A Study of the Effect of Privacy Assurance Mechanisms on Self-disclosure in Social Networking Sites from the View of Protection Motivation Theory

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Abstract

Users' information privacy issue becomes an important challenge not only for SNS users but also for the SNS service providers and governing organizations. This study's objectives are: (1) to study how assurance mechanisms affect SNS users' self-disclosure intention by applying protection motivation theory (PMT), and (2) to empirically test the perceived privacy concern as part of the PMT in order to predict self-disclosure on SNS. There are a number of expected contributions for this study. First, this study applies PMT in order to understand how assurance mechanisms applied by SNSs affect users to disclose their personal information. Second, we introduce the customizing privacy as an assurance mechanism which has not been studied in previous literature. Finally, we consider fear component of PMT which has not been studied by previous researchers who applied PMT in this context.

Keywords: Social networking sites, Self-disclosure, protection motivation, assurance mechanisms.

Introduction

Along with recent advancement of web technologies, social networking sites (SNSs) affect people's life styles by enabling them to perform so many activities that they were not easy to do before. Ofcome technology tracker report in 2014 informed that over 50% of the Internet users stated that using SNSs is one of the major reasons of using the Internet (Ofcom 2014). SNS users are able to quickly access and easily share different source of personal information such as pictures of friends and family and political opinions (Jiang et al. 2013). Because of the predominant and rampant of SNSs, users' information privacy issue becomes an important challenge not only for SNS users but also for the SNS service providers and governing organizations (Boyd and Ellison 2007).

Rainie et al. (2013) report that more than 50% of the Internet users expressed they concern with their information privacy; and 66% of them posited that current law does not protect them against privacy threats. A survey in the United States shows that among the SNS users who have concern with information privacy, majority of them still disclose their personal information on the Internet (Madden et al. 2007). Thus, it seems that many SNS users tend to disclose their personal information in SNSs while they still concern with the privacy of their information. Since it seems controversial, it could be interesting to investigate why SNS users are still interested in sharing their information on SNSs while they still have privacy concern.

We guess several reasons for this controversial privacy behavior of SNS users. One possible reason is that SNSs apply several mechanisms to ensure their users about the privacy of their information (Squicciarini et al. 2010). Therefore, it is an interesting and timely issue to empirically test the effect of privacy assurance mechanisms on SNS users' privacy concern and privacy behavioral intentions such as protection motivation and information disclose intention. Drawing from the literature review on privacy concerns on SNSs, we identify that while the information system research has made some progresses in understanding the SNS users' privacy concern, still there are some gaps that should be addressed. First, although practitioners applied different mechanisms to address privacy concern there is a gap in the literature in investigation of how these mechanisms affect users' privacy concern using existing theories

(Bansal and Zahedi 2008a; Kim, Steinfield, et al. 2008; Squicciarini et al. 2010). Second, protection motivation theory (PMT) has been applied in IS literature to investigate protection attitudes and behavior (e.g.,Bulgurcu et al. 2010; Crossler et al. 2014; Herath and Rao 2009; Johnston and Warkentin 2010) without considering fear or risk as part of PMT (Floyd et al. 2000; Tanner Jr et al. 1991). Third, although PMT suggested that fear appeal process leads to change in attitude and behavior regarding the threat, most of the studies only investigate fear appeal effect on protection related behavior. This could be an important gap to investigate whether fear appeal process suggested in PMT can affect SNS user to not to disclose their information or just motivate them to protect their information.

The objectives of this research are:

- To study how assurance mechanisms affect SNS users' self-disclosure intention by applying PMT.
- To empirically test the perceived privacy concern as part of the PMT in order to predict self-disclosure on SNS.

Literature Review and Background Theory

Social Networking Websites and Self-disclosure

Information disclosure has been investigated in many contexts. A number of studies elaborate the factors that affect customers to disclose their information on e-commerce websites (e.g., Culnan and Armstrong 1999; Dinev and Hart 2006; Laufer and Wolfe 1977). Some other studies investigate the antecedents of information disclosure on SNSs (Chen and Sharma 2015; Chen 2012; Jiang et al. 2013; Posey et al. 2010). Posey et al. (2010) suggest that social benefits and costs together with social norms and perceived collectivism influence online community users to disclose their personal information. Extroversion and internet risk are other factors which is suggested in the literature as the antecedents of self-disclosure (Chen and Sharma 2015; Chen 2012). Another study by Koohikamali et al. (2015) suggest that incentives may affect SNS users to disclose their location on these websites. Jiang et al. (2013) suggest that privacy concerns and social rewards are important indicators of self-disclosure behavior in SNSs.

