CONCERNING SNS USE: HOW DO ISSUES OF PRIVACY AND TRUST CONCERN USERS?

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ABSTRACT
As the popularity of social networking sites (SNSs) continues to grow, the research on what affects user intentions is also experiencing increased attention. This study investigates the effect of privacy and trust in other SNS users on trust in the SNS and the relationship between trust in the SNS, social norms and the intention to use an SNS. Data collected from online surveys were analyzed using linear regression analysis. The findings indicate that perceived privacy and trust in other SNS users has a positive relationship with trust in the SNS. However, the data showed no significant relationship between trust in the SNS and intention to use the SNS, unless mediated by social norms. This finding contributes to the literature on SNS intention to use, by confirming that social norms play a significant role in the way SNS users evaluate their intention to use.

Keywords  
trust, privacy, social norms, social networking site

INTRODUCTION
Social networking sites (SNSs) such as Facebook, MySpace and Twitter have become ubiquitous in the Internet world today. Millions of users around the world can gain access to these free online systems to “stay connected online with their offline friends and new online acquaintances, or to share user-created content” (Kim, Jeong, and Lee, 2009). An observed phenomenon is the way in which some of these SNSs grow in number of users more than others. “Orkut and Friendster originated in the US, but have been overshadowed by other sites and instead enjoy popularity elsewhere” (Kim et al., 2009b). Additionally, some sites such as Facebook and Twitter continue to see an increase in membership and usage while others such as MySpace have struggled to remain competitive.

In January 2010, Facebook grew from over 300 million active users to over 500 million by the end of the year and 750 million users by the middle of 2011 (Facebook Press Release, Statistics). In contrast, MySpace which experienced similar extraordinary growth initially, has experienced rapid declines in its user base, laying off almost one-third of its employees in and another 47% of the remaining employees in January 2011 (Arango, 2011). In 2011 News Corporation, parent company of MySpace, sold the failing SNS for only $35 million after acquiring it in 2005 for $580 million (Stelter, 2011). It is therefore of interest to both practitioners and information systems researchers to understand what impacts the intention to use and actual use of these online systems.

As Facebook has currently become the dominant SNS, it is the system of concern in this study. Social networking sites have been defined as being “web based services that allow individuals to (1) construct a public or semipublic profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (Boyd & Ellison, 2007). Put more simply “social networking sites are web sites that allow people to stay connected with other people in online communities” (Kim et al., 2009b). SNSs can also be defined by the specific set of features they usually incorporate such as user profiles, friend-connections and private messaging features.

As the popularity of SNSs increases, so too does the research on various behaviors associated with their use. Initial studies have investigated whether the issue of privacy has become a major concern for users of SNSs (Awad and Krishnan, 2006; Dwyer, Hiltz and Passerini, 2007) while others have examined the significance of such elements as technology acceptance, critical mass, social norms, and trust and their effect on intention to use an SNS (Sledgianowski and Kulviwat, 2009). The easy availability of vast amounts of personal data that is both stored and shared on social networks may unwittingly expose users to numerous privacy risks.
The current study investigates the effect of perceived privacy concerns and trust in other SNS users on trust in the SNS itself as well as the effect of trust in the SNS and social norms on users’ intention to use an SNS. Our research question is: How do user concerns regarding issues of privacy and trust, as well as the pressure of social norms affect the intention to use the SNS? The remainder of the paper is organized as follows. The theoretical background and hypotheses development is reviewed. Next, the methodology employed in the study is described, followed by the analysis of the data. Finally, a discussion of the results, limitations, and directions for future research are presented.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Synthesizing conceptual frameworks from Ajzen and Fishbein (1973) and Sledgianowski and Kulviwat (2009), a modified model of SNS user intentions is presented, based on perceptions of privacy, social norms, and trust in both the SNS as well as the other SNS members. It is theorized that a user’s perception of privacy afforded by the SNS as well as trust in other SNS users will positively affect their trust in the SNS. Additionally, the perceptions of social norms and the trust in the SNS will both positively affect the intention to use the SNS. The model is shown below in Figure 1, followed by a discussion of each of the constructs and associated hypotheses.

