

Association for Information Systems AIS Electronic Library (AISeL)

WISP 2015 Proceedings

Pre-ICIS Workshop on Information Security and
Privacy (SIGSEC)

Winter 12-13-2015

Measuring Users' Privacy Concerns in Social Networking Sites

Samira Farivar

McMaster University, farivas@mcmaster.ca

Yufei Yuan

McMaster University, yuanyuf@mcmaster.ca

Follow this and additional works at: <http://aisel.aisnet.org/wisp2015>

Recommended Citation

Farivar, Samira and Yuan, Yufei, "Measuring Users' Privacy Concerns in Social Networking Sites" (2015). *WISP 2015 Proceedings*. 25.
<http://aisel.aisnet.org/wisp2015/25>

This material is brought to you by the Pre-ICIS Workshop on Information Security and Privacy (SIGSEC) at AIS Electronic Library (AISeL). It has been accepted for inclusion in WISP 2015 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Measuring Users' Privacy Concerns in Social Networking Sites *Research in Progress*

Samira Farivar

McMaster University, Hamilton, Canada (farivas@mcmaster.ca)

Yufei Yuan

McMaster University, Hamilton, Canada (yuanyuf@mcmaster.ca)

Abstract

Social networking sites (SNSs) have become increasingly popular in recent years. These websites allow millions of individuals to create online profiles and disclose information with others. The disclosure of personal information has been considered as a major issue which can lead to negative consequences; therefore, privacy is a major concern of SNSs users. It is important to understand and measure the complexity of privacy concerns in SNSs. In this study, we investigate the nature of users' privacy concerns in SNSs and its differences with information privacy concerns which previously studied in the setting of Internet and e-commerce. We then propose a new scale for measuring users' privacy concerns in SNSs (UPCSNS) which will be useful for future SNSs privacy studies.

Keywords: Privacy Concerns; Social Networking Sites; Instrument Development; Information Privacy

Introduction

Recently, the role that Social Networking Sites (SNSs) play in our social lives has become increasingly significant. Based on Duggan and Smith (2014), 73% of online adults are active on at least one SNS and 63% of Facebook's users log in at least once a day. These websites allow users to create a network to connect with others and share with them their personal information such as their identity, social connection, personal life, opinion, and so on. The disclosure of personal information on SNSs has been considered as a major issue which may cause negative consequences such as hacking, identity theft, harassment, etc. (Gross and Acquisti 2005)

Privacy issues related to the online environment has been widely examined by scholars. The construct of privacy concerns has usually been considered as an important aspect in studying privacy issues. Based on a Pew research center surveys, more than 50 percent of SNSs users are concerned about the potential privacy threats of these websites (Madden 2012; Madden et al. 2015; Shelton et al. 2015). In existing literature, privacy concerns have been mostly measured by two scales namely Internet Users' Information Privacy Concerns (IUIPC) and Concern For Information Privacy (CFIP) (Malhotra et al. 2004; Smith et al. 1996). However, these scales were originally designed for measuring privacy concerns mainly regarding e-commerce. As we will discuss, privacy issues in SNSs are much broader than in e-commerce environment. Furthermore, a literature review on information privacy by Bélanger and Crossler (2011) has emphasized the need for developing measurement of privacy concerns in different contexts.

To respond to this call, drawing on previous studies and empirical evidences, we propose that privacy concerns of SNSs users consist of three major dimensions: context sensitivity concerns, accessibility concerns, and concerns regarding the potential negative consequences. In

this research, we define users' privacy concerns in SNSs (UPCSNS) as concerns about the loss of privacy as a result of disclosing information on SNSs.

In what follows, first we review existing literature on the subject, and then we define the measures of UPCSNS. This is followed by a description of the proposed research methodology. Finally, the paper concludes by discussing expected contributions of this research.