Prior IS research has devoted so much effort on elaborating the concept of privacy concern in e-commerce websites, online healthcare, and organizational context (Anderson and Agarwal 2011; Malhotra et al. 2004; Smith et al. 1996). Although several studies suggested privacy concern as an important indicator of self-disclosure behavior (Chen 2012; Jiang et al. 2013; Posey et al. 2010), the antecedents of SNS users' privacy concern received little attention from existing literature (Chen 2013).

Background Theory

Protection motivation theory (PMT) developed by Rogers (1975) explains and predicts protection attitudes and behaviors of an individual who is exposed to a threat (Maddux and Rogers 1983; Rogers 1975; Weinstein 1993). This theory is one of the theories that has been used by researchers to investigate the privacy in different contexts (Chai et al. 2009; Dinev and Hart 2004; Junglas et al. 2008; Li 2012; Youn 2009). PMT suggests that there are three important component in fear appeal: (1) the severity of the threat' negative outcomes; (2) The probability that the threat occurs; and (3) the efficacy of protective responses (Rogers 1975). Maddux and Rogers (1983) revise the previous version of PMT by adding self-efficacy as the forth component that affects protection motivation behavior. PMT suggests two cognitive processes: threat appraisal and coping appraisal (Floyd et al. 2000; Maddux and Rogers 1983).

Threat is defined as "something that is a source of danger that can bring harm (physical or mental) to an individual" (Junglas et al. 2008, p. 390). Threat appraisal is a process of estimating the severity and susceptibility of the threat while coping appraisal refers to the process of estimating the efficacy of protection responses and the perceived self-efficacy of the individual who is exposed to the threat (Junglas et al. 2008). While the original and the revised versions of the PMT believe that the threat and coping appraisal are parallel processes that happens at the same time (Maddux and Rogers 1983; Rogers 1975), a number of studies suggest that these two processes are sequential (e.g., Scherer 1984, 1988; Tanner Jr et al. 1991). Tanner Jr et al. (1991) argue that threat appraisal must occur prior to other evaluations such as coping appraisal. PMT also addresses that there are two sources of information that

influence the threat and coping appraisal: environmental and inter-personal sources of information. Environmental sources of information are verbal persuasion and observation and inter-personal source consists of personality variables and prior experiences (Floyd et al. 2000).

Research Model and Hypotheses

Considering the theoretical lenses of PMT in the context of SNSs, we propose our research model (see Figure 1). Dinev and Hart (2006) argue that people are more willing to disclose their personal information in online transactions if they perceive less privacy concern compared to their confidence and enticement belief. Indeed, SNS users' behavior must be consistent with their expectancy theory. This theory suggests that individuals behave in a way that maximize positive outcomes and minimize negative outcomes (Van Eerde and Thierry 1996). Privacy concern is one of the most important concerns of SNS users when they disclose information on the network in previous studies in the SNS context (Jiang et al. 2013; Krasnova and Veltri 2010). Perceived privacy concern is defined as a SNS user's perception that the SNS may release user's personal information for unauthorized use (Kim, Ferrin, et al. 2008). We argue that lack of privacy is a negative outcome for SNS users that may lead to not to disclose their information. On the other hand, Privacy concern as fear which is part of PMT affect SNS users' protection related attitude and behavior (Floyd et al. 2000). This affects users to be motivated to protect their information. So we hypothesize:

H1: Protection motivation negatively affects intention to self-disclosure.

H2: Perceived privacy concerns negatively affect intention to self-disclosure.

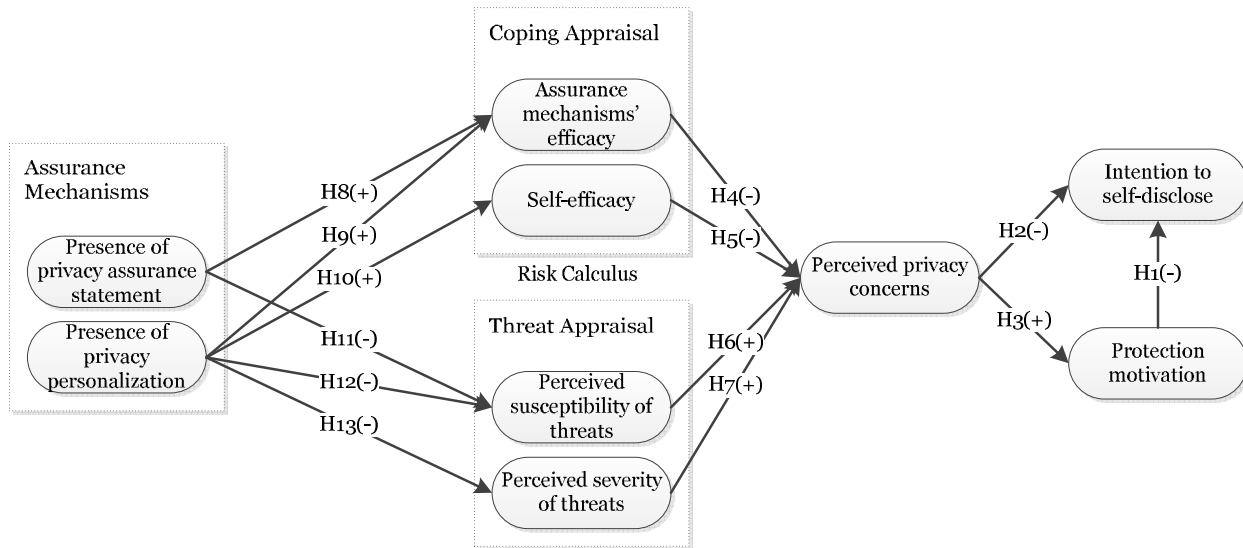H3: Perceived privacy concerns positively affect protection motivation.