![Figure 1 – Proposed Privacy and Trust Model](image)

Perceived Privacy

Information privacy refers to what extent, when, and how information about individuals is communicated to others (Chai, Das, and Rao 2011). Because of the personal nature of social interactions that occur in SNS use, a great deal of attention has been paid to the privacy of user content (Awad and Krishnan, 2006; Dwyer et al. 2007). Prior research has examined how information privacy concerns affect user intentions to provide information to web sites (Awad and Krishnan, 2006). Studies have shown that while users express very strong concerns about the privacy of the personal information they share on an SNS, they are not as attentive as they should be when it comes to safeguarding that information (Awad and Krishnan, 2006; Krasnova, Spiekermann, Koroleva, and Hildebrand, 2010).

Studies of why SNS users disclose personal information have used the framework of social exchange theory, which suggests that potential benefits of interpersonal relationships are weighed against the costs associated with creating that relationship (Krasnova et al., 2010). This offers an explanation of why SNS users would be willing to disclose so much of their personal information, even when the risk of someone misusing that information is so high in online networks. In other words, the loss of a certain amount of privacy is viewed as the price of acquiring the desired benefits of those online relationships (Krasnova et al., 2010).

Additionally, prior research indicates a reciprocal relationship between trust and self-disclosure in online communication (Christofides, Muise, Desmarais, 2009). In other words, the more users disclose about themselves, the more other users are willing to trust them. Disclosing information to those in your personal network is one way to build and maintain relationships. Research has found that SNSs can offer the relationship maintenance that gives young adults the ability to adjust to a new life situation, such as going away to college (Christofides et al., 2009). These researchers note that disclosure of such personal information increases the perception of trustworthiness and results in reciprocal personal disclosure by the other party. Therefore, we propose the following hypothesis:

H1: Perceived privacy will have a positive relationship with a user’s trust in the SNS
Trust

Interpersonal trust has been defined in the literature as confident positive expectations regarding others’ conduct (Staples and Webster 2008). Trust has been identified as a critical component of virtual interactions, where many traditional cues regarding the other party’s motives might not be readily apparent (Jarvenpaa and Leidner, 1999; Morris et al., 2002; Peters and Manz, 2007; Staples and Webster, 2008). Research has recognized that trust is an important element in any virtual transaction, because the technology used in virtual exchanges can change the context of human relationships by changing both their physical infrastructures and social dimensions (Jarvenpaa, Shaw, and Staples, 2003).

Trust has been examined as both an antecedent and an affect in prior research, and categorized with three dimensions: disposition to trust, institution-based trust, and trusting beliefs (Chen and Barnes, 2007; Kim, Shin, and Lee, 2009). Disposition to trust is the willingness to depend on others, while institution-based trust refers to structural or environmental mechanisms in place that will ensure trustworthy behavior of individual members, and finally trusting beliefs are concerned with the firm’s integrity, ability and benevolence (Kim et al., 2009a).

The current study examines sharing information with others in one’s personal network through the use of a public SNS, and focuses on the disposition to trust other users of the SNS, as well as the trusting beliefs regarding the SNS provider’s integrity, ability and benevolence. Institution-based trust, or the elements of security put in place by the organization is thought to have a marginal effect on SNS users since the greatest risk of sharing personal information lies primarily in what other members are likely do with the information shared rather than with the site itself.

