

<http://ansinet.com/itj>

ITJ

ISSN 1812-5638

INFORMATION TECHNOLOGY JOURNAL

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Research on Influence Factors and Behavioral Willing of User Privacy Concern on Social Network Platform

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Abstract: In social network, more and more users are concerned about the privacy and most of them regard influence factors as static. This research establishes dynamic influence model of the privacy concern based on four types of social sites including emotional, tool, mixed and non-tied type. By considering direct and indirect influence that user may get, as well as different roles and characteristics of different types of social networks, this study finds the emergency and media related to the privacy and the media publicity have apparent influence on the privacy concern. By comparing four types of social networks, the user privacy concern is affected significantly by dynamic factors, in which mixed social network represented by SinaWeibo indicates the result that is closest to the assumption and closest to social behavior characteristics of the user.

Key words: Social network, privacy, dynamic influence factor, group influence factor, behavioral intention

INTRODUCTION

As the media and user expose more privacy disclosure events more frequently, the user privacy concern degree are changing significantly. In researching privacy issues in Internet environment (online), Luo (2002) referred to the definition of Westin (1968): the privacy 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.

For the privacy concern measurement, especially the privacy concern measurement in the information area, there were two major models in the academic community: CFIP instrument posited by Smith *et al.* (1996) and IUIPC model developed by Malhotra *et al.* (2004) based on CFIP model. Yang *et al.* (2008) made the investigation and statistics to existing privacy concern instrument and found that compared with CFIP instrument, IUIPC had higher stability and convergence efficiency and was more suitable for China's situation. Hence, IUIPC instrument was used in this study for the privacy concern measurement.

As for factors that influence privacy concern, Cheshlre *et al.* (2010) thought variables such as network information control, adverse event experience, IT knowledge would affect the user privacy concern to some degree; Taylor *et al.* (2009) found the cash and non-cash compensation would reduce the user privacy concern to some extent.

Individual privacy concern was also affected by others. Social influence could explain how people percept 38.1% of Internet privacy (Gong and Jin, 2008). Based on the theory of Granovetter (1973), social ties included strong ties and weak ties. Huang (1988) indicated three-tier relationship of Chinese people: "Inside-middle-outside" with "metaphor of concentric circle" and each tier was suitable for different switching specification. In "concentric circle", the center was "emotional tie", the outer tier was "tool tie" and the tier in between was "mixed tie".

However, previous studies on the user privacy concern influence factors thought most influence factors were static. This study established dynamic influence model of the privacy concern from dynamic perspective by considering indirect and indirect influence of the user, as well as different characteristics of different types of social networks based on four types of social networks: emotional, tool, mixed and tied type.

THEORETICAL FRAMEWORK AND MODEL ASSUMPTION

This study initially decides to establish the following model. This model consists of four aspects: Individual level factor and group environment factor influencing social network user privacy concern, perception of benefits obtained by using social network, as well as the adoption behavior intent of the user after the interaction

of the privacy concern and benefit perception. In studying factors influencing the privacy concern, this study considers two factors: dynamic factors and group factors. Therefore, five influence factors are identified in this study-personal emergency (personal adverse event experience, media exposure contacted by the person), personal network literacy improvement, group emergency event (adverse event experience of others, media exposure contacted by others). In addition, this study measures the privacy concern with the cost expenditure and for the benefit, this study uses two factors: emotional benefit perception (emotional connection establishment or benefits obtained) and non-emotional benefit perception (reducing the cost of maintaining real-world user social network cost or other non-emotional benefit brought) and studies the influence of the benefit and cost on the adoption behavior of consumers under the interaction of the privacy concern and benefit perception. The theoretical model is shown in Fig. 1.