Figure 1: Reserach Model

In this study threat refers to the access of unauthorized people to the SNS users' personal information. The concept of fear appeal has been investigated by several studies in the literature (Johnston and Warkentin 2010). To investigate the intention to self-disclosure of SNS users, we applied PMT. Privacy concern is a result of the cognitive process of evaluating the threat and the coping capability that a person perceived regarding that threat. According to Maddux and Rogers (1983) when individuals exposed to a threat they evaluate the threat and their coping capability. They suggest that individual's evaluation of threat affects affect their perceived fear or risk from performing a behavior. The output of this cognitive process is change of individuals' attitude and behavior regarding the threat. This risk calculus process in which the person can estimate the net risk in dealing with online website that was defined in the literature by different words such as fear or risk. Regarding the self-disclosure on SNS fear or risk can be defined as perceived privacy concern. In fact, individual's perceived privacy concern from self-disclosure on SNS is the result of threat appraisal and copping appraisal. Therefore, we posit that:

H4: Assurance mechanisms efficacy negatively affects SNS users' perceived privacy concerns.

H5: SNS users' self-efficacy negatively affects SNS users' perceived privacy concerns.

H6: SNS users' perceived susceptibility of threats positively affects their perceived privacy concerns.

H7: SNS users' perceived severity of threats positively affects their perceived privacy concerns.

According to Rogers and Thistlethwaite (1970) individuals who are exposed to threats seek to find assurance against those threats. Web assurance mechanisms are considered as coping mechanisms for SNS users to protect themselves against threats of disclosing information. Privacy assurance statement refers to statement that SNSs use in order to ensure their users about the SNS's control over the users' information and communicate the procedures that they applied to protect users' information. Presence of privacy assurance statement on the SNS affects its users' evaluation of the coping mechanisms on the SNS. In fact presence of privacy assurance statement on a SNS shows that the SNS aims to protect the users' personal information and for this purpose develops some predefined processes. Assurance mechanisms' efficacy here refers to effectiveness of the assurance mechanisms on the SNS such as privacy assurance mechanisms or privacy personalization features (Witte 1992). SNS users' perceived Threat susceptibility is another construct which is affected by presence of privacy assurance statement. The treat susceptibility refers to the extent a threat regarding user's personal information is probable to happen (Johnston and Warkentin 2010). According to Bansal and Zahedi (2008b) privacy assurance statement affects users to have better assessment of the risks of information disclosure behavior. It means that the presence of privacy assurance statement helps them better understand the susceptibility of the risk as part of risk assessment. Based on the above arguments we hypothesize that:

H8: Presence of privacy assurance statement on the SNS positively affects perceived assurance mechanisms' efficacy.

H11: Presence of privacy assurance statement on the SNS negatively affects perceived susceptibility of threats.

Privacy customization in this study refers to a feature on almost all SNSs that enable SNS users customize how and to whom their information can be released. When people are able to change the privacy settings on SNS (ability to specify who can see your posts, photos, and etc.), they perceive that they have more control over the information they disclose on the SNS. Perceived control affects SNS users' perception regarding the effectiveness of the assurance mechanisms (Arcand et al. 2007). In addition, users who customize their privacy perceive more self-efficacy since using this feature SNS users will be able to keep their information out of access of unauthorized people (Stutzman et al. 2011). SNS users who customize their privacy specify who is authorized to access their information (Stutzman et al. 2011). By controlling the access of other users over their information SNS users perceived the threat of disclosure less probable compare to those who do not control the access. SNS users also perceive less severe threat by controlling other users' access over their information because they do not permit untrusted users to access their personal information. Therefore we hypothesize that:

H9: Privacy customization by SNS users positively affects their perceived assurance mechanisms' efficacy.