Therefore, the central trust is in those people with whom the knowledge is shared, as sharing has been shown to increase recipients’ power over the one sharing information (Staples and Webster, 2008). Thus, the interaction of disclosing personal information with other SNS users can be viewed as a trust-building activity. It has been noted that people who disclose information on Facebook are seen as more trustworthy (Christofides et al., 2009). Additionally, Krasnova et al. (2010) found that trust in other SNS users and also trust in the SNS provider were viewed as ways to alleviate individuals’ perceptions of the risks associated with sharing personal information. Therefore, we propose the following hypothesis:

H2: Trust in other SNS users will have a positive relationship with the user’s trust in the SNS

Intention to Use

The Theory of Reasoned Action (TRA) proposed by Ajzen & Fishbein (1973) in social psychology posits that behavioral intentions are influenced by both attitudes and subjective norms. Attitude toward behavior stems from an individual’s feelings and beliefs (either positive or negative) regarding the performing of a specific behavior. It also takes into account a person’s belief regarding the desirability of related consequences occurring from that specific behavior.

As previously defined, trust includes the trusting beliefs regarding the SNS provider’s integrity, ability and benevolence (Kim et al., 2009a) and are expected to have an impact on an individual’s behavior intention. Furthermore, previous research found that trusting beliefs have a positive effect on intention to reveal personal information (Malhotra et al., 2004). In the context of this study, behavioral intention refers to the intention to use a social networking site. Thus, intention to use is defined as the user’s evaluation of the desirability of his or her using the SNS system (Mathieson, 1991). Therefore, we propose the following hypothesis:

H3: Trust in the SNS will have a positive relationship with a user’s intention to use the SNS

Social Norms

Social norms is related to what is accepted and expected by the opinions of the community which the individual values. So it is reasonable to propose that a community’s attitude toward any behavior will have an influence on an individual’s likelihood to perform that specific behavior. The concept of social norms is defined as an individual’s perception of whether people important to the individual think the behavior should be performed.

Social norms, also referred to as social influence, have been added to various models to improve the explanatory power of technology acceptance and usage (Ajzen and Fishbein 1975; Sledgianowski & Kulviwat, 2009; Venkatesh et al., 2003). Social norms also include the weight of the motivation to comply. The influence of those people who are important to the user is expected to have a significant effect on their intention to use the SNS. Therefore we propose the following hypothesis:

H4: Social norms will have a positive relationship with a user’s intention to use the SNS
METHODOLOGY
The data for this study were collected from an online survey administered to undergraduate students at a large university in the southwestern United States. College students were deemed appropriate respondents since Facebook, the focus of this study, was originally targeted towards college students as a tool to stay connected. We received 166 responses and removed 30 for incomplete answers. This yielded an 81.9% usable response rate.

The survey consisted of previously validated scales that were adapted to the context of this study where necessary in addition to a developmental scale for the construct of perceived privacy. A list of the scale items and their sources are listed in Appendix A. Seven-point Likert scales were used to measure the perception items in the survey (from “1 – strongly agree” to “7 – strongly disagree”). Demographic data were also collected and the descriptive statistics for our sample of 136 participants are presented in Table 1. Of interest are the numbers of respondents who report having a Facebook account, 91%. Fully 80% of those respondents reported using their account within the last 24 hours, with an average age of 26 years.

<table>
<thead>
<tr>
<th>Gender</th>
<th>%</th>
<th>Classification</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>63%</td>
<td>Freshman</td>
<td>0%</td>
</tr>
<tr>
<td>Female</td>
<td>37%</td>
<td>Sophomore</td>
<td>3%</td>
</tr>
<tr>
<td>Facebook Use</td>
<td></td>
<td>Junior</td>
<td>51%</td>
</tr>
<tr>
<td>Have account</td>
<td>91%</td>
<td>Senior</td>
<td>43%</td>
</tr>
<tr>
<td>Don't have account</td>
<td>9%</td>
<td>Other</td>
<td>2%</td>
</tr>
<tr>
<td>Last use of Facebook</td>
<td>Age</td>
<td>Average</td>
<td>26 yrs</td>
</tr>
<tr>
<td>Within last 24 hrs</td>
<td>80%</td>
<td>Maximum</td>
<td>53 yrs</td>
</tr>
<tr>
<td>Past week</td>
<td>18%</td>
<td>Minimum</td>
<td>19 yrs</td>
</tr>
<tr>
<td>Past month</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Descriptive statistics