Theoretical Background

Information Privacy, Information Privacy Concerns, and Existing Scales

Privacy in general has been explored and discussed for centuries. Skinner et al. (2006) propose that privacy would refer to the human rights within the different concepts. Clarke (1999) suggests four different dimensions for privacy: privacy of a person, personal behavior privacy, personal communication privacy, and personal data privacy. Regarding online environment, especially e-commerce, two proposed dimensions which are personal communication privacy and personal data privacy could be considered as information privacy. The broad definition of information privacy based on Boguslaw and Westin (1968) is "the claim of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about them is communicated to others". Information privacy concerns refer to the individual's views in regards of fairness of information privacy (Campbell 1997).

For measuring customers' information privacy concerns, Smith et al. (1996) first defined one-dimensional global information privacy concern (GIPC) scale. (Smith et al. 1996)(Smith et al. 1996)(Smith et al. 1996)(Smith et al. 1996)(Smith et al. 1996) This scale (GIPC) measures privacy concerns in general and it does not have specific dimensions. Recognizing the complexity of individuals' privacy concerns, another multidimensional scale named as concern for information privacy (CFIP) was introduced by Smith et al. (1996). As

several studies show, this scale is valid for the context of offline direct marketing (Campbell 1997; Stewart and Segars 2002). In order to include online environment, Malhotra et al. (2004) examined the shifting of these dimensions, and they proposed another measurement scale namely internet users' information privacy concerns (IUIPC) which has three dimensions: collection, control, and awareness.

In Table 1, we summarize the differences between the context of SNSs and e-commerce in regards of disclosing information. Since in SNSs, the type of disclosed data, to whom users' data would be accessible, and the potential negative consequences of disclosure are much broader than e-commerce environment, the SNSs users' perceptions of privacy threats will be different from e-commerce customers. Regarding the economic impact of information disclosure, SNSs can have the equal negative economic consequence as e-commerce since the shopping activities are also available through SNSs and users may reveal their financial information to the SNSs. Thus, it is vital to examine the dimensions of information privacy concerns in SNSs environment.

Table 1. Information Disclosure Differences between e-commerce and social networks		
	E-Commerce website	Social Networking Site
Purpose	Online transaction and personalization	Interaction with groups of other users
Communication	Two way communication between customers and vendors	Multiple level of group communication and information sharing
Reasons of Disclosure	To complete transaction and receive customized service	Enjoyment- social support - maintaining relationships
Type of disclosed data	Personal identity such as name and address and payment information	Much broader, including personal data, photos, views, opinions, likes, etc.
Possible Access	Mainly by the server site	Broader, including the server, personal friends, public, government, and etc.
Possible negative consequences	Mainly financial loss	Financial, social, and political damage

Users' Privacy Concerns in SNSs (UPCSNS)

As discussed, disclosing information on SNSs is different from e-commerce environment. The important differences are about the type of disclosed information, the level of accessibility

of these data, the potential negative consequences of this disclosure. Hence, we propose that for measuring privacy concerns in SNSs, these four dimensions should be considered.

Information Sensitivity Concerns: The prominent goal of SNSs is to encourage their members to share more personal information (Nosko et al. 2010). Sharing personal information on SNSs can have some benefits like increasing individuals' social capital (Ellison et al. 2007), or improving individual's social presence among their peers (Christofides et al. 2012). However, there are also several privacy threats in sharing sensitive information online. Therefore, SNSs users are worried about revealing sensitive information (Wang et al. 2011a; Wang et al. 2011b). For instance, Facebook, the most popular SNS, asks its members to provide their personal profile information such as their name, address, job, education, religious views, and so on. Furthermore, users share their photos and their social connections with other members. People also may also share sensitive information about their personal life or political opinions. As previous studies show, SNSs users are concerned about disclosing sensitive information on their profile and in their activities (reading, posting and commenting). This concern may lead to the control or being reluctant to disclose sensitive information. For instance, some may not want to reveal their real name or avoid expressing their controversial political opinions, etc. Hence one of the important dimensions of UPCSNS would be users' concerns regarding their sensitive information being disclosed on SNSs.