According to the above model, this study puts forward the following assumptions:

- H1:** In social network media platform, individual adverse event experience will increase the user privacy concern positively
- H2:** In social network media platform, negative media exposure will increase the user's privacy concern positively
- H3:** In social network media platform, the network literacy improvement will increase the user's privacy concern positively

- H4:** In social network media platform, adverse event experience of others will increase the user's privacy concern positively
- H5:** In social network media platform, negative media exposure of others will increase the user's privacy concern positively
- H6:** In social network media platform, emotional benefit drives the behavioral intent of the user positively
- H7:** In social network media platform, non-emotional benefit perception drives the behavioral intent of the user positively
- H8:** In social network media platform, the user privacy concern degree will affect the user's behavioral intention negatively

STUDY METHODOLOGY

In this study, the questionnaire is used to collect the data and corresponding environment adjustment is made specifically for emotional, tool, mixed and non-tied websites. The first type, emotional website, is represented by Renren and Kaixin; the second type, tool website, is represented by Linked In and Dajie; the third type, mixed website, is represented by SinaWeibo and TencentWeibo and the fourth type, non-tied website, is represented by Douban.

All variables in the model can be measured in the questionnaire, totally 9 variables and 54 measurement items. The interviewee uses general Likert 7-scale instrument to score each item, from "1-Completely disagree" to "7-Completely agree", Total 500

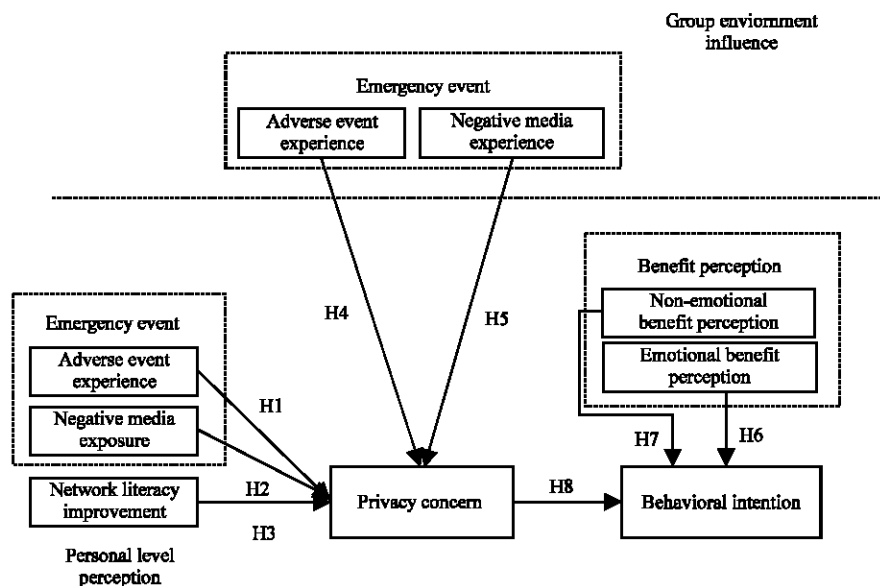


Fig. 1: Theoretical model of dynamic influence factors for social network user privacy concern

questionnaires were issued and 478 were returned, with a return percentage of 95.6%. There were 405 valid questionnaires, with a validity rate of 84.7%.

RESEARCH RESULT AND ANALYSIS

The reliability analysis result of four questionnaires in this study was shown in Table 1. The table showed that

Cronbach coefficient of total reliability was over 0.7, indicating the questionnaire developed for this study had good reliability. In addition, This study tests the validity of each variable. Testing result shows that the validity of four questionnaires is good.

Table 2 listed the model fitting measurement value and acceptable range recommended in common literatures. Results showed that except for RMSEA index larger than

Table 1: Questionnaire validity analysis

Questionnaire type	Total reliability	PAE	PME	PANI	SAE	SME	CIP	NCIP	BI
Emotional relationship site	0.897	0.523	0.750	0.629	0.768	0.293	0.586	0.767	0.625
Tool relationship site	0.897	0.700	0.776	0.613	0.658	0.387	0.676	0.620	0.625
Mixed relationship site	0.924	0.647	0.767	0.756	0.670	0.687	0.604	0.774	0.568
Non-tied relationship site	0.926	0.565	0.564	0.647	0.646	0.352	0.483	0.704	0.678

