ABSTRACT

Online Personal health record (PHR) systems allow users to be active in their healthcare management by making it possible to research and learn about healthcare opportunities, as well as to gather, store, use, and share their personal health information. Developers and providers of PHR systems must take into consideration the factors that affect whether users are likely to use such tools. The objective of this research is to determine the factors influencing users’ acceptance of PHR systems to enable their activeness in making healthcare decisions.

Keywords: E-Health, Health IT Adoption, PHR Systems, Privacy, Security.

INTRODUCTION

The need for access to healthcare information is becoming increasingly important. With the many health risks and other health-related concerns that are known to public, people are worried and want to seek answers. With the rapidly-moving, advanced technology that is made available to virtually everyone in this day and age, people are leveraging its power to get access to information. The advent of the Internet and the use of healthcare information technologies have demonstrated improvements in large healthcare delivery systems. Because it is important for people to actively participate in their healthcare and wellbeing, technology can also be utilized as a platform for quick and easy access to health-related information and communication in home settings. Internet based technologies are increasingly becoming an important source for healthcare needs, information and communications (Marton and Choo, 2012; Wakefield et al., 2010). Personal Health Record (PHR) Systems used to collect, track and share health information are being offered by hospitals, insurance companies, employers, and commercial vendors to allow patients (or caretakers) to better manage their healthcare. These systems could enhance patients’ health knowledge, personal empowerment, and, as a result, improve their health outcomes (Hilton et al., 2012). As observed by Emani and colleagues (2012), fifty million patients have access to MyChart PHR, and another twenty million veterans have access to My HealtheVet, the Department of Veterans Affairs PHR. There are also free applications such as Microsoft’s HealthVault which allow users to integrate their personal health information from various resources and share with their healthcare providers, caretakers, and doctors (Avancha et al., 2012).

In spite of the usefulness of PHR systems, their level of adoption and usage is low in the US (Gaskin et al., 2011). According to Emani and colleagues (2012), there is a need to apply
theoretical frameworks to the study of patient adoption and use of PHR. While much of the prior research is focused on people’s intention to seek health-related information on the Internet, it is also important to include their intention to disclose their personal information and use PHR systems. The objective of this research is to determine the factors influencing users’ intention to use online PHR systems in taking healthcare decisions.

The rest of the paper is organized as follows. The upcoming section presents our review of the prior literature. It is followed by our proposed research model. In the end we present our conclusions.

**LITERATURE REVIEW**

The price for healthcare is becoming extremely costly, and affording to make appointments with doctors is a challenge for many. With the varying views about health issues amongst different doctors, even people who are able to see physicians many times want to seek second opinions elsewhere. People want to be able to make decisions about their healthcare by finding information on their own. Technology is being leveraged by healthcare providers to effectively provide access to important health-related information for users. The Internet, for example, is used as a communication channel, such as e-mail; as a community, such as bulletin boards and mailing lists; and as content, such as websites that provide health information (McMullan, 2006). The Internet is considered as a fast and reliable way of getting health information (Anderson, 2004; Borzekowski and Rickert, 2001). People browse the Internet for medical information not only for themselves but also for their family, friends and relatives. It is found that women are more likely to search for health information on the Internet as compared to men (Atkinson et al., 2009). College students also use search engines and web sites (for example: WebMD, Ask Jeeves, FitDay, Health.com, Mayo Clinic, Planned Parenthood, MensHealth, Sexeducation.com, and Shape.com) to find health related information and improve their healthcare behavior (Escoffery et al., 2005). Users, who were once passive recipients, are now active consumers of health information (McMullan, 2006). While some found that the health information on the web is resulting in patients following treatment plans inconsistent with professional recommendations (Weaver III et al., 2009), others indicate that the Internet is now complementing formal healthcare provided by health professional services (Suziedelyte, 2012).

