Privacy Exposure on WeChat from Users’ Perspective:
A study among the University Students in China

Author: XiaoTong Liu
Supervisor: Andrea Alessandrini
Examiner: Päivi Jokela
Date: 2018.5.22
Course Code: 51K50E
Subject: Informatics
Level: Master
Department of Informatics
Abstract

In 21st century, social media has become one necessary part in people’s life, different kinds of social media emerge in endlessly. In younger generation, it is popular to use social media as a communication tool to get closer to each other. During using social media, it is important to have awareness to protect their personal information. Comparing with Western countries, the topic of privacy is not often discussed in China and some privacy issues might be ignored due to people have not enough knowledge in this area. In this study, the focus is to investigate Chinese university students’ perception of privacy risks and WeChat personal information exposure. Based on this, this study also explores the users’ attitudes toward WeChat and how it influences the future usage of it. The adopted research method is qualitative research method, by doing interviews with 15 students from different school, city and major. From the study, eight essential concepts are used to answer two research questions. Though analysis, the situation of the privacy perception can be found, the reasons and attitudes toward WeChat are also figured out. At the end of the thesis, the contribution of this study and suggestions to future research are shown.

Keywords

Social Networking services, WeChat, Security awareness, Information privacy, Privacy model, Risks perception, Big Data, University students, China.
Acknowledgement

First of all, I would like to thank my thesis supervisor Mr. Andrea Alessandrini. I’m so grateful that Andrea guide the whole process of writing thesis and always give me some good suggestions. When I feel anxious about writing thesis, he always can guide me out and inspire me a lot. I’m so appreciating his professional and valuable options for the thesis and his support.

Secondly, I would like to thank the examiner Päivi Jokela, and module leader Anita Mirijamdotter who provided several effective seminars during the thesis course and give very useful feedbacks to me.

Further, I would like to thank all the volunteers who take part in my research and giving very interesting and useful options to this study. Moreover, I want to show my appreciation to my classmate who reviewed my work and give me useful advices.

Lastly, I would like to thank my parents who will always support me, inspire me and believe me. Every time when I feel tired on the verge of collapse, you gave me the power to complete this challenge. Thank you so much and I am so luck that I have such wonderful parents.
Table of Contents

1. **Introduction**................................................................................................................. 1
   1.1 Introduction and Topic Justification .............................................................................. 1
   1.1.1 Research Setting ........................................................................................................ 2
   1.2 Research Problem ......................................................................................................... 3
   1.3 Research Background .................................................................................................... 3
   1.3.1 Social Media and WeChat ........................................................................................ 3
   1.3.2 University Students and WeChat ............................................................................. 5
   1.3.3 Privacy and Social Media Privacy ............................................................................. 5
   1.4 Scope and Limitations .................................................................................................... 6
   1.5 Thesis Organization ....................................................................................................... 6

2. **Literature Review** .......................................................................................................... 7
   2.1 Privacy Definition ......................................................................................................... 7
   2.2 Information Privacy ....................................................................................................... 8
   2.3 Information Security Awareness .................................................................................. 9
   2.4 SNS User’s Risk Perception ......................................................................................... 11
   2.5 Privacy Risks on WeChat ............................................................................................ 12
   2.5.1 Privacy risks in Moments ........................................................................................ 12
   2.5.2 Privacy Risks in Official Accounts ........................................................................ 13
   2.5.3 Privacy Risks in WeChat Payment ......................................................................... 14
   2.5.4 Privacy Risks in Location Based Services (LBS) .................................................. 15
   2.5.5 Privacy Risks in Shake ............................................................................................ 17
   2.6 Privacy Model ............................................................................................................. 18
   2.7 Media technology and Big Data .................................................................................. 20
   2.8 Summary ...................................................................................................................... 22

3. **Methodology** .................................................................................................................. 23
   3.1 Interpretive Research .................................................................................................... 23
   3.2 Qualitative Research Method ...................................................................................... 23
   3.3 Data Collection Method ............................................................................................... 24
   3.3.1 Interview .................................................................................................................. 24
   3.4 Data Analysis Approach ............................................................................................... 26
   3.4.1 Memoing .................................................................................................................. 26
   3.4.2 The three Cs: Coding, Categorizing, and Identifying Concepts .............................. 26
   3.5 Reliability and Validity ................................................................................................. 27
   3.6 Ethical Considerations .................................................................................................. 27

4. **Empirical Findings** ......................................................................................................... 29
   4.1 The Results of Initial Coding ....................................................................................... 29
   4.2 Categorizing and Concepts .......................................................................................... 30
   4.3 Perception of privacy risks .......................................................................................... 31
   4.4 Irreplaceable tool and transformed environment background ................................... 31
   4.5 Knowledge of privacy risks ........................................................................................ 32
   4.6 User’s Acceptance of Personal Data Usage ................................................................. 33
   4.7 Users’ Expectations ....................................................................................................... 34
   4.8 Personal Information Control ...................................................................................... 34
   4.9 Balanced usage ............................................................................................................. 37
   4.10 Preparation for the Consequences ............................................................................. 37