Table 2: Model fitting of four social networks

Fitting indicator	Acceptable recommended value	Social network			
		Emotional	Tool	Mixed	Non-tied
Chi-S/df	<3.00	2.350	2.294	2.128	2.287
RMSEA	<0.05-0.08	0.114	0.112	0.106	0.116
GFI	>0.90	0.965	0.958	0.915	0.962
AGFI	>0.90	0.958	0.956	0.896	0.958
RMR	<0.50	0.398	0.396	0.331	0.400

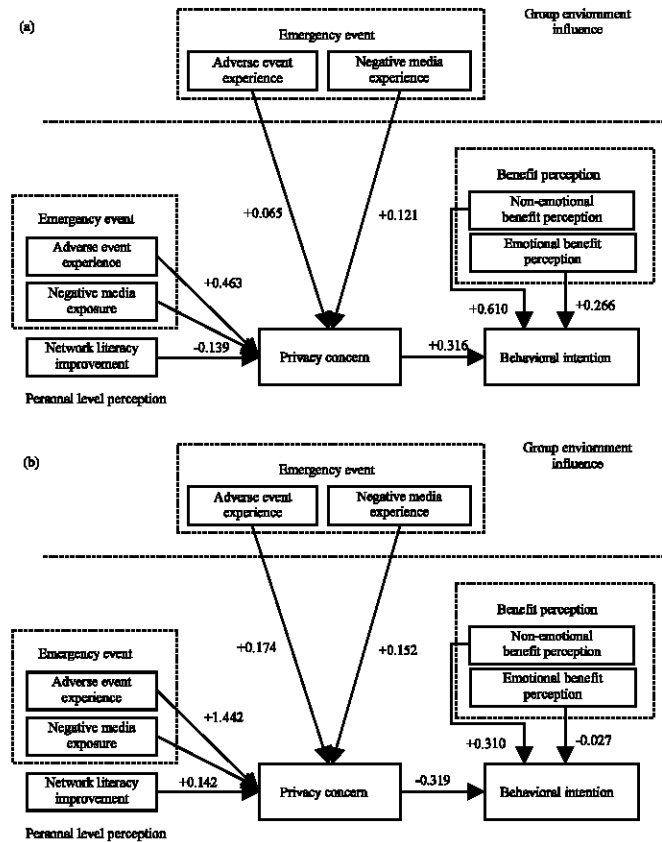


Fig. 2(a-d): Continue

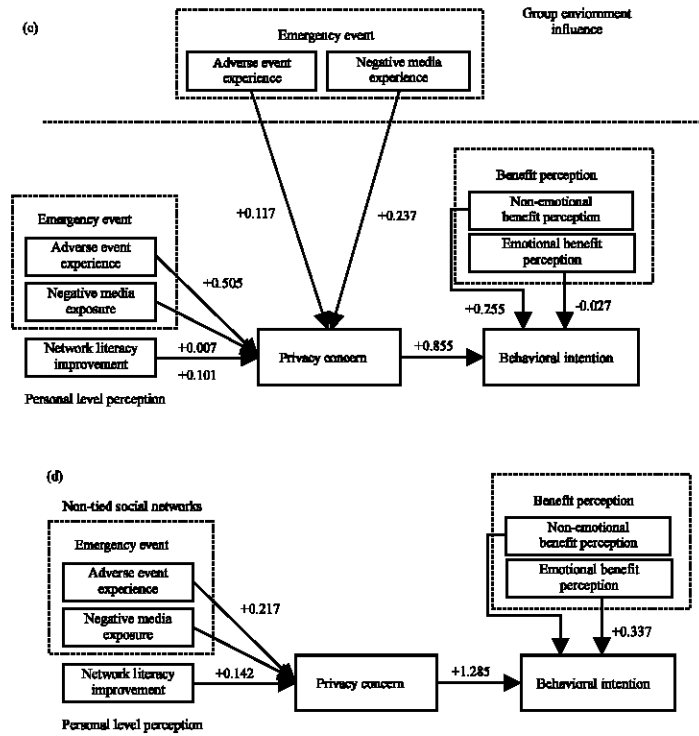


Fig. 2(a-d): Model modification of four social networks

the recommended value, other indicators were in the acceptable range. There was no indicator for evaluating the model individually and RMSEA indicator was close to the recommended value, so this model was evaluated acceptable generally.