Healthcare technologies and the Internet are also used by organizations and individuals to transmit and store patients’ healthcare records. While an electronic health record (EHR) is created and managed by a healthcare provider, a personal health record (PHR) is created and managed by patients themselves (Avancha et al., 2012). According to Gaskin and colleagues (2011), “Tethered PHRs allow patients to view their health information stored in the electronic medical record of their healthcare provider, untethered PHR systems are maintained by the patient utilizing commercially available software or web applications”. PHRs are used to manage personal health information, to collect, monitor, and organize daily health data, to manage prescriptions, appointments, and medical procedures, to obtain relevant patient oriented disease information, and to gather knowledge for decision support(Horan et al., 2010; Kaelber et al., 2008; Lee et al., 2007). Microsoft’s HealthVault is a well-known PHR service which allows users to integrate their personal health information from various resources and share with their healthcare providers, caregivers, and doctors (Avancha et al., 2012). However, despite having interest in health and the
increased availability of technology, people have not yet fully adopted PHR systems and industry is doubting if PHRs are a workable information source in their current form (Andrews, 2011).

**RESEARCH MODEL**

With technology as an aid, people can efficiently make healthcare decisions at much lower costs than the traditional means. People use technology for seeking healthcare information and disclosing personal information related to their medical needs. PHR systems help to gather, store, use, and share health information for patients and their families. Online PHR system providers like Microsoft’s HealthVault maintain relationships with other healthcare providers and allow users to integrate their personal health information from various resources, control all their personal health information via web portals and share it with their healthcare providers, caregivers, and doctors (Avancha et al., 2012). Still, peoples’ interests and their level of adoption and usage of PHR system is low in the US. Our research model attempts to identify the factors influencing the adoption of PHR systems. While the technology acceptance model is widely used in IS literature to explain the use of information systems, it has ignored the effect of fit between information seeking and disclosing behavior. The dependent variable for this research is an individual’s intention to use online PHR systems, defined as an indication of a person's readiness to use online personal health record systems for healthcare decisions (Ajzen, 1991), which is influenced by intention to seek healthcare information, intention to disclose personal information, and the fit between them. The intention to adopt a system has been widely used in the IS literature as a precursor to actually adopt a system.

**Intention to Seek Healthcare Information:** Intention to seek healthcare information is defined as an indication of a person's readiness to seek healthcare information (Ajzen, 1991) for healthcare decisions. The more a user intends on seeking information, the higher the chances he or she utilize technology to do so. Therefore,

*Proposition 1: Intention to seek healthcare information is positively related to intention to use online personal health record systems.*

**Intention to Disclose Personal Information:** Intention to disclose personal information is defined as an indication of a person's readiness to disclose their private information (Ajzen, 1991) for healthcare decisions. If users are not ready to disclose their personal information on personal health record tools in order to receive assistance in making healthcare decisions, then they will not intend to use such technological solutions for their healthcare needs and taking healthcare decisions. Therefore,

*Proposition 2: Intention to disclose personal information is positively related to intention to use online personal health record systems*

**Healthcare Information Seeking and Personal Information Disclosure Fit**— The fit is defined as the degree of alignment or balance that needs to be in place to achieve one or more goals (Cresswell and Sheikh, 2012). Achieving a fit between the information necessary to be disclosed by the user and the information needed by the user is very important. According to the balance theory, individuals prefer to maintain a balanced state among the elements viewed as being part
of a ‘system’ or part of a whole (Wakefield, 2013). The task technology fit model postulates that a technology can have positive performance impacts and users would intend to use technology only if it "fits" the task that is being supported (Goodhue, 2006; Goodhue and Thompson, 1995). The technology should be developed in such a way that it does not require users to provide any information which is more than necessary. The more the user perceives the fit between disclosing personal information and seeking healthcare information, the higher the intention to use technology. Therefore,

**Proposition 3:** Healthcare information seeking and personal information disclosure fit is positively related to intention to use online personal health record systems.

