

Review of Research on the Privacy Protection Behavior of Social Network Users

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ABSTRACT

This article takes WOS and CNKI literature as the analysis objects, and analyzes the current research status of social network users' privacy protection behaviors from four aspects: research theme, theoretical basis, data collection and analysis methods, and influencing factors. The research on the privacy protection behavior of social network users mainly explores the influencing factors of the adoption behavior of privacy protection measures; in the future, research on the privacy protection behavior of teenagers and elderly users can be strengthened.

Keywords: social network, personal privacy protection, information security

1. INTRODUCTION

The development of Web2.0 technology has promoted the rapid prosperity of social networks characterized by sharing. Social networks provide users with opportunities to keep in touch, develop relationships and create social capital[1], and gradually become an important platform for people to communicate and interact with others. Social networks encourage users to create SNS (Social networking sites) files and disclose personal information to experience the benefits of social networking services; the information that users continue to disclose is also an important guarantee for the sustainable development of social networking business models. However, with more and more users disclosing a large amount of personal information on social networking platforms, users will face huge privacy risks, including personal identity theft, cyberbullying, online tracking, hacking, unauthorized third-party access, government surveillance, and personal data analysis for marketing purposes, etc[2]. Under the dual background of personal information security protection and data business value mining, user privacy behavior has become the main focus of the academic and industry. Privacy protection behaviors are behavioral measures taken after personal information is presented[3]. Based on this, this article uses the literature in the WOS and CNKI databases as the analysis basis, and summarizes the current research status of the privacy protection behavior of SNS users at home and abroad through the content analysis method,

in order to provide a reference for domestic theoretical research.

2. LITERATURE RETRIEVAL

In order to grasp the research progress of SNS users' privacy protection behaviors at home and abroad, the following 3 steps were implemented: (1) In the Web of Science database, select the core collection as the document source, with TS=((Social network* OR Social media OR SNS OR OSN OR MSN OR Facebook OR Twitter OR Instagram OR LinkedIn OR Forum OR ResearchGate OR WeChat OR Blogs) AND privacy protection behavior) to search English literature for the search formula. (2) In the CNKI database, select CSSCI, core papers as the source of the literature, and use SU=((social network OR social networking site OR social media OR WeChat OR Weibo) AND privacy protection behavior) as the retrieval style to conduct Chinese literature Search. (3) Through reading and screening documents that are highly relevant to the subject, 32 English documents and 15 Chinese documents were obtained (search deadline: July 31, 2021).

3. OVERVIEW OF RESEARCH HOTSPOTS

The privacy protection behaviors of social network users are mainly divided into three types: disclose false or incomplete information; take privacy protection measures; repress information disclosure[4]. This article analyzes it from four aspects: research theme, theoretical basis, data sources and analysis methods, and influencing factors.

3.1. Research topics

3.1.1. Types of social networks

At present, the overall amount of research on the privacy protection behavior of SNS users at home and abroad is relatively small. Among the selected literature

samples, the types of social networks studied in China include WeChat, Weibo, academic social networks, and SNS in general. Most of the foreign research on the privacy protection behavior of social network users revolves around the Facebook social platform. This article categorizes different types of social network research, as shown in Table 1 below.

Table 1. Types of social networks

Types of social networks	Feature	References
Personal Network	A strong relationship platform based on acquaintances	Facebook[5-14]、 WeChat [3,15-18]
Interest Network	Blog platform based on status updates	Twitter[8]、 Instagram[8]、 Sina Weibo [19]
Professional Network	Social platforms for specific objects	Blogs from Sciencenet.cn [20]

3.1.2. Privacy protection behavior

Among the three types of social network user privacy protection behaviors, information falsification and suppression are negative privacy protection behaviors, which hinder the normal development of social networks. Since information falsification is an approximate explanation of the honesty dimension in self-disclosure behavior of social network users, some scholars mentioned it when discussing the influencing factors of self-disclosure behavior. For example, R.W.Zhang et al. concluded that privacy concerns and disclosure honesty are negatively related [21]; L.Wang et al. found that social rewards reveal disclosure honesty in positive predictions, and privacy concerns reveal disclosure honesty in negative predictions[22]. Inhibition behavior refers to the refusal or withdrawal to disclose personal information. R.Chakraborty et al. explored the mechanism for the elderly to exit information sharing behavior by calculating the similarity index[6]. Y.M.Xu et al. introduced the concept—Privacy Protection Disengagement Behavior: Reduce efforts to respond to threats, and verified the complete mediating role of privacy fatigue between privacy protection self-efficacy and privacy protection disengagement behavior[23].

that the main influencing factors of privacy setting behavior are privacy setting willingness and perceived control[17]. At present, domestic and foreign scholars have not paid enough attention to the research on the adoption of privacy protection measures. And a complete research system has not yet been formed. Future research can further explore the factors that promote and inhibit the adoption of privacy protection technology by SNS users on the basis of qualitative research methods, providing help to guide users to actively take privacy protection measures and reduce information leakage.