Accessibility Concerns: One of the important differences between SNSs environment and e-commerce is that SNSs users' information is accessible to the wide-range of parties or to the public with or without any restriction. According to the study by Christofides et al. (2012), unwanted disclosure is one of the most prevalent bad experiences of SNSs users. According to a new Forrester survey, inadvertently getting access to the identity information is the biggest fear

of one-fifth of SNSs users in US (Levien 2015). The other important concern of SNSs users which has been reported in this study is the fear of getting unwanted contacts and messages. Hence, we propose the other dimension of UPCSNS as the users' concerns about who can access their online profiles and if their information can be leaked to the others.

Potential Negative Consequences: There are several privacy threats related to the SNSs. Among these threats, identity theft is the most reported from SNSs users (e.g. Fogel and Nehmad 2009; Johnson et al. 2012; Krasnova et al. 2010, 2012; Nosko et al. 2010). There may be also other negative consequences, such as companies use SNSs users' data for advertising purposes, government search and monitor users' information for political reasons, or a company use SNSs data to monitor their employees' activities (Duggan et al. 2014; Madden 2012). As the report by Madden et al. (2015) shows, 69 percent of US adults are concerned about their activities on SNSs being monitored and their data being used for other purposes without their consents. Hence, the third proposed dimension for measuring UPCSNS would be concerns regarding the negative consequences of sharing personal information on SNSs.

SNSs Privacy Policy Concerns: The last dimension that we propose for measuring UPCSNS is users' concerns towards the SNSs privacy policy behaviors. Different SNSs have different privacy policies; therefore, users may have different levels of trust towards different SNSs.

Furthermore, in SNS, users could have interactions in different groups; hence, their concerns would be on multiple different privacy policies or lack of policies (social website communication carrier, government, group members' rights, and etc.). SNSs users are concerned whether the SNSs privacy policies are clear and if the SNSs keep its promises or not. Thus, our last proposed dimension of UPCSNS is the users' concerns regarding the SNSs privacy policies.

Research Methodology

The proposed measurement scales are listed in Appendix 1. To enhance the clarity and relevance, these preliminary items will be discussed with expert judges and a group of SNSs users for further improvement. We will then run the pilot study to assess the reliability and conciseness of the survey instruments. Then the full study will be conducted to identify the factor structure of UPCSNS and the nomological validity of UPCSNS. To identify the factor structure of UPCSNS, first we will conduct an exploratory factor analysis of the factors of UPCSNS, and then we will run the confirmatory factor analysis. In the CFA analysis, we will test different hypothesized models to find whether the items of MUIPC form into a single factor or into one, two, or three first-order factors. We will also test a model in which the three first order factors be measured by a second-order factor UPCSNS (Xu et al. 2012). Based on Stewart and Segars (2002), in order to validate the nomological validity of higher order construct of UPCSNS, we will also measure behavioral intention using the items of Malhotra et al. (2004), and prior privacy experience using the items of Smith et al. (1996).

Limitations and Conclusion:

The purpose of this study is to respond to the call for establishing new measurement scales for privacy concerns in SNSs' environment. We proposed four dimensions for measuring UPCSNS and developed the initial measurement scales for specifically addressing privacy concerns in SNSs. This study is focused on the development of instruments for UPCSNS. In future, an extension of this study need to be done in order to check the UPCSNS in a larger nomological model and study the role of UPCSNS in influencing users' actual behaviors. This work can be considered as the beginning of further research on the concept of privacy concerns in SNSs. The measurements need to be verified and could be used in future SNSs privacy studies.

References:

- Bélanger, F., and Crossler, R. E. 2011. "Privacy in the Digital Age: A Review of Information Privacy Research in Information Systems," *MIS Quarterly* (35:4), pp. 1017–1041.
- Boguslaw, R., and Westin, A. F. 1968. "Privacy and Freedom," *American Sociological Review*, New York: Atheneum, p. 173.
- Boyd, D. M., and Ellison, N. B. 2007. "Social network sites: Definition, history, and scholarship," *Journal of Computer-Mediated Communication* (13:1), pp. 210–230.
- Campbell, A. J. 1997. "Relationship marketing in consumer markets: A comparison of managerial and consumer attitudes about information privacy," *Journal of Interactive Marketing* (11:3), pp. 44–57.
- Christofides, E., Muise, A., and Desmarais, S. 2012. "Risky Disclosures on Facebook: The Effect of Having a Bad Experience on Online Behavior," *Journal of Adolescent Research* (27:6), pp. 714–731.
- Clarke, R. 1999. "Internet privacy concerns confirm the case for intervention," *Communications of the ACM*, pp. 60–67.
- Duggan, M., Rainie, L., Smith, A., Funk, C., Lenhart, A., and Madden, M. 2014. "Online Harassment," *Pew Research Center*.
- Ellison, N. B., Steinfield, C., and Lampe, C. 2007. "The benefits of facebook 'friends': Social capital and college students' use of online social network sites," *Journal of Computer-Mediated Communication* (12:4), pp. 1143–1168.
- Fogel, J., and Nehmad, E. 2009. "Internet social network communities: Risk taking, trust, and privacy concerns," *Computers in Human Behavior* (25:1), Elsevier Ltd, pp. 153–160.
- Gross, R., and Acquisti, A. 2005. "Information revelation and privacy in online social networks (Facebook case)," in *Proceedings of the 2005 ACM workshop on Privacy in the electronic society*.
- Johnson, M., Egelman, S., and Bellovin, S. M. 2012. "Facebook and privacy: it's complicated," *Proceedings of the eighth symposium on usable privacy and security. ACM* (Section 2), pp. 1–15.
- Krasnova, H., Spiekermann, S., Koroleva, K., and Hildebrand, T. 2010. "Online social networks: why we disclose," *Journal of Information Technology* (25:2), Palgrave Macmillan, pp. 109–125.
- Krasnova, H., Veltri, N. F., and Günther, O. 2012. "Self-disclosure and privacy calculus on social networking sites: The role of culture intercultural dynamics of privacy calculus," *Business and Information Systems Engineering* (4:3), pp. 127–135.
- Levien, S. 2015. "Privacy Is the Next Consumer-LED Market Shift," *Forrester Research, Inc.*
- Madden, M. 2012. "Privacy management on social media sites," *Pew Research Center*.
- Madden, M., Rainie, L., Perrin, A., Duggan, M., and Page, D. 2015. "Americans' Attitudes About Privacy, Security and Surveillance," *Pew Research Center*.
- Malhotra, N. K., Kim, S. S., and Agarwal, J. 2004. "Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model," *Information Systems Research* (15:4), INFORMS, pp. 336–355.
- Nosko, A., Wood, E., and Molema, S. 2010. "All about me: Disclosure in online social networking profiles: The case of FACEBOOK," *Computers in Human Behavior* (26:3), Elsevier Ltd, pp. 406–418.