**Information Quality:** Information quality is defined as the user’s perception of the overall quality of the information (Teo et al., 2008). It is considered as a second order factor affecting the use of information systems, and consists of the following first order dimensions: accuracy, usefulness, currency, completeness, usefulness and reliability (Garcia-Smith and Effken, 2013; Geissbuhler and Boyer, 2006). Users will be apt to seek health related information if they will find the available information to be of appropriate quality. The higher the perceived information quality, the more the user intends to seek information. Therefore,

**Proposition 4:** Information quality is positively related to intention to seek healthcare information.

**Drive to Learn:** Drive to learn is the need that pushes individuals to collect information and examine their environment in order to fulfill their curiosity and make sound judgments to resolve problems (Junglas et al., 2009). Backed by their motivation and willingness to learn, users with drive to learn will stop at nothing to research information most closely associated with their health concerns in an attempt to find the answers to their questions and concerns. If there is no drive or motivation for learning, a user is less likely to seek information. Therefore,

**Proposition 5:** Drive to learn is positively related to intention to seek healthcare information.

**Healthcare Need:** Healthcare need is defined as users’ perceptions of the necessity and importance of healthcare for their well-being. If the user is all about doing whatever it takes to receive the best possible solutions to his or her health issues, he or she has a high healthcare need. High need for health care will increase patients’ tendencies to accept e-health technologies to receive additional care (Wilson and Lankton, 2004). If the user is in need of easily accessible information then he or she will be more likely to disclose personal information and seek healthcare information. In addition, unless there is a real need for the user to attain some benefits, the user will not be inclined to disclose his or her personal information. Therefore,

**Proposition 6a:** Healthcare need is positively related to intention to seek healthcare information.

**Proposition 6b:** Healthcare need is positively related to intention to disclose personal information.
Effort Expectancy: Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh et al., 2003). If the users find it difficult to use technology, they will be less inclined to use it to seek healthcare information, or to provide personal health information. Users may already be on the fence when wanting to share their personal information. If a factor such as too much effort is required then they will be quick to shy away from sharing. Likewise, if users want to seek healthcare information but feel that they will need to put forth too much effort, they will be unlikely to seek this type of information. Therefore,

*Proposition 7a:* Effort expectancy is negatively related to intention to seek healthcare information.

*Proposition 7b:* Effort expectancy is negatively related to intention to disclose personal information.

Performance Expectancy: Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gain in performance (Venkatesh et al., 2003). It is important for the users to have access to their health information which is accurate, reliable, timely and complete. Users who want to find out as much as possible about illnesses that may be detrimental to their health would benefit from a medium that provides access to the most in-depth, detailed, and comprehensive information on these illnesses. If the user believes that the system would provide them accurate, reliable, timely and complete information to schedule the appointment, to manage their healthcare needs or to find health-related information, and would perform the expected tasks well, he or she will more likely utilize the system. Therefore,

*Proposition 8a:* Performance expectancy is positively related to intention to seek healthcare information.

*Proposition 8b:* Performance expectancy is positively related to intention to disclose personal information.

Trust: Trust is an important element in influencing consumer behavior and has been shown to be of high significance in the Internet-based e-commerce context (Pavlou, 2003). Consumer trust in e-commerce transactions is defined as the user’s perception that a particular transaction will occur in a manner consistent with his or her confident expectations (Chellappa and Pavlou, 2002). If a PHR system is not credible or well known, a user may be less likely to share his or her personal information or seek other healthcare information. The more trust a user has, the more he or she would be willing to disclose his or her personal information and seek healthcare information. Therefore,

*Proposition 9a:* Trust is positively related to intention to seek healthcare information.

*Proposition 9b:* Trust is positively related to intention to disclose personal information.

Ethical Concerns: Ethical concerns are defined as the concerns for ethical issues regarding managed care (Ulrich et al., 2003). Ethics are the guiding principles used by individuals to determine right and wrong courses of action in the absence of any clearly defined rule to take a
decision. PHR systems aim towards encouraging greater patient engagement in their own care but many patients do not prefer to take on more responsibility or do not want shared decision making (Wynia and Dunn, 2010). As humorist Dave Barry wrote, “I don’t WANT to be an informed medical consumer. I liked it better when my only medical responsibility was to stick out my tongue” (Barry, 2013). PHR systems may increase the already heavy burdens on family caregivers and create conflicts of interests (Bauer, 2001). As for seeking healthcare information, many individuals face dilemmas in deciding whether seeking information about their health-related issues from any entity other than their doctor is right or wrong. The increasing use of technology was found as altering the patient-provider relationship in both positive and negative ways (Bylund et al., 2007). Some people believe that the use of technology could lead to a greater impersonalization of society where people live in physical isolation from each other (Bauer, 2001). Such values and ethical issues held by the patients or their caretakers could be threatened by the use of PHRs. Therefore,

**Proposition 10a: Ethical concerns are negatively related to intention to seek healthcare information.**

**Proposition 10b: Ethical concerns are negatively related to intention to disclose personal information.**

**Security Risk:** Security risk is defined as the degree to which users’ believe that their personal information will not be viewed, stored or manipulated during transit or storage by inappropriate parties, in a manner inconsistent with their confident expectations (Bansal et al., 2010). It is important for the users that PHR systems have mechanisms to ensure the security of electronic health information as it is maintained and transmitted electronically (Cripps and Standing, 2011). If users feel that their personal information or their electronic devices will be compromised, they are less likely to use the online PHR systems. The higher the perception of security risk, the lower the intention to disclose and seek healthcare information. Therefore,

**Proposition 11a: Security risk is negatively related to intention to seek healthcare information.**

**Proposition 11b: Security risk is negatively related to intention to disclose personal information.**

**Health Information Privacy Concern:** It is defined as users’ concerns about the loss of privacy and the need for protection against unwarranted communication and use of personal information disclosed for healthcare needs (Bansal et al., 2010). Privacy concerns are constantly rising especially when it comes to disclosing personal information via the web. It is important for the users to have control over how their health information is accessed, used, and disclosed (Cripps and Standing, 2011), else they may be wary of disclosing their information in fear of not having complete control over that information. The more a user is concerned about the privacy of his or her health information and how it is used, disclosed, and protected by the entity to which it is provided, the less he or she will disclose that information. Therefore

**Proposition 12: Health information privacy concern is negatively related to intention to disclose personal information.**
Health Information Sensitivity: Information sensitivity is defined as users’ perceptions of the nature and importance of information which, if compromised, could cause serious harm to them and contributes to the level of uncertainty or risk that accompanies information disclosure (Angst and Agarwal, 2009). Consumer willingness to disclose personal information depends on the sensitivity of this information (Bansal et al., 2010; Milne, 1997). According to Bansal and colleagues (2010), the more sensitive users perceive their personal health information, the greater the concern the person will have about disclosing it. Therefore,

Proposition 13: Health information sensitivity is negatively related to intention to disclose personal information.
CONCLUSION

Over the last few years, the use of technology has grown exponentially in all areas. The majority of people have easy access to the Internet where they can purchase goods, services, airline tickets, and even earn a degree online. People now also have the option and facilities to take care of their healthcare needs online. The use of PHRs to make well-informed healthcare decisions is becoming increasingly widespread. One could email their healthcare provider, schedule appointments online, and utilize health apps that help with medication management. Furthermore, individuals can use technology to aid themselves with their healthcare decisions. People have the ability to search healthcare information including symptom checklists, drug and pharmacy information, and physician blogs.

The factors described in this study are postulated to affect how users will utilize technology to make healthcare decisions. Our proposed model investigates a research area that needs careful attention in today’s environment. Various empirical studies can be designed upon this model to verify the propositions. The results will allow us to extend our understanding of the underlying factors that determine users’ acceptance of PHR systems to enable their activeness in making healthcare decisions. It will contribute to IS theory by evaluating a theory based model of the factors behind the adoption of personal health record systems, a specific application which has direct impact on the well-being of the patients. The results can also be used to advance our understanding of developing appropriate interventions for improving the adoption and use of this important tool. It will also assist practitioners for improving communication between healthcare providers and patients (or caregivers) and enhancing patients’ abilities to effectively self-manage their healthcare.

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References