DATA ANALYSIS
Assessment of the Measurement Model
The adequacy of the measurement instrument is determined by examining both the reliability of the items and also through construct validity, which is comprised of both convergent and discriminant validity (Gerbing & Anderson, 1998). The most commonly used measure for determining reliability is with Cronbach’s Alpha values higher than the generally accepted threshold of .70 (Nunnally, 1967). The values ranged from .739 to .903 except the one developmental construct of perceived privacy, with a value of .627. This value is considered marginal in terms of acceptability, however for a developmental scale item, is considered acceptable for exploratory analysis (Peterson, 1994). The Cronbach’s Alpha values are presented in Appendix A alongside each construct.

Convergent and discriminant validities are determined through factor analysis of the survey items. Factor analysis is a branch of statistics that is concerned with reducing a large number of categories or factors to a smaller number (Harman, 1968). Convergent validity provides a measure of the variance shared between a construct and its factors. It is demonstrated when items that measure the same construct have high correlations and discriminant validity is shown when items measuring different constructs do not have high correlations (Gefen and Straub, 2005).

When a thorough literature review is conducted and latent variables are derived from previous research the appropriate factor analysis approach is confirmatory factor analysis (CFA) (Suhr, 2006). However, when new items are used for measuring latent variables, exploratory factor analysis is the recommended approach (Suhr, 2006). As we adapted new items for measuring the perceived privacy latent variable, we used exploratory factor analysis (EFA) for this construct. We performed factor analysis first with the latent variables: trust in other users and perceived privacy. Next, we performed CFA on the latent variables trust in SNS, social norms, and intention to use. Results of our factor analysis are presented along with the items in Appendix A. Four of the items were reverse-coded and the CFA and EFA results endorsed the unidimensionality of our variables. This strong construct validity supported proceeding with the testing of the hypothesized relationships.
Assessment of Hypotheses

In order to test the hypothesized relationships among the constructs, we used linear regression analysis, in which the average scores for the items loaded on corresponding factors are our independent/dependent variable values. To test H1: “Perceived privacy will have a positive relationship with a user’s trust in the SNS” and H2: “Trust in other SNS users will have a positive relationship with the user’s trust in the SNS” we evaluated the following model:

\[
\text{Trust in SNS} = b_0 + b_1 \times \text{Trust in Other Users} + b_2 \times \text{Perceived Privacy}
\]

The results of the analysis suggest that the hypotheses H1 and H2 are supported by the data with an R^2 of 0.279 (p-value = 0.000). The coefficients are displayed on the respective arrows on Figure 2.

In order to test H3: “Trust in the SNS will have a positive relationship with a user’s intention to use the SNS” and H4: “Social norms will have a positive relationship with a user’s intention to use the SNS” we evaluated the following model:

\[
\text{IU} = b_0 + b_1 \times \text{Trust in SNS} + b_2 \times \text{Social Norms}
\]

The results of the analysis reveal that H3 is not supported as Trust in the SNS is found to be an insignificant indicator of Intention to Use with a p-value = 0.059. However, the data show that H4 (Social Norms \(\rightarrow\) Intention to use) is supported with a p-value < .001. A summary of the hypotheses are presented in Table 2.

Since the relationship between trust and intention to use (H3) is theoretically established in the literature (Kim et al., 2009a; Malhotra et al., 2004) but was not supported, and the hypothesis relating social norms to intention to use (H4) is supported, we examined the data further to gain a better understanding.

In a post hoc analysis, we explored an alternative approach in which social norms mediates the relationship between trust in SNS and intention to use. Previous research has hypothesized this relationship but failed to find support for it (Chow and Chan, 2008). We used Hayes’ PROCESS method (Hayes 2012) to evaluate the suspected mediated relationship. The PROCESS software follows the steps of the mediation analysis described by Baron and Kenney (1986) where X= trust, M= social norm and Y= intention to use. Results are presented below in Table 3.