For these four types of websites, the structure model analysis result was good, but different result existed for different website. The modified four models were shown in Fig. 2.

CONCLUSION

In four types of websites, personal adverse event (H1) experience factor will produce significant influence on the privacy concern of social network consumers.

In tool, mixed and non-tied social network, personal negative media exposure factor (H2) will produce significant influence on the privacy concern of social network. In these three kinds of websites, users can get negative media exposure from enterprises, public figures and society and therefore maintain a stronger privacy concern.

In emotional, tool and mixed social networks, adverse event experience of others (H4) and negative media exposure of others (H5) will produce significant influence on the privacy concern. This indicates that in these three

types of social networks, group factor has significant influence and the user will be affected by social network group significantly.

Among factors deciding behavioral intention, emotional benefit perception (H7) has significant influence on the user's behavioral intention in non-tied social network, indicating that in such social network, users intent to meet certain emotional demand, such as talking about a movie; while non-emotional benefit perception (H6) has no influence on behavioral intention, indicating that for non-tied social network, emotional orientation is high that tool orientation.

In tool-oriented social networks, non-emotional benefit perception (H6) has significant influence on behavioral intention while emotional benefit perception (H7) has no influence on behavioral intention. This indicates that in tool-oriented social networks, the user's intention is very clear, i.e., they want to meet rigid demand through social network, so emotional demand. Users can feel tangible benefits, such as getting valuable information or knowing helpful person. Mixed social network shares common characteristics of tool-oriented social networks. This indicates that in mixed social networks, users experience tangible benefits, such as receiving valuable information or know the person they are interested; while emotional benefit perception (H7) has no

influence on behavioral intention, indicating in existing mixed social network, tool orientation is higher than emotional orientation.

In emotional social networks, non-emotional benefit perception(H6) and emotional benefit perception (H7) have significant influence on behavioral intention, indicating in emotional social network, the user privacy exposure is to obtain emotional benefit like receiving the attention, encourage and affirmation and they also want to non-emotional benefits, such as small gift and prize like the medal or coupon. This provides the reference for the marketing of such websites.

In addition to above conclusions, different websites represent different special points. In emotional social network, personal negative media exposure (H2) has negative influence on the privacy concern. The reason may be that users think they know friends on emotional social network based on offline actual relationship, the trust degree among them is relatively high and this is real social network of users, so the more they receive negative information, the higher trust they have for their small network and the more privacy they are willing to expose in this small network.

In four types of social networks discussed in this study, personal network literacy improvement (H3) of only mixed social network products positive influence on the user privacy concern, so this result should be researched. The network literacy improvement is not be able to be observed easily. Maybe in social network similar to real social environment like SinaWeibo, users experience more complex, various and frequent privacy threats. Completely open mixed social network will not provide the security protection for users, or even has no any protection measure, so users must adapt to and improve their protection capability in the process of using social networks.

In tool-oriented social networks, the privacy concern has negative influence on behavioral intention (H8) of users, indicating the higher the user privacy concern degree is, the more users are willing to expose private information. Because such negative correlation is only represented on tool-oriented social networks. The reason may be that the usage essence and basic demand of users for tool-oriented social networks are to get more values by exposing more information. In other types of social networks, users need to make great efforts to protect the information and the only purpose and most valuable stake of them here is to get the value.

In non-tied social networks, adverse event experience of others (H4) and media exposure contacted by others (H5) have no influence on the privacy concern. This indicates that in non-tied social networks, the group

factor has little influence. Friends of users on the network have no direct connection with them, or have no influence on users.

ACKNOWLEDGMENTS

The research is supported by National Basic Research Program of China (973 Program) (2012CB315805), Project of National Natural Science Foundation of China (71172135, 71231002) and the Fundamental Research Funds for the Central Universities (2013RC0603).

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