3.2 Theoretical basis

3.2.1. Main theories and models

The theories used in the research on SNS user privacy protection behavior at home and abroad mainly include communication privacy management theory[9], theory of planned behavior[7,14,17,24,25], protection motivation theory[13,18,25], uses and gratifications theory [13], fear appeal theory [4], social capital theory [6], social role theory [6], social cognition theory [26]. The models used include technology acceptance models[17,25]. Communication privacy management theory is to realize privacy protection through the process of personal privacy boundary management, mainly considering factors such as individual differences, context, privacy risks[11]; the theory of planned behavior assumes that behavior intention is the nearest front-end dependent variable of actual behavior, and mainly focuses on factors such as attitude, subjective norms, and perceived behavior control[7]; protection motivation theory is a basic theoretical model widely used and recognized in the theory of fear appeals[4], which believes that there are two cognitive processes when individuals respond to threats: threat assessment and response assessment. The threat assessment process mainly focuses on the two factors of perceived threat sensitivity and severity, and the response assessment process mainly focuses on the two factors of response efficiency and self-efficacy[19]. The technology acceptance model believes that the

3.1.3. Adoption of privacy protection measures

The research on the adoption behavior of SNS users' privacy protection measures at home and abroad is centered on the adoption behavior of privacy settings. The research on SNS privacy setting behavior at home and abroad is mainly based on empirical research, supplemented by qualitative research. For example, Q. Liu uses a semi-structured in-depth interview method to explore the seven motivations for privacy settings in WeChat Moments[18]; E.Litt uses telephone interview data to explain how background, motivation, and social networking experience affect people's usage of social networking technology to protect its privacy[9]; Zhu Hou et al. used WeChat as an example to conduct empirical research by combining the theory of planned behavior and technology acceptance model, and found

willingness to use is mainly affected by two factors: perceived usefulness and perceived ease of use[17].

3.2.2. Theory application method

This article divides the theoretical application into four forms: ①Single theoretical research: refers to the usage of only one theoretical model without any modification to the original variables of the model. For example, Wang Luyao et al. discussed the influence of the four factors of protection motivation theory on privacy protection behavior [19]. ②Theory expansion research: refers to adding new variables to expand the original theoretical model. For example, A.K.Saeri et al. added two factors of perceived risk and perceived trust based on the original planned behavior theoretical model to predict the privacy protection behavior of SNS users [7]. ③Theory combination research: refers to the simple combination of important variables in different theories, and only discusses the relationship between independent variables and dependent variables without discussing the relationship between independent variables. For example, A.Vishwanath combines protection motivation theory and uses and gratifications theory to examine the most important factors that

promote privacy settings[13]. ④ Theory integration research: refers to integrating variables in different theories and models. Theory integration research not only studies the relationship between independent variables and dependent variables, but also discusses the relationship between independent variables. For example, B.S.Chon et al. integrated theory of planned behavior, protection motivation theory and technology acceptance model, studied SNS user privacy protection intentions, and found that the usefulness and ease of use in the technology acceptance model had a positive impact on the privacy protection attitude in the theory of planned behavior[25].

3.3 Data sources and analysis methods

The data collection form is sorted out as shown in Table 2. It is found that most studies collect self-reported data from users by issuing questionnaires, and a few studies use observation methods, interview methods and web data crawling methods. At present, the data acquisition channel is relatively single, and some studies have adopted the form of "questionnaire method + observation method" to obtain user data[7].

Table 2. Main data collection methods

Data collection method	References
Questionnaire survey	L.Y.Wang et al. [4], D.Van et al. [5], A.K.Saeri et al. [7], D.Epstein et al. [8], A.Vishwanath et al. [13], A.Taneja et al. [14], J.H.Xu et al. [15], Q.Shen[16], H.Zhu et al. [17], L.Y.Wang et al. [19], Y.M.Xu et al. [23], S.S.Ho et al. [24], B.S.Chon et al. [25], D.W.Zhang et al. [26]
Interview method	E.Litt[9], Y.Feng et al. [11], B.Hofstra et al. [12], Q.Liu[18]
Web Crawler	C.P.Hu et al. [20], K.Lewis et al. [10]
Observation method	R.Chakraborty et al. [6]

The data analysis methods are sorted out as shown in Table 3. Regression analysis and structural equation modeling are the most commonly used data analysis

methods. Some studies use qualitative research methods [18], and some studies combine qualitative and quantitative methods [26].