H10: Privacy customization by SNS users positively affects their self-efficacy

H12: Privacy customization by SNS users negatively affects their perceived susceptibility of threats.

H13: Privacy customization by SNS users negatively affects their perceived severity of threats.

Research Methodology

We will use a survey to collect data from users who have experience of self-disclosure on SNSs. We reviewed the literature to develop relevant measures (see Appendix 1). After collecting data from SNS users our plan is to use Partial Least Square (PLS) with Smart PLS as our statistical analysis tool.

Expected Contributions

There are a number of expected contributions for this study. First, this study applies PMT in order to understand how assurance mechanisms applied by SNSs affect users to disclose their personal

information. Although some previous studies investigated this relationship, this study may be able to find out what factors mediating this relationship. Second, we introduce the customizing privacy as an assurance mechanism which has not been studied in previous literature. This construct plays an important role in motivating SNS users to disclose their information on these websites. Finally, we consider fear component of PMT which has not been studied by previous researchers who applied PMT in this context. Adding perceived privacy concern a fear component in PMT helps us to provide a risk calculus model to predict the motivation of SNS users to protect their information and consequently their intention to disclose their information.

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Appendix 1: Measurement Items

Construct	Items	Source
Presence of privacy assurance statement	I feel confident that this SNS's privacy assurance statement reflects their commitments to protect my personal information.	Xu et al. (2011)
	With the SNS's privacy assurance statement, I believe that my personal information will be kept private and confidential by this website.	
	I believe that this SNS's privacy assurance statement is an effective way to demonstrate their commitments to privacy.	
	This SNS has a privacy assurance statement reflecting their policies regarding the privacy of information they collect	New items
	This SNS's privacy assurance statement is available for users to inform them about their policies regarding the privacy of information they collect.	
Customizing privacy	I customize my SNS privacy settings most of the time I share my information on this SNS.	New items
	I prefer to customize privacy settings before I share my information in this SNS.	
	This is a good idea to customize privacy setting on this SNS.	
	I usually use privacy customization feature on this SNS.	
	I think privacy customization is very useful feature on this SNS.	
Assurance mechanisms' efficacy	Assurance mechanisms on this SNS works for protection of my information.	Johnston and Warkentin (2010)
	Assurance mechanisms on this SNS are effective for protection of my information.	
	When this SNS uses assurance mechanisms, my information are more likely to be protected.	
	I believe that the assurance mechanisms that this website uses help me to keep my information private.	New items
	I think the assurance mechanisms that this SNS uses are effective.	
Self-efficacy	Privacy customization settings are easy to use.	Johnston and Warkentin (2010)
	Privacy customization settings are convenient to use.	
	I am able to use privacy customization settings without much effort.	
	I am able to protect my information using the privacy settings on SNS.	Compeau and Higgins (1995)
	I used similar setting on other websites so I am able to use these settings.	

Perceived susceptibility of threats	My information is at risk for being released to unauthorized people on the SNS.	Johnston and Warkentin (2010)
	It is likely that my information will become available to unauthorized people on the SNS.	
	It is possible that my Information will become available to unauthorized people on the SNS.	
	It is likely that others get access to my information on this SNS without my permission.	New items
	It is possible that others get access to my information on this SNS without my permission.	
Perceived severity of threats	If my information released to unauthorized people, it would be very bad for me.	Johnston and Warkentin (2010)
	If my information released to unauthorized people, it would be serious danger.	
	If my information released to unauthorized people, it would be significant danger.	
	If my information be available to unauthorized users, it would be risky.	New items
	If my information be available to unauthorized users, it would be dangerous for me.	
Perceived privacy concern	I am concerned that this SNS is collecting too much personal information from me.	Kim et al. (2008)
	I am concerned that this SNS will use my personal information for other purposes without my authorization	
	I am concerned that this SNS will share my personal information with other entities without my authorization.	
	I am concerned with the privacy of my personal information.	
	I am concerned that this SNS will sell my personal information to others without my permission.	
Intention to self-disclosure	I intend to disclose my personal information on this SNS.	Johnston and Warkentin (2010)
	I predict I will disclose my personal information on this SNS in the future.	
	I plan to share my personal information on this SNS	
	How likely is that you would consider sharing your personal information in the future?	Jarvenpaa et al. (1999)
	How likely is it that you would disclose your personal information on this SNS?	
Protection motivation	I will protect my personal information against possible threats.	New items
	Protection of personal information is absolutely essential in this SNS.	
	I am motivated to protect my information in this SNS.	