A CONCEPTUAL MODEL OF CONSUMER WILLINGNESS TO PROVIDE THE PERSONAL HEALTH INFORMATION: AN INTEGRATED PERSPECTIVE

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ABSTRACT

As digitization being emphasized gradually in healthcare, the privacy of people’s personal health information has escalated as matter of significant concern in the public. Based on the review of empirical studies, this research summarizes the conceptualizations of health information privacy concern, information sensitivity, risk, trust and emotion. Also, this research provides an integrative framework to identify the relationships between these factors. The result of this research could assist in enhancing researchers to explore in relative domains.

Keywords: Privacy Concern, Personal Health Information, Trust, Risk, Emotion

INTRODUCTION

Background

The implementation of the national health insurances and the emphasis of patient awareness give a serious challenge to Taiwanese hospital management and force the health care industry to transform in management and in strategy aspects. As a result, diversified leadership and value innovation on hospital management have attracted people’s attention. Healthcare institutions began to think about how to adopt information technology into health care industry including electronic medical records (EMRs), telemedicine, mobile healthcare, quality management of patient safety and so on. One of the critical issues of hospital information technology in recent years is the promotion and development of EMRs which is not only the focus policy of Department of Health but also the quest for hospitals toward U-Healthcare. Under keen competition in health care industry and series of government policies to healthcare reform through IT adoption, hospitals view the development of EMRs as important guidelines of medical digitization. In the healthcare industry, besides space saving and digitized data storage, one of the main purposes for IT adoption is to collect, save, process, use and transfer patients’ information about healthcare and hospital activities to fulfill the needs of relative application.

In the traditional Physician-Patient Relationship, healthcare institutions and healthcare personnel have duty to keep confidential of patients’ health information. People’s personal health information was collected through observation, interview, physical assessment and check of laboratory data when people went to hospital or healthcare institutions for treatment (that is the use of EMR). In recent years, the promotion of EMRs of Department of Health and the raise of privacy issues bring up the concepts of personal information privacy and
health information security. The issues of personal information privacy become important when people enhance their self-awareness. When people go to hospitals or healthcare institutions for treatment, are they willing to disclose their personal health information? And is there any other factor to influence people’s willingness of personal health information disclosure?

Motivations

Due to the development of IT, healthcare services have become increasingly digitization. However, personal health information privacy has become an issue that people are concerned. Besides the participation and support of healthcare providers and personnel, personal health information privacy also needs the recognition and actual use of patients in order to reduce inappropriate use of healthcare information. Thus, in the development of EMR, what the critical factors that influence people’s wiliness of providing personal health information are is a critical issue.

In the U.S.A, WedMD (DeNoon, 2004) investigated 1,500 people that will or will not be honest to provide personal health information when they went to hospitals or healthcare institutions for treatment. The result showed that 45% of the respondents did not provide complete or real information to physicians. And 21% of the respondents did not want their personal health information being record on the medical record. One reason of the unwillingness for respondents to provide real and complete information to physicians is that people worry about the privacy security. When people are willing to provide personal health information to physician completely, information security and privacy concerns are very important influential factors.

Past studies have found that information privacy concerns, trust and risk will affect the intention of people’s willingness to provide personal health information (Bansal et al., 2010; Anderson & Agarwal, 2011). Based on past studies, this study will like to discuss that whether people’s willingness to provide personal health information will be influenced by information privacy concerns, trust, risk and emotion or not when healthcare institutions and healthcare personnel engaged in medical activities in Taiwan.

Research Purpose and Research Questions

According to the research background and motivations, the purposes of this study are to integrate of foreign literatures in the past, and to develop and establish a conceptual framework in order to provide research direction for other researchers in the future. There are different relationships between factors, such as information privacy concerns, and willingness to provide personal health information. Anderson & Agarwal (2011) found that the relationship of information privacy concerns and willingness to provide personal health information will be changed by difference factors. Therefore, this study explored the public’s willingness to provide personal health information from an integrated perspective of information privacy. This study integrated literatures about people’s willingness to provide information and also pointed out the follow-up development opportunities in the future. To sum up, the research questions of this study are:

(1) What is the relationship between information sensitivity and people’s health information privacy concerns?
(2) What is the relationship between people’s health information privacy concerns and their
willingness to provide personal health information?

