-2.ch333

Figure 1. Research model



RESEARCH MODEL

Typically, studies on health information technology (IT) have focused on IT design and implementation (Anderson, 1997; Lorenzi et al., 2008) in detriment to examining how clinician end users respond to already implemented IT (Holden & Karsh, 2010). This is critical because there is a growing number of studies suggesting unintended consequences of health IT (Ash et al., 2004; Wears et al., 2006) due to the fact that the fit between IT and the clinical work system will lead end users to accept or reject the IT, to use it or misuse it, to incorporate it into their routine or work around it (Lapointe & Rivard, 2005; L_rum et al., 2001). Due to these challenges in implementing technologies, scholars have suggested that we examine the factors that affect healthcare IT adoption. Moreover, since these technologies are used by groups within an organizational setting, it is also critical the understanding on the role that group interaction processes play in the adoption of IT.

In this article I developed a model that explains the acceptance and use of health IT from a group level perspective. Specifically, I incorporated both individual's attitudes towards a technology and the group's interaction processes in order to explain their combined impact on the group's decision to adopt a technology. As a result, the framework incorporates both instrumental and social perspectives on group work. The *instrumental perspective* employs individual utility models suggesting that individuals adopt new technologies when the benefits from adoption and use exceed the costs (Rogers, 1995). This view suggests that organizational actors select new technologies based on their perceptions of the match between organizational task requirements and the technology itself. The *social influence perspective*, on the other hand, focuses on social processes that influence technology use. This view suggests that human behavior in organizations is primarily based on subjective and socially constructed perceptions that are mainly determined by the attitudes, statements, and behaviors of coworkers (Fulk, 1993). Thus, it is the result of group interaction over time that will determine whether or not a specific technology will be accepted in the workplace.

The discussion above suggests that it is not merely the individuals' attitudes toward the technology that impact the decision outcome. Rather, we need to recognize that it is the total of all group members' expressed opinions that greatly influence the decision to adopt a focal technology. With this in mind, the model also draws upon the tenets of the technology acceptance in groups (TAG) model developed by Sarker et al (2008). Their model focuses on the main components behind the acceptance of technology at the group level and highlights the effects of group interaction processes that unfold as group members' interact over time. According to the TAG model, human behavior in organizations is a result of both group members' prior attitudes towards the technology as well as the process of communication and negotiation that takes places as group members