A Three Country Study for Understanding Physicians’ Engagement With Electronic Information Resources Pre and Post System Implementation

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ABSTRACT

Deriving the benefits of electronic information resources as provided by electronic medical record systems (EMR) on a global scale is critically dependent on physicians’ adoption and continued use of such resources. Yet, there is little known about the factors that motivate physicians to adopt and continue to use electronic information resources. The purpose of this article is to investigate the motivational factors leading to adoption and usage of electronic information resources in diverse regions of the world including developing countries (India and Egypt) and developed countries (the US). Based on the socio-cognitive theory and the decomposed theory of planned behavior, the authors surveyed 314 physicians in three countries in order to assess their engagement with electronic information resources. Data was analyzed via PLS for direct and indirect effects of socio-cognitive constructs and their impact on electronic information resources’ use intentions. The authors’ results suggest there are similarities as well as differences in factors impacting adoption and usage of electronic information resources pre and post EMR implementation in both developing and developed countries. They found that physicians’ perceptions of effort expectations, technological infrastructure and support, and computer self-efficacy were the strongest direct drivers influencing intentions to use electronic information resources both in pre and post-EMR implementations in all three countries that were studied. However, a richer set of factors contributed to physicians’ intentions to continue to use electronic information resources, post-EMR, in developed countries as compared to pre-EMR in developing countries. Social influences had a strong indirect effects, influencing physicians’ perceptions of effort expectations post-EMR as well as perceptions of performance expectations pre-EMR implementation. Computer self-efficacy was a significant predictor of effort expectations of an electronic information resource both pre and post-EMR implementation while compatibility with physicians’ practices significantly influenced performance expectations in both pre and post EMR implementations in all three countries studied. The authors’ study provides important theoretical and practical implications for successful management and implementation of electronic information resources such that they are adopted and used in the healthcare environment.

KEYWORDS
Adoption and Use, Decomposed Theory of Planned Behavior, Developing and Developed Countries, Electronic Information Resources, Electronic Medical Records, Global Information Management, Information Technology Diffusion, Management and Implementation of EMR, Pre and Post Implementation, Socio-Cognitive Theory

DOI: 10.4018/JGIM.2018040103

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1. INTRODUCTION

Computerization in the healthcare industry is a current and timely effort throughout the healthcare systems and around the world. Healthcare organizations both in the US and many other countries, have started investing millions of dollars into complex information technologies (IT) in the form of interoperable electronic medical records (EMR). EMR could save substantial amounts to the healthcare industry globally. In fact, if adopted and implemented, EMR could save $78 billion worldwide from 2014 to 2019 (Juniper Research, 2016) by creating many efficiencies along the continuum of care, improving quality of care, reducing errors and contributing to creation of a worldwide medical information exchange platform. Yet, EMR adoption has been slow in many countries including the US. One important reason for this slow progress is behavioral (Pare et al., 2014), clinicians have been reluctant to embrace complex technologies (Ilie et al., 2009a; Ilie et al., 2009b).

The US has a rather low rate of EMR adoption among physicians as compared to other developed nations, according to a Bloomberg news report (Robertson, 2013). In fact, the US ranks only 7th on a list of top 10 developed countries with highest EMR adoption rates after Norway, the Netherlands, United Kingdom, New Zealand, Australia and Germany. In fact, in the US, the EMR adoption pace has slowed down in the recent years and physicians who have adopted systems have a long way to go to meet the government’s Stage 2 criteria for meaningful use of the technology (Conn, 2014). The latest HIMSS analytics data that tracks the 7-stage US EMR adoption model shows that while many hospitals in the US have adopted some basic EMR functionality (staged 1-3), US hospitals still have much work to do in order to move to more advanced EMR-enabled tools (HIMSS, 2015). According to the same report (HIMSS, 2015), currently, the number of hospitals in the US with clinical decision support (stage 4) is at about 10% while the number of hospitals with complete EMR with data warehousing and data continuity (stage 7) is at about 4%. A similar rating model exists in China (Model of EHR grading – MEG). A recent study that examined the levels of EHR adoption in 848 Chinese hospitals (Shu et al., 2013) found that most hospitals had only basic systems (levels 0-2). Very few had a higher score corresponding to a high level for clinical information using and sharing (Shu et al., 2013).

EMR can provide three main types of benefits that add value compared to traditional paper-based patient records:

1. It can solve logistical organization problems associated with paper-based systems;
2. It can improve the quality of clinical decisions through automated decision-support tools;
3. It can improve physicians’ return by reducing the cost of managing clinical information (Pare et al. 2014).

In addition, on a global scale, one main benefit of EMR is interoperability of the medical records including global access to health records. This is a great benefit as more and more people work and travel globally.

Generally, the global healthcare IT market is on the rise and projected to reach $66 billion by 2020 (Gold, 2014). Cost reduction and efforts to streamline workflows are main drivers behind this projected growth. Various developing nations started to evaluate and implement standards and systems in order to computerize their medical records. For example, India, a large developing nation has started building national standards in its efforts to boost a national EHR for India. Currently, the healthcare system in India is divided between public and private hospitals, with most people opting for private facilities because of better infrastructure and shorter wait times. The Indian government plans to provide universal health care to all of its citizens by 2020 by increasing public spending from 1% to over 6% of its gross domestic product (Stone, 2014).

Saudi Arabia also started to invest in EMR systems, although challenges and discrepancies remain in EMR adoption and implementation rates between urban and less urban regions (Bah et
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