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Does Organizational Innovation Capability Impact Electronic Medical Records Implementation Success?

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ABSTRACT

Innovation capability involves the bringing to the market and/or successful implementation of a new product or service. It is the ability to mobilize the knowledge of the employees and the organization from past experiences to create new knowledge, and use such new knowledge to bring to the market and/or successfully implement a new product or service. Innovation capability is associated with higher levels of product and process innovation within the organization. EMR is considered a technology innovation per research literature. In this research-in-progress paper, we posit that an organization with a high level of innovation capability based on product and process innovation implementations in the past will successfully implement a technology innovation such as an EMR system. A conceptual model is presented with related hypotheses.

Keywords

Electronic Medical Records (EMR), Electronic Health Records (EHR), Healthcare Information Technology Implementations, Organizational Innovation Capability, Implementation Success.

INTRODUCTION

Organizational innovation has always been considered important, but has become more so in recent times due to the intense competition in industry (Calantone, Cavusgil & Zhao, 2002; Damanpour, 1996, 1991, 1987; Damanpour & Evan, 1984). In the realm of healthcare, Electronic Medical Records (EMR) and Electronic Health Records (EHR) fit the profile of technology innovations (Crane & Crane, 2006; Dansky, Thompson & Sanner, 2006; Dansky & Dirani, 1998; Dansky et al., 1998; Lee et al., 2016; Lee, 2000). According to the official website of the office of the National Coordinator for Health Information Technology (ONC) of the United States government, while EMR contains the standard medical and clinical data gathered in one provider's office, EHR contains and shares information from all providers involved in a patient's care, and can be created and managed by authorized staff from across more than one healthcare organization. The terms EMR and EHR have been used interchangeably in both, research and practitioner literature, and are used interchangeably in this paper also. Innovation capability involves the bringing to the market and/or successful implementation of a new product or service. It is the ability to mobilize the knowledge of the employees and the organization from past experiences to create new knowledge, and use such new knowledge to bring to the market and/or successfully implement a new product or service. A firm that has the ability to enhance its organization learning and integrate existing knowledge with new knowledge should also have the capability to successfully develop and implement product and process innovations (Therin, 2003). With regards to the implementations of Health Information Technology (HIT) innovations such as EMR, there is no over-arching conceptual framework in academic literature (Creswell & Sheikh, 2013). This research-in-progress paper presents a conceptual model to explore the association between the existing level of product and process innovation in the organization and its ability to successfully implement a HIT innovation such as EMR/EHR.

LITERATURE REVIEW

Organizational Innovation Capability

It cannot be disputed that innovation is critical to organizational success. Innovation has been studied from different perspectives in academic research. Christensen (1999) contends that in addition to other duties and responsibilities, a manager must also manage innovation within the organization. Organizational innovation capability requires finding a good balance between flexibility and control which are often at odds with each other. While flexibility enables creativity and change vital for exploration that fuels innovation, control emphasizes discipline, long-term goals, core competencies and budgets (Khazanchi, Lewis & Boyer, 2007). Damanpour (1996, 1991, 1987) explains that because even the most stable environments change and organizations adopt innovations continually over time, organizational innovativeness is more accurately represented when multiple innovations are considered. Downs & Mohr (1976) have raised the question of whether variability in the type of innovation has an influence on its adoption or whether different variables may have different explanatory roles depending on the type of innovation in question. Organizational adoption may be influenced by the characteristics of the leaders in an organization, by characteristics of the organization itself, and by characteristics of the context in which it operates and out of which it emerged (Kimberly & Evanisko, 1981). A number of variables within each of the aforementioned three categories have been found empirically to be related to adoption behavior (Kimberly & Evanisko, 1981).

An organization's ability to innovate depends on an innovation supporting culture that encourages creativity, experimentation and risk taking (Jassawalla & Sashittal, 2002). It could conceivably refer to how early an organization adopts a new product, process or service relative to other organizations (Damanpour, 1991; Hunt & Morgan, 1996; Hurt, Joseph & Cook, 1977; Hurt & Tiegen, 1977; Rogers & Shoemaker, 1971). Innovation capability and organizational innovativeness could be conceptualized from the perspective of the rate of adoption of innovations as well as an organization's willingness to change (Calantone, Cavusgil & Zhao, 2002; Hurt, Joseph & Cook, 1977). Organizational innovation capability could involve implementation of product innovation, process innovation, or both. Product innovations involve the creation of new goods or services and process innovations involve creating or improving methods of production, service or administrative operations (Khazanchi, Lewis & Boyer, 2007). Damanpour (1991) states that innovation could be a product or service, a new production process technology, a new structure or administrative system, or a new plan or program pertaining to organizational members. Innovation could also refer to the adoption of a product or service (Damanpour & Evan, 1984; Zaltman, Duncan & Holbeck, 1973).

Electronic Medical Records / Electronic Health Records

In the United States, EMR has gained importance due to the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 which provides incentives to hospitals and doctors for implementation and use of EMR, as well as penalties for not implementing and using EMR. The implementation of EMR has the potential to directly impact cost reduction and quality improvement in healthcare delivery by lowering the processing times associated with enormous amounts of patient information within and between hospitals, enhancing the speed and quality of communications between patients and the healthcare providers, and delivering evidence-based high-quality healthcare through collection and mining of patient information using computers (Hillestad et al., 2005; Jardim & Martins, 2016; Sharma et al., 2016). For these reasons, EMR is finding widespread use in healthcare, especially for healthcare quality improvement and public health improvement.