(3) What is the relationship between people’s trust of hospital and their willingness to provide personal health information?

(4) What is the relationship between people’s emotion of knowing their current health state and their willingness to provide personal health information?

(5) Will the relationship between health information privacy concerns and people’s willingness to provide personal health information be more significant at high risk than at low risk?

(6) Will the relationship between people’s trust of hospital and their willingness to provide personal health information be more significant at high risk than at low risk?

LITERATURE REVIEW

This chapter includes six parts describing the literatures of Personal health information, privacy and privacy concerns, information privacy concerns, information sensitivity, trust, risk and emotion.

Personal Health Information, PHI

As time went by, people went to healthcare institutions and hospitals for treatment and generated lots of data. Those data have high relationship with people’s career and life. Pratt et al. (2006) proposed definition of personal health information: “For the patient, it can store, search and maintain personal health information that contains the medication records and situations, referral, etc... There are many kinds of health information presented, such as papers, electronic files, Web interface, etc...”. From health information storage perspective, the concept of personal health record has been emphasized in recent years. Personal health record is that patient maintained their own health record. Under proper security and privacy conditions, patient can provide complete personal health and medical records by using mobile devices.

According to the above definition, personal health information contains many types of information (Pratt, 2006). In Taiwan, the major source of patient’s health information is the electronic medical records promoted by Department of Health.

Information Privacy Concern

First, this section will be introduced privacy and privacy concerns, information privacy concerns and the definition of information privacy and disclosure.

Privacy and Privacy Concerns

The concept of privacy is centered on individual, so individual has the ability to control and share their personal message without being affected by other factors. Privacy has become increasingly important in advancing society (Clarke, 1999; Warren & Brandies, 1890). Information privacy refers to any person, group or organization that can control or decide personal information when and how it passed to others (Westin, 1968; Stone et al., 1983). Most of the researches explore the information privacy of user in the e-commerce environment (Stewart & Segars, 2002; Malhotra et al., 2004; Liao et al., 2011; Tsat et al., 2011). Dyson (2008) proposed definition of health information privacy: “a series of data in the healthcare treatment process, the personal health information has been used, thus, under
the privacy of medical information, should focus on how to distinguish that the others to control the extent of information.”

**Information Privacy Concerns**

Currently, the Internet is more and more flourishing. People can easy collect other person’s information before the user agrees through Internet. People begin to worry about personal information security. Therefore, how to measure information privacy becomes a research topic (Mason, 1986). In 1996, Smith et al. proposed the Concern for Information Privacy (CFIP). This scale measures the degree of personal information privacy concerns in organization and consists of four dimensions: data collection, unauthorized secondary use, improper access and errors. But Smith et al. represented that these factors were not fixed. It would change over time or due to different environment. So, Malhotra et al. (2004) refered to CFIP scales, proposed user’s information privacy concerns in the Internet environment and summarized them in three dimensions: data collection, control, privacy policy awareness. In addition to the application online transactions contexts, information privacy concerns also is often used in the health information researches (Anderson & Agarwal, 2011; Bansal et al., 2010; Angst & Agarwal, 2009).

**Trust**

Trust has considerable influence in many circumstances. Therefore, the significances of trust are different in the different situations. The key points of trust are information asymmetry and confidentiality under the risk. If consumers cannot accurately judge while the service provided is complete and correct, they may lack the professional skills or knowledge.

Consumers’ decisions to provider their personal health information are depend on the extent of consumer organizations trust. Especially in the field of medical insurance which mainly gather information that has privacy and sensitivity. Therefore, it’s very important to maintain the trust in healthcare institutions (Rohm & Miline, 2002). Anderson & Agarwal (2011) believed that trust was needed to consider in multiple aspects: to a certain extent the ability, reliability and security trust of individuals, groups or organizations. Their study also found that risk would affect the relationship between the trust for electronic storage system and people’s willingness to provider personal health information to healthcare institutions.