5. **Discussion** ....................................................................................................................... 39
5.1 Discussion of the Empirical Findings .................................................................39
  5.1.1 Discussion of RQ1 .........................................................................................39
  5.1.2 Discussion of RQ2 .........................................................................................40
5.2 Reflections ............................................................................................................41
6. Conclusion .............................................................................................................43
  6.1 Conclusion .........................................................................................................43
  6.2 Contribution .......................................................................................................44
  6.3 Future research ..................................................................................................44
Reference ..................................................................................................................45
Appendix. A: Informed Consent .................................................................................51
Appendix. B: Interview Questions ..............................................................................52

Tables:
Table 1: Interview Characteristics ............................................................................26
Table 2: Summary of Findings ..................................................................................30
Table 3: Daily time spend on WeChat ......................................................................32
Table 4: Information shared with public ..................................................................35

Figures:
Figure 1: Screenshot of WeChat interface ...............................................................4
Figure 2: Example visualization for awareness along the three orthogonal dimensions...11
Figure 3: Example of Moments ...............................................................................12
Figure 4: Example of Official Account ....................................................................13
Figure 5: Example of QR Code ...............................................................................15
Figure 6: Example of People Nearby .......................................................................16
Figure 7: Example of WeRun ..................................................................................17
Figure 8: Example of Shaking function ..................................................................18
Figure 9: Expanded privacy model ..........................................................................19
Figure 10: Example of data collection sources .........................................................22
Figure 11: Example of privacy settings on WeChat ..................................................36
1. Introduction

Chapter 1 includes the introduction to the research area. The research background and previous study are presented here followed by the aim of this study and research questions. The scope and limitations of the study are also discussed and the organization of whole thesis is shown in the end of this chapter.

1.1 Introduction and Topic Justification

In the 21st century, informatization has been promoted successfully due to the extensive application and rapid development of the Internet. “Cross-cultural encounters” are gradually becoming more of a possibility since more than half of the people in the world are connected as a seamless web by the Internet (Ess, 2013). Thanks to the advent of the digital media, in particular the power of the rapidly spreading of digital information on the Internet, the way that people communicate and disclose information has been transformed to a whole new level of revolution. As stated in the Digital Global Overview in 2017 (Kemp, 2017), it has been 25 years since Tim Berners-Lee publicly provided the “World Wide Web”, more than half of the world’s population now are using the internet indicating that the Internet has become an integral part of a daily life for the majority people in the world. More specifically, there are 2.80 billion global social media users and 2.56 billion global mobile social media users. Moreover, the number of global social media users is expected to reach 3 billion in 2018. Internet World Stats (2017) pointed that there are approximately 1938 millions of Internet users in Asia countries; this value corresponds to the 49.7% of the overall users globally. The huge number indicates most people are experiencing the widespread application and development of social media around the world. Social networking sites (SNSs) (e.g. WeChat, Weibo and RenRen, etc) provide a platform for users to share their personal life with a wealth of personal information (e.g. photos, mood, current situation, relationship status, current location and up-to-date activities, etc). Hundreds or even thousands personal information from internet social media users can be obtained only with a click of mouse. Individual users prefer to share their personal information in the social networks compare with “society in real life”. SNSs has produced positive effects on human being’s life in the social and economic fields. But at the same time, due to the rapid development of SNSs, the exposure of personal privacy to social media has become one of the issues that cannot be ignored (Benson, Saridakis and Tennakoon, 2015, p.428). How to protect the personal privacy of the users is one of the challenges that SNS needs to face while bringing benefits to human society.

In such an information age, the world is full of all kinds of information and the people is surrounded by SNSs. The conventional and long-used media is currently being strongly impacted by a new type of virtual media due to their limitations. Traditional outdoor advertising media can generate a large amount of waste that cannot be recycled; digital media consumes a lot of electricity; the negative impact of natural media on the environment cannot be ignored also (Jim, 2015). The emergence of virtual media in the information age has reduced costs and increased the efficiency of users' absorption and dissemination of information. Additionally, the information can be shared both publicly and privately is the sole responsibility of the user. A protective measure should be taken into account in the social media networking to create a truly private security space for the Internet users. The users must recognize the high potential privacy risks in social media during the information sharing process (Qi and Edgar-Nevill, 2011, p.74). It is well accepted that disclosing information on social networking sites bring benefits. However, it is also a risk since digital footprints play
an important role in impression formations as well. According to Litt (2013), as SNSs become more and more popular, impression formations on people who are using this service in different lifestyles are not only depending on their friends and families, but also based on their own online self-presentations and colleagues, current and potential employers, insurance companies, government agencies, advertisers and law enforcement agencies. A large amount of personal information is frequently posted and distributed on various social networks. The user information and relative data collected and gathered by SNSs providers might be accessed by third parties for any useful or unknown purposes. The leakage of personal information may lead to privacy intimidations of various stakeholders including SNSs providers (e.g. WeChat, Weibo, RenRen, etc.), third parties, and fourth parties (e.g. hackers, government agencies, etc.). In 4th April 2018, Facebook company admitted that 87 