Perera et al. (2011) elaborated how patients and doctors balance the perceived benefits and harms of sharing electronic health data from EMRs for patient care and secondary purposes. As part of their study, 511 patients and 46 physicians at St. Joseph's hospital in Ontario, Canada were administered the Health Information Privacy Questionnaire (HIPQ) before and after an extended use of EMR for a period of over six months. Analysis of survey results showed that more than 90% of physicians and patients supported the sharing of digital patient records among healthcare professionals while less than 70% agreed on the sharing of de-identified information outside of the healthcare circles. 58% of patients and 70% of the physicians believed that benefits of computerization outweighed the risks of loss of confidentiality while a smaller percentage of them supported the notion that computerized records were more private than paper records. Stanberry

(2011) called EMR a ‘silent giant’ and elaborated on the factors necessary for increased use of EMR such as cost, privacy and laws/regulations. Stanberry (2011) alluded to United States laws that present challenges to EMR implementation such as anti-kickback laws, anti-referral laws, malpractice exposure laws and privacy regulations, and stressed that issues relating to cost, privacy and laws/regulations must be addressed before EMRs can be successfully used to manage and communicate healthcare information. Luchenski et al. (2013) researched the patient and public views on EHR and their uses in the United Kingdom (UK) through a cross-sectional survey administered to patients and members of the public. They found that the use of EHR/EMR was supported in general, but there were concerns relating to privacy safeguards and lack of awareness regarding secondary uses. Of the 2,857 responses obtained, over 89% favored EHR use for personal healthcare with over 66% preferring that their complete medical history be included in the record. About 62% supported the use of EHRs for secondary purposes such as planning, policy and health research. Older participants were found to be less favorable towards EHRs than the younger demographic. Patients had concerns relating to privacy safeguards, but responded that they would be amenable if specific criteria to ensure privacy were met.

RESEARCH MODEL AND HYPOTHESES

Innovation capability is not limited to the conceptualization of a new product or service, but also involves the bringing to the market and/or successful implementation of a new product or service (Çakar & Ertürk, 2010). It is the ability to mobilize the knowledge of the employees and the organization from past experiences to create new knowledge, resulting in the formation or implementation of a product or process innovation (Çakar & Ertürk, 2010; Kogut & Zander, 1992; Ranganathan & Afnan, 2012; Rao et al., 2001). A firm that has the ability to enhance its organization learning and integrate existing knowledge with new knowledge also has the capability to successfully develop and implement product and process innovations (Damanpour, 1991; Hurley & Hult, 1998; Kogut & Zander, 1992; Therin, 2003). Innovation is a by-product of a learning organization and a learning organization is also an innovative organization. Consequently, organizational learning is positively associated with innovation performance (Therin, 2003). Levels of organizational learning, knowledge integration, and knowledge management capability have a significant impact on a firm’s innovation (Ju, Li and Lee, 2006). The types of innovation in an organization such as product and process innovation influence the innovation capability of the organization, which in-turn influence the innovation performance of the organization (Damanpour, 1991; Hurley & Hult, 1998; Mir, Casadesus & Petnji, 2016; Therin, 2003). In this paper, we posit that an organization with a high level of product and process innovation based on high innovation capability and past product implementation successes would have the experience and know-how to successfully implement a technology innovation such as an EMR system. Based on the above discussion, we present the following hypotheses.

Hypothesis 1: The level of process innovation existing in the organization will positively correlate with EMR implementation success.

Hypothesis 2: The level of product innovation existing in the organization will positively correlate with EMR implementation success.

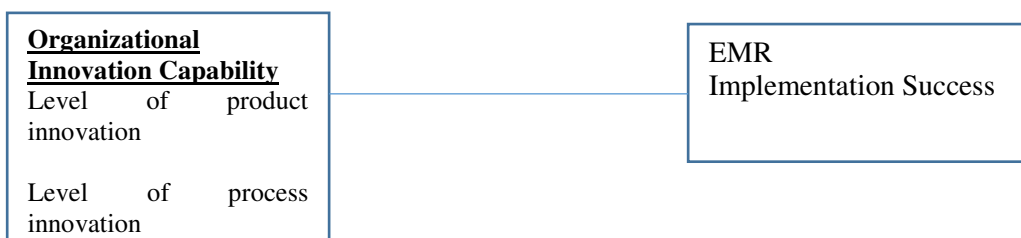


Figure 1. The Research Model

PROPOSED METHODOLOGY

This is a research-in-progress paper as stated earlier. It is proposed to collect data and perform statistical analyses using a survey instrument based on the Likert scale. A statistically valid sample size will be used. Because of the presence of latent variables in the research model, the use structural equation modeling (SEM) for data analysis will be appropriate (Hoyle, 1995). The items in the survey instrument will be adapted from past studies in research literature. Reliability and validity of the items in the instrument will be assessed before use.

CONCLUSION

This research study tries to uncover the statistical association between an organization's innovation capability based on its past innovation implementation successes, and its ability to successfully implement technology innovations such as EMR. Successful EMR/EHR implementations are expected to contribute to making healthcare operations efficient and effective leading to cost reduction and healthcare quality improvement. When completed, this research-in-progress will add to the existing body of knowledge relating to the impact of organizational factors such as innovation capability on the organization's ability to successfully implement technology innovations. This research study will have important implications for both, academic researchers and practitioners.

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