**Emotion**

In the past, most of the researches about privacy are under risk, trust, or other conditions (Rohm & Miline, 2002; Son & Kim, 2008). Recent studies have indicated (Cosmides & Tooby, 2002) that emotion has the ability to change individuals’ viewpoints and judgments in decisions making. Psychologists also pointed out that if personal emotion is stimulated, it also can affect personal choice in decision making and external behavior (Ariely & Loewenstein, 2006). Emotion will be influenced by personal experience (Weinstein, 1989), impression and waiting time (Van Boven et al., 2004). For example: Individual will be anxious or worry about his/her health status, so he/she wants to improve his/her health status by disclose some information to healthcare institutions (Anderson & Agarwal, 2011).

**Information Sensitivity**

The researches about privacy showed that consumers are willing to open or disclose the
personal information depends on the sensitivity of the information (Malhotra et al., 2004; Phelps, 2000; Sheehan & Hoy, 2000; Miline, 1997; Nowak & Phelps, 1992). Such as health information that most people may feel it sensitive (Bansal et al, 2010). Bansal et al. (2010) showed that when people go to healthcare institutions for treatment, they may produce some health information which is very special and sensitive. Therefore, they explored whether people’s information privacy concerns will be different because of the sensitivity of personal health information or not.

**Risk**

Stakeholders in the healthcare environment are very complex. In addition, medical information is highly personal and sensitive information. As a result, making the discussion of privacy concerns needs to pay attention to the wide range of risk factors (Anderson & Agarwal, 2011). Under any circumstances, risk refers to the uncertainty of loss possibility that consumers faced when making decisions. The concept of risk is used in terms of economic, financial or marketing in the past (Murray, 1991). Anderson & Agarwal (2011) believed health privacy concerns and trust of whether the public is willing to provide personal health information or not will be changed because some risk situational. Personal perceived risk depends on the different types of situational: 1) Type of information; 2) Intended purpose; 3) Requesting stakeholder.

**DEVELOPMENT OF CONCEPTUAL FRAMEWORK AND HYPOTHESES**

**Conceptual Framework**

According to the literatures, this study proposed a summarized and collated research framework shown in Figure 1. The study of architecture is mainly based on the Anderson & Agarwal (2011) model of exploring people’s willingness to provide personal health information from electronic health information privacy concerns, risk, trust and emotion. In addition, this study would like to know, in the health care environment, the relationship between health privacy concerns and trust(Bansal et al., 2011; Rohm & Milne, 2004), and the relationship between information sensitivity and health information privacy concern. As a result, this study added the dimension of the information sensitivity (Bansal et al., 2010; Li, 2011). This conceptual model has three major dimensions: 1) from the point of view of people’s health information privacy concerns, it may be influenced by information sensitivity and trust; 2) from the point of view of people willingness to provide personal health information, it may be influenced by people’s health information privacy concerns, trust and emotion; 3) from the view of relationship between health information privacy concerns, trust and willingness to provide personal health information, it may be influenced by risk (high and low).
Development Hypotheses

Seven hypotheses are developed according to prior literature:

Information Sensitivity and Health Information Privacy Concerns

In the past, many researches of privacy (Li Yuan, 2011; Bansal et al., 2010; Dinev & Hart, 2006) show that the information sensitivity have influence on willingness to provide personal health information of people. For example, Bansal et al. (2010) explored the impact of health information sensitivity on individual’s health information privacy concerns and found a significant relationship. And in the other domain (E-commerce), Malhotra et al. (2004) used high/low level to examine the impact of less sensitive information and more sensitive information on trust belief and behavioral intention. Therefore, it is propose the effect between information sensitivity and health information privacy concerns. In sum, we proposed hypothesis H₁ as follows:

H₁: Information sensitivity positively influenced health information privacy concerns

Trust and Health Information Privacy Concerns

Some of personal characteristics will affect the trust from previous studies, such as Internet users that have higher concern of information privacy in Internet will have lower trust on the websites. So, privacy concern is also negatively associated with trusting beliefs. For example, Dinev & Hart (2006) found that privacy concerns depends on risk and trust, in the other words, if people perceived higher trust and the lower risk, they will willingness to provide their personal information. In sum, we proposed the Hypothesis H₂ as following:
H2: health information privacy concerns negatively influenced Trust