- Shelton, M., Rainie, L., Madden, M., Anderson, M., Duggan, M., Perrin, A., and Page, D. 2015. "Americans' Privacy Strategies Post-Snowden," *Pew Research Center*.
- Skinner, G., Han, S., and Chang, E. 2006. "An information privacy taxonomy for collaborative environments," *Information Management & Computer Security* (14:4), pp. 382–394.
- Smith, H. J., Milberg, S. J., and Burke, S. J. 1996. "Information Privacy: Measuring Individuals' Concerns About Organizational Practices," *MIS Quarterly* (20:2), pp. 167–196.
- Stewart, K. A., and Segars, A. H. 2002. "An empirical examination of the concern for information privacy instrument," *Information Systems Research* (13:1), pp. 36–49.
- Wang, Y., Leon, P. G., Norcie, G., Acquisti, A., and Cranor, L. F. 2011a. "I regretted the minute I pressed share": A Qualitative Study of Regrets on Facebook," *Symposium on Usable Privacy and Security 2011, Pittsburgh (USA)* (August 2015), pp. 1–16.
- Wang, Y., N., Cranor, G., and Faith, L. 2011b. "Who Is Concerned about What? A Study of American, Chinese and Indian Users' Privacy Concerns on Social Network Sites," *Trust and trustworthy computing* (10), pp. 146–153.
- Xu, H., Gupta, S., Rosson, M. B., and Carroll, J. M. 2012. "Measuring mobile users' concerns for information privacy," *Proceedings of the 33th International Conference on Information Systems*.
- Xu, H., and Teo, H. 2004. "Alleviating consumer's privacy concern in location-based services: A psychological control perspective.," *Proceedings of the Twenty-Fifth International Conference on Information Systems* (Beinat 2001), pp. 793–806.

Appendix1: Research Constructs and Measures

Scale items:

Information Sensitivity Concerns

- 1) I am concerned about revealing my identity information on my SNS profile
- 2) I am worried to disclose my private life information on SNSs.
- 3) I believe that sharing controversial political opinion on SNSs is not a good idea.
- 4) I believe that sharing personal information on SNSs is not wise.
- 5) I am concerned that SNSs ask me to reveal my personal information.
- 6) On a scale from 1 (not at all) to 7 (very much), please rate how you think the following information is sensitive:

Gender- Birthdate- Hometown- Email address -Mobile phone -Current city/town -Job listed- Job position- Job place- Educational Degree- College/university name -Relationship status -Sexual orientation- Political views -Religious views -Favorite music Favorite books -favorite movies- Likes (pages the users like) -Profile picture- Tagged photos -Photo Albums-Sharing videos Your Notes- Friends' list- Groups list

Accessibility Concerns

- 1) I am concerned that my personal profile on SNS may be accessed by someone outside of my connections.

- 2) I am worried about government or company can access my personal information on my SNS profile.
- 3) I do not want my parents or teachers access my contents (comments, shared information, etc.) being shared on SNS.
- 4) I am concerned about a stranger can contact me and send me messages on SNSs.
- 5) I am concerned about SNSs providers reveal my personal information to third parties.
- 6) I believe that SNSs could reveal my personal information to the third companies.
- 7) On a scale from 1 (not at all) to 7 (very much), please rate the level of control you have for the following group of people getting access to your data:

Your friends- friends of your friends- public users

Negative Consequence Concerns

- 1) I am concerned that my personal information on my SNS profile may be used for other purposes such as advertisement without my authorization.
- 2) I am concerned that my activities on SNS being monitored by government, my employer, etc. and produce harmful consequences
- 3) I am concerned about identity theft due to the publication of my personal identity information on SNS.
- 4) I am concerned about cyber bullying or harassment through SNS.
- 5) I am worried that sharing my information on SNSs may lead to negative consequences like harassment, identity theft, and so on.

SNSs Privacy Policy Concerns

- 1) I am concerned that this SNS keeps its promises.
- 2) I am worried about the SNS privacy protection behaviors.
- 3) I believe that this SNS privacy policy is not clear.
- 4) I believe that this SNS is not trustful.

Behavioral Intentions(Xu and Teo 2004)

- 1) I am likely to disclose my personal information on SNSs.
- 2) I predict I would use SNSs in the next 6 months.
- 3) I intend to use SNSs in the next 6 months.

Prior Experience(Smith et al. 1996)

- 1) How often have you personally experience violating your privacy on SNSs?
- 2) How much have you heard or read during the last year about the misuse of information on SNS profiles?
- 3) How often have you personally been the victim of violating the privacy on SNSs?