Table 3. Main data analysis methods

Data analysis method	References
Structural equation modeling	B.Hofstra et al. [12], A.Taneja et al. [14], H.Zhu et al. [17], L.Y.Wang et al. [19], Y.M.Xu et al. [23], D.W.Zhang et al. [26]
regression analysis	R.Chakraborty et al. [6], A.K.Saeri et al. [7], D.Epstein et al. [8], E.Litt[9], K.Lewis et al. [10], B.Hofstra et al. [12], A.Vishwanath et al. [13], J.H.Xu et al. [15], Q.Shen [16], S.S.Ho et al. [24]
Other methods	D.Van et al. [5], Y.Feng et al. [11], Q.Liu [18], C.P.Hu et al. [20], B.S.Chon et al. [25]

3.4 Influencing factors

This article summarizes the main influencing factors

considered by the research on the privacy protection behavior of SNS users at home and abroad from four aspects: informant, information, information technology, and information environment, as shown in Table 4 below.

Table 4. The main influencing factors of SNS user privacy protection behavior

Primary classification	Secondary classification	Specific factors
Informant	Demographic characteristics	gender [7], age [7], education level [20], income[9]
	Emotions and attitudes	privacy concerns [3,15,17,26], trust [7,17], privacy attitudes [7,14], social relations information privacy awareness [15], Personal information privacy awareness [15]、Privacy fatigue [23], privacy burnout [26]
	Other factors	privacy protection self-efficacy [4,19,23]、response efficiency [4,19]、experience in using privacy protection measures [19,24], privacy turbulence[9], social network site experiences[9], self-disclosure[16], Privacy literacy [26]
Information	Information feature	Information sensitivity [26]
Information technology	Platform advantage	Perceived usefulness [17,25]、Perceived ease of use [17,25], Perceived behavior control [7,14,24,25]
Information environment	Internal environment	Threat severity [4,19], Threat susceptibility [4,19]
	External environment	social influence [4], Perceived risk [7], Subjective norms [7,24,25], Interactional fairness [17], peer influence [26], Parental influence [26]

4. CONCLUSION

4.1 Summary

This article combs the research status of SNS users' privacy protection behaviors at home and abroad, and finds that: There are not many studies on users' privacy protection behavior; privacy protection behavior of social network users is divided into three forms of behavior, including disclosure of false or incomplete information, adoption of privacy protection measures, and suppression of information disclosure; and the research of privacy protection measures adoption behavior is in the majority; the research on this topic is based on the theory of planned behavior and the theory of protection motivation, and adopts four methods of theory application; the main data collection and analysis method is in the form of "cross-sectional questionnaire survey + regression model"; the influencing factors of social network users' privacy protection behavior include four aspects: informant factors, information factors, information technology factors and information environment factors.

4.2 Outlook

According to the current research status of domestic and foreign privacy protection behavior of social network users, the following suggestions are put forward for the future direction of domestic research:

(1) Conduct research on different social media platforms. At present, the domestic research on SNS user privacy protection behavior is mainly based on a single social network platform. The research on various

types of social network platforms has not formed an independent research system, and there is a lack of comparative research between different social network platforms. In the future, it is possible to explore the complete system of research on privacy protection behavior of user from domestic social network platform: such as WeChat and QQ with instant messaging as the main feature; or Weibo with content sharing as the main feature. By studying the user privacy protection behaviors of different social media platforms, it provides theoretical references for privacy education, privacy design, and privacy supervision.

(2) Conduct research for different user groups. The privacy protection behavior of SNS users at home and abroad mainly revolves around youth groups (especially college students) and user groups with multiple age stages, and there are few studies on adolescent group and elderly group. Since young people account for a large proportion of SNS users, they are often used as research objects in the research of SNS user privacy protection behaviors. As the proportion of adolescent group and elderly group using social networks increases, future research should actively explore their privacy protection behavior.

(3) Broaden data collection channels and use multi-source data for research. When conducting questionnaire surveys, different data collection methods can be combined to capture actual privacy protection behaviors. For example, the combination of questionnaire survey method and observation method allows users to report related privacy protection behaviors against their own SNS files to avoid memory bias; the combination of web crawlers and other technology can help to obtain users' true disclosure

information, and study protection modes for different types of information.

(4) Broaden the research perspective and integrate multiple influencing factors for research. SNS user privacy protection behavior is a complex and dynamic privacy management process. Some factors (such as privacy concerns) have instability in the impact of SNS user privacy protection behavior. Future research can continue to explore the reasons for this conclusion; culture factors are also influencing factors that cannot be ignored. In the future, cross-cultural research can be conducted to optimize SNS cross-border services.

(5) Strengthen the research on the privacy protection behavior of SNS users. At present, the domestic research on the privacy protection behavior of SNS users is in the initial exploration stage, and the factors that affect the privacy protection behavior of SNS users have not been fully explored. Future research can combine qualitative research methods to find out the potential influencing factors of SNS user privacy protection behavior, gradually forming a relatively complete theoretical research system.

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