**Health Information Privacy Concerns and Willingness to Provide Personal Health Information**

From the point of view of privacy concerns, it may be a disutility enhancer to willingness to provide personal health information. Inexcusable invasion of privacy are undesirable, such like having sensitive health information made public. So, there are a lot of reasons people will not to disclose their health information. For example, Dinev & Hart (2006) found that people’s privacy concerns are negatively impacts willingness to provide personal information on the Internet. In sum, we proposed the Hypothesis H3 as following:

H3: Health information privacy concerns negatively influenced willingness to provide personal health information

**Trust and Willingness to Provide Personal Health Information**

If hospital and healthcare institutions being a trustworthily, they will be desirability for people. Trust as a belief of encouraging trading, therefore, some studies believe that the trust will affect the intention of consumers directly (McKnight et al., 1998). Especially in a medical environment, people will be faced with the uncertainty and risk; the trust will affect people willingness to provide personal health information (Anderson & Agarwal, 2011). Extrapolating to the context of this study, if a people trust hospitals and healthcare institutions, then trust adds to the relationship because people can rely on hospitals and healthcare institutions to care about themselves. In sum, we proposed the Hypothesis H4 as following:

H4: Trust positively influenced willingness to provide personal health information

**Moderator of Risk**

Anderson & Agarwal (2011) found that consumers deciding whether or not to disclose health information in an electronic storage format are be influenced by situational risk factors. In the past, there are not studies to theorized or tested the moderating effects in the health information privacy content. Findings in the health informatics domain suggest that most people want more control over the use of their information when it is for different risk (Willison et al. 2009). If people trust hospitals or healthcare institutions, they will willingness to provide their information such that the more high the risk is perceived to be, the more negative the relationship between trust and willingness to provide personal health information. Other hand, when people concern their information cannot prevent the other users to accessed or leaked (risk of uncertainty), they will not to provide their information such that the more high the risk is perceived to be, the more positive the relationship between health information privacy concerns and willingness to provide personal health information. In sum, we proposed the Hypothesis H5 and H6 as following:

H5: The risk moderates the relationship between trust and willingness to provide personal health information.

H6: The risk moderates the relationship between health information privacy concerns and willingness to provide personal health information.
Emotion and Willingness to Provide Personal Health Information

Recent studies have indicated (Cosmides & Tooby, 2002) that the emotion has the ability to change the individuals in making decisions for the views and judgments. Psychologists also pointed out that if personal emotion are stimulated, it also can affect personal choice in decision making and external behavior (Ariely & Loewenstein, 2006). Emotion will be influenced by personal experience or impression (Van Boven et al., 2004). For example: Individuals will anxiety or worry about his health status, so he wants to improve his health status by disclose some information to healthcare institutions, specifically, the more negative (i.e., sad) an individual feels about his health, the more willing he is to provide access (Anderson & Agarwal, 2011). If emotion is real an important factor in the health information privacy context, it is also important to determine if individuals are able to accurately predict the extent to which the emotion might influence their willingness to provide access. In sum, we proposed the Hypothesis H7 and H8 as following:

H7: People’s negative emotion (i.e., sad) regarding his/her current health state negatively influence willingness to provide personal health information.

H8: People mispredict the extent to which their emotional state regarding their health condition influences willingness to provide personal health information.

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<th>Relationship of Dimensions</th>
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DISCUSSIONS AND CONCLUDING REMARKS

In recent years, information privacy concern is usually a great interest in information Management research area. The continued growths of the digitization of all types of information show that the concept is become more important in the future, especially in Health information research area. But, the researches of the health information privacy concerns are less than E-commerce. The fact that the means have been explored for measuring concerns for health privacy has increased slowly in this domain, just like the
explored area of willingness to provide impacted research on the relationship between health information privacy concerns and willingness to provide health information. So, this study makes some contribution to the literature: 1) Looking at the theoretical contributions made in health information privacy concerns literature and arranging the relationships of dimensions to establish conceptual model; 2) it provides conceptual model from an integrate view of the empirical studies on health information privacy concerns from the individual behavior perspective. In Taiwan, the issue of health privacy concern has more different properties than the other countries. So, how to consider the relationships between health information privacy concerns, trust, and risk (moderator or mediator) need to be further definite. Finally, health information privacy is a very interesting research domain that will continue to explore as new technologies such like personal health record (PHR) in the future.

REFERENCES


Lin & Chang

Conceptual Model of Personal Health Information Providing Willingness