Table 2: Summary of Hypotheses Results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Comfort with privacy concerns will have a positive relationship with a user’s trust in the SNS</td>
<td>Supported</td>
</tr>
<tr>
<td>H2: Trust in other SNS users will have a positive relationship with the user’s trust in the SNS</td>
<td>Supported</td>
</tr>
<tr>
<td>H3: Trust in the SNS will have a positive relationship with a user’s intention to use the SNS</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H4: Social norms will have a positive relationship with a user’s intention to use the SNS</td>
<td>Supported</td>
</tr>
</tbody>
</table>

Table 3: Mediation Regression Coefficients with respective p-values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Relationship</th>
<th>Path coefficient and p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>X (\rightarrow) M</td>
<td>Trust (\rightarrow) SN</td>
<td>.3893 (p-value=.0000)</td>
</tr>
<tr>
<td>X (\rightarrow) Y</td>
<td>Trust (\rightarrow) IU</td>
<td>.3654 (p-value=.006)</td>
</tr>
<tr>
<td>X and M (\rightarrow) Y</td>
<td>Trust and SN (\rightarrow) IU</td>
<td>SN = .4015 (p-value=.0010) TRUST = .2091 (p-value=.0593)</td>
</tr>
</tbody>
</table>

Figure 2 – Measured Privacy and Trust Model

![Figure 2 – Measured Privacy and Trust Model](image-url)
A mediating variable exists when that variable’s presence is required for a relationship of other variables to be significant (Kerlinger and Lee, 2000). As indicated in Table 3, when evaluated separately, both trust and social norms show a significant positive relationship with intention to use. However, when analyzed together, trust is no longer significant. These results indicate that social norms partially mediate the relationship between trust in SNS and intention to use.

**DISCUSSION, LIMITATIONS, AND FUTURE DIRECTIONS**

The goal of this study was to examine how user concerns regarding issues of privacy and trust, as well as the pressure of social norms affect the intention to use the SNS. The data analysis of the proposed model shows support for three of the four proposed hypotheses. The data indicate a significant relationship between the perceived privacy concerns of the SNS users and trust in an SNS (H1) as well as a significant relationship between trust in other SNS users and the trust in an SNS (H2).

This can be understood when considering that trust in other SNS members is related to the belief that the other parties possess characteristics which inhibit them from engaging in opportunistic behavior (Krasnova et al., 2010). When users of an SNS have increased levels of trust in other SNS members, this will impact their overall trust in the SNS itself. Furthermore, SNS users’ perceived privacy concerns have a direct impact on their willingness to trust the SNS since it has been suggested that disclosure of personal information increases the perception of trustworthiness (Christofides et al. 2009).

Of interest was the finding that social norms had the greater influence on a user’s intention to use an SNS than did trust when the two constructs are evaluated together in the model. Although prior research has found trust to have a positive effect on intention to use (Malhotra et al. 2004), our analysis showed that it was insignificant in the presence of social norms. In a post hoc analysis of the data, it was discovered that social norms partially mediates the relationship, indicating that trust in an SNS in and of itself is not sufficient to impact the intention to use the SNS without the added effect of social norms. This mediated relationship was previously proposed by Chow and Chan (2008) in the context of knowledge sharing within an organization, but these authors found no support for it. Our results, however, confirm the significance of social norms as a mediator between trust in the SNS and intention to use it. This finding extends the literature by providing empirical support for this relationship.

There were some limitations to this study that should be noted. First, only college students were used as subjects of our survey. While there has been some criticism of using college students in terms of limiting the generalizability of the results, we felt students were a good barometer of Facebook users. Students are a significant demographic on the site, being the original intended users. Also, the average age of our users was 26 years, with the oldest student being 53 years. This diversity in the range of age groups lends a wider range of generalizability to our results.

Another limitation to the study is that we examined only a subset of factors that have been identified as potentially important to the intention to use an information system. While the literature is still relatively new in regards to investigating the use of social networking systems per se, it is expected that other factors such as perceived playfulness, critical mass and perhaps even gender could have significant effects on the intention to use an SNS. These factors represent areas of future research.

**CONCLUSION**

This research investigated the effect of privacy and trust in other SNS users on trust in the SNS as well as the relationship between trust in the SNS, social norms and the intention to use an SNS. Linear regression analysis was performed on data collected from online surveys that were distributed to a group of college students. The findings indicated that perceived privacy and trust in other SNS users have a significant positive relationship with trust in the SNS. However, the data showed no significant relationship between trust in the SNS and intention to use the SNS, unless mediated by social norms. This finding contributes to the literature on SNS intention to use, by confirming that social norms play a significant role in the way SNS users evaluate their intention to use. Clearly, when interacting through the use of social media, an important criterion affecting the intention to use that online information system will be social norms or the influence of those in a user’s social circle.

**REFERENCES**


**APPENDIX A**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Factor Loading</td>
</tr>
<tr>
<td>Trust in other users (based on Krasnova et al. 2010)</td>
<td>Other Facebook members are honest in dealing with each other</td>
<td>.925</td>
</tr>
<tr>
<td></td>
<td>Other Facebook members care about the well-being of others</td>
<td>.914</td>
</tr>
<tr>
<td></td>
<td>Other Facebook members are trustworthy</td>
<td>.871</td>
</tr>
<tr>
<td></td>
<td>Other Facebook members will do their best to help me</td>
<td>.716</td>
</tr>
<tr>
<td>Perceived Privacy (based on Malhotra et al., 2004)</td>
<td>(Reverse-coded) Overall, I find it risky to publish my personal information on Facebook</td>
<td>.807</td>
</tr>
<tr>
<td></td>
<td>I feel safe publishing my personal information on Facebook</td>
<td>.786</td>
</tr>
<tr>
<td></td>
<td>Overall, I see no real threat to my privacy due to my presence on Facebook</td>
<td>.650</td>
</tr>
<tr>
<td></td>
<td>(Reverse-coded) I fear that something unpleasant can happen to me due to my presence on Facebook</td>
<td>.415</td>
</tr>
<tr>
<td>Trust in SNS (based on Krasnova et al. 2010)</td>
<td>Facebook is trustworthy</td>
<td>.867</td>
</tr>
<tr>
<td></td>
<td>Facebook keeps its commitments to its members</td>
<td>.864</td>
</tr>
<tr>
<td></td>
<td>Facebook is also interested in the well-being of its members, not just its own</td>
<td>.857</td>
</tr>
<tr>
<td></td>
<td>Facebook is honest in its dealings with me</td>
<td>.838</td>
</tr>
<tr>
<td></td>
<td>Facebook makes good-faith efforts to address most member concerns</td>
<td>.820</td>
</tr>
<tr>
<td>Social Norms (adapted from Taylor &amp; Todd 1995)</td>
<td>People who are important to me think that I should frequently use Facebook</td>
<td>.856</td>
</tr>
<tr>
<td></td>
<td>My friends think that I should frequently use Facebook</td>
<td>.784</td>
</tr>
<tr>
<td></td>
<td>People who influence my behavior encourage me to use Facebook</td>
<td>.780</td>
</tr>
<tr>
<td></td>
<td>My parents think that I should frequently use Facebook</td>
<td>.566</td>
</tr>
<tr>
<td>Intentions to Use (adapted from Taylor &amp; Todd 1995)</td>
<td>I will be a heavy Facebook user</td>
<td>.883</td>
</tr>
<tr>
<td></td>
<td>(Reverse-coded) I will not use Facebook frequently</td>
<td>.853</td>
</tr>
<tr>
<td></td>
<td>I intend to use Facebook frequently</td>
<td>.851</td>
</tr>
<tr>
<td></td>
<td>(Reverse-coded) I intend to be a light Facebook user</td>
<td>.760</td>
</tr>
</tbody>
</table>

*Items, sources, loadings and Cronbach alpha values*