

5-2010

UNDERSTANDING THE WILLINGNESS TO USE STANDALONE PATIENT HEALTH RECORD SYSTEMS AS A PRIVACY CALCULUS

Han Li

Minnesota State University Moorhead, li@mnstate.edu

Ashish Gupta

Minnesota State University Moorhead, gupta@mnstate.edu

Jie Zhang

Virginia State University, jzhang@vsu.edu

Follow this and additional works at: <http://aisel.aisnet.org/mwais2010>

Recommended Citation

Li, Han; Gupta, Ashish; and Zhang, Jie, "UNDERSTANDING THE WILLINGNESS TO USE STANDALONE PATIENT HEALTH RECORD SYSTEMS AS A PRIVACY CALCULUS" (2010). *MWAIS 2010 Proceedings*. 20.
<http://aisel.aisnet.org/mwais2010/20>

This material is brought to you by the Midwest (MWAIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in MWAIS 2010 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

UNDERSTANDING THE WILLINGNESS TO USE STANDALONE PATIENT HEALTH RECORD SYSTEMS AS A PRIVACY CALCULUS

Han Li

School of Business
Minnesota State University Moorhead
li@mnstate.edu

Ashish Gupta

School of Business
Minnesota State University Moorhead
gupta@mnstate.edu

Jie Zhang

Virginia State University
jzhang@vsu.edu

(Research in Progress)

ABSTRACT

Despite the growing research interest in the digitization of healthcare, current understanding of barriers of using healthcare IT are mostly centered round providers. There is a lack of understanding of how to get patients involved in managing their own health information digitally by using standalone Personal Health Record Systems (PHR). To fill the research gap, this study uses the literature on information privacy to theorize and empirically test how individuals' willingness to use standalone PHR is driven by a privacy calculus buttressed by the level of perceived control over their own health information. The perceived benefits of PHR and perceived control are suggested to be the major factors overriding the effect of potential privacy risks of PHR.

Keywords

Patient Health Records, PHR, Privacy belief, privacy calculus, perceived control

INTRODUCTION

Traditional paper-based documentation of medical records is error-prone and inefficient. Medical errors cause between 44,000 and 98,000 deaths each year, of which over 50 percent are avoidable (Institute of Medicine 2000). Also, patients often need to receive unnecessary duplicate tests as such paper-based patient data are not easily transferred among different healthcare providers. Health IT has been advocated as a means for improving efficiency, quality and safety of healthcare and, eventually curbing the hiking healthcare cost (Goldzweig, Towfigh et al. 2009). Health IT could potentially prevent thousands of errors, and save about \$80 billion each year in United States if it is widely adopted (Hillestad, Bigelow et al. 2005). The healthcare industry is under the pressure to go through a digital transformation. The recent economic recovery package of Obama Administration will pay physicians \$44,000 to \$64,000 for adopting and effectively using EHRs from 2011 to 2015 (Tang and Lee 2009). However, current efforts have mostly been focused on impact of EHRs and how to motivate healthcare providers to use the electronic health records (EHRs). The role of healthcare consumers in the wide deployment of health IT is largely overlooked. The benefits of health IT will be restricted if patients are not involved or even refuse to participate in this digital transformation. Patients need to have convenient access to their own health data to make informed daily health decisions, be able to update their health data and work with healthcare providers to proactively manage their own health. For example, chronic diseases account for 75% of the nation's health care dollars (Blankenhorn 2010). The care of chronic diseases requires ongoing monitoring of patients' condition and communication between patients

and their healthcare providers. Therefore, active involvement of patients is crucial for the success of the digital transformation of health industry.

Two types of personal health records systems (PHR) have been implemented to provide patients access to their personal health records and enable them to actively manage their own health information (Tang and Lee 2009). One is the integrated PHR, which is an extension of physicians' EHRs or a portal to data stored in EHRs. Integrated PHR saves patients effort in collecting and maintaining their digital health records but patients have limited control over their own health data and how to exchange data in integrated PHR with different healthcare providers is a major issue. Another type is the standalone PHR developed by online commercial companies such as Google Health, and Microsoft HealthVault. Standalone PHR is web-based and centered on patients. Patients are put in control of their personal health data. They could gather, store and manage their health records using standalone PHR and easily share the data with any healthcare providers. Online PHR is particularly valuable in case of emergencies when the hospital could be informed about a patient's current and past medication history right away.

PHR is still an emerging embryonic health IT. Until now, there is little theory-based scholarly research on PHR. For example, Whetstone and Goldsmith (2009) applied TAM model to investigate the factors that influence the intention to use PHR. As pointed in a recent literature survey paper by Goldzweig et al. (2009), patient-focused IT applications are a much-needed future research area. Overall, the acceptance of PHR by patients is still a largely untapped research area. To fill the research gap, this study focus on standalone PHR as it requires more active involvement from patients than integrated PHR. In particular, we extended the privacy calculus model to examine factors that influence patients' willingness to use standalone PHR.

Consumers face serious threats to the privacy of their health information when such information is captured and stored digitally. In 2009, five computers and a flash drive containing medical records of about 10,000 individuals were stolen in Detroit (Gallagher 2009). Standalone PHR as a Web-based service may be hacked, exposing patients' health information to unauthorized access. To use PHR, one of the major barriers consumers have to overcome is their concern over information privacy. Patients may refuse to have their health records digitized due to privacy concern (Angst and Agarwal 2009). A national survey conducted by California Healthcare Foundation found that 67 percent of people are concerned about the privacy of their personal medical records (Bishop, Holmes et al. 2005). In this study, we draw upon information privacy literature (Culnan and Bies 2003; Dinev and Hart 2006) and propose that patients' willingness to using standalone PHR is driven by a cost-benefit trade-off analysis buttressed by the level of perceived control over their own health information. In particular, our research questions are: 1) What are the benefits that factor into the cost-benefit tradeoff analysis driving the decision to use PHR? 2) How does perceived control of personal health information adjust the cost-benefit tradeoff analysis?

LITERATURE AND RESEARCH HYPOTHESES

Prior studies have suggested that the effect of information privacy is malleable with situational stimuli (Angst et al. 2009; Li et al. 2010). Consumers can not achieve absolute information privacy. They often make situational tradeoff analysis to decide whether to disclose their information to receive certain benefits. For example, online shoppers would have to disclose some personal information to complete ecommerce transactions. Similarly for standalone PHR, patients would need to agree to build their medical profile online and share it with healthcare providers to receive the needed medication. It is necessary to examine patients' willingness to use standalone PHR in an exchange context as a privacy calculus involving assessments of competing exchange benefits and privacy risks. Patients need to weigh the benefits of PHR against risks of storing and managing their health information over the Internet. They would be more likely to use standalone PHR if the privacy risks could be overridden by benefits of PHR.

In addition, justice perceptions have been suggested to further influence privacy calculus (Culnan 1993; Culnan et al. 2003; Li et al. 2010). Employees were found to be less concerned about their information privacy when fair information practices (FIPs) were implemented (Culnan 1993). FIPs are "procedures that provide individuals with control over the disclosure and subsequent use of their personal information and govern the interpersonal treatment that consumers receive" (Culnan et al. 2003, P.330). The level of control over health information practices serves as one important basis for Internet users to form their perceptions of procedural fairness (Son et al. 2008). In this study, we use the perceived control as the proxy for perceived fairness of information privacy procedures and examine how perceived control adjusts the privacy-related cost benefit tradeoff analysis performed by patients when deciding whether to use standalone PHR.

The research model (Figure 1) shows how patients' willingness to use standalone PHR is driven by assessments of exchange benefits and risks adjusted by perceived control over health information practices. Patients' willingness to use standalone PHR could be enhanced in two ways: 1) providing sufficient benefits such as easier access to test results, increased quality of health care and lower medication costs; and 2) increasing perceived control over health information practices.

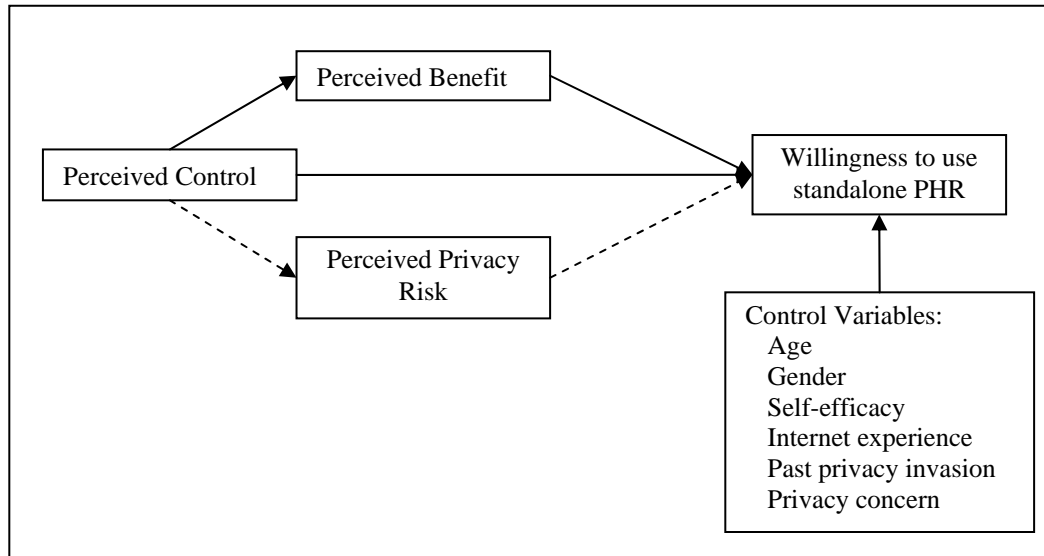


Figure 1. Research Model

PHR Benefit

Privacy concerns have caused many people to hide their medical information (Bishop et al. 2005). Moreover, digital health information tend to have higher privacy risks than paper-based records (Angst et al. 2009). Strong benefits are expected from PHR for consumers to overcome their fear of privacy risks and consider using standalone PHR. Some of the most important benefit for patients and other consumers are increased access to credible health related data, improved communication and increased connectedness between patients and caregivers (Tang et al. 2006). Perceived benefits of standalone PHR should increase patients' willingness to relinquish some privacy in return for the utility from PHR. Therefore, we hypothesize:

H1: Perceived benefit has a positive impact on patients' willingness to use standalone PHR.

Privacy Risk

In this study, privacy risk is defined as the expected loss potential associated with releasing personal health information to the firm providing standalone PHR service. PHR could potentially expose patients to various privacy risks. For example, patients' health records in web-based PHR could be stolen by cyber criminals from anywhere over the Internet if the data is not well protected by the vendors of PHR. Patients may themselves disclose the password of their PHR accounts to cyber criminals as a result of malicious software attack. Consumers with high privacy risk beliefs should perceive a greater loss potential and be cautious about disclosing their health information. Therefore,

H2: Privacy risk belief has a negative impact on patients' willingness to use standalone PHR.

Perceived Control

Procedural justice is the perceived fairness of the procedures, which is an important factor that individuals consider when decide whether to disclose their personal information (Culnan et al. 2003). In the context of consumer privacy, a central element of procedural justice is the ability to control the disclosure and subsequent use of their personal

information. Due to the increased uncertainty of online transactions, Internet users are particularly concerned about their ability to control their personal information (Malhotra et al. 2004). Perceived level of control serves as an important basis for patients to determine the degree of procedural justice in standalone PHR service. When patients perceive they could have control what health information to be collected and how their health information will be used, they would be more willing to use PHR service.

H3: Perceived control has a positive impact on patients' willingness to use standalone PHR.

Procedural justice also provides a signaling function to consumers about privacy risks in information exchange (Culnan et al. 2003) and could further influence consumers' perceptions of costs and benefits. High level of control over information practices could assure consumers that the organization is less likely to behave opportunistically. Patients may rely on the perceived control over their health information disclosure and usage as a signal to assess the potential privacy risks and benefits they may gain from using standalone PHR. They would perceive a high level of privacy risks when they perceive a low level of control over the collection and subsequent usage of their health information stored in standalone PHR. Similarly, increase level of perceived control may cause consumers to form more favorable judgments about the benefits of PHR. For example, patients would perceive PHR to be beneficial if they have control over sharing their health information with physicians and their family members. Therefore, we have:

H4: Perceived control has a positive impact on patients' perceived benefit of standalone PHR.

H5: Perceived control has a negative impact on patients' perceived privacy risk.

REFERENCES

1. Angst, C.M., and Agarwal, R. "Adoption of electronic health records in the presence of privacy concerns: the elaboration likelihood model and individual persuasion," *MIS Quarterly* (33:2) 2009, pp 339-370.
2. Bishop, L.S., Holmes, B.J., and Kelley, C.M. "National consumer health privacy survey," California HealthCare Foundation, Oakland, CA.
3. Culnan, M.J. "How did they get my name?" An exploratory investigation of consumer attitudes toward secondary information use," *MIS Quarterly* (17:3) 1993, pp 341-363.
4. Culnan, M.J., and Bies, R.J. "Consumer privacy: Balancing economic and justice consideration," *Journal of Social Issues* (59:2) 2003, pp 323-342.
5. Goldzweig, C.L., Towfigh, A., Maglione, M., and Shekelle, P.G. "Costs and benefits of health informatino technology: new trends from the literature," *Health Affairs* (28:2) 2009, pp w282-w293.
6. Li, H., Sarathy, R., and Xu, H. "Understanding situational online information disclosure as a privacy calculus," *Journal of Computer Information Systems* (Forthcoming) 2010.
7. Malhotra, N.K., Kim, S.S., and Agarwal, J. "Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model," *Information Systems Research* (15:4) 2004, pp 336-355.
8. Son, J.-Y., and Kim, S.S. "Internet users' information privacy-protective responses: A taxonomy and a nomological model," *MIS Quarterly* (32:3) 2008, pp 503-529.
9. Tang, P.C., Ash, J.S., David W, B., Overhage, J.M., and Sands, D.Z. "Personal health records: Definitions, benefits, and strategies for overcoming barriers to adoption.," *Journal of the American Medical Informatics Association* (13:2) 2006, pp 121-126.
10. Whetstone, M., and Goldsmith, R. "Factors influencing intention to use personal health records," *International Journal of Pharmaceutical and Healthcare Marketing* (3:1) 2009, pp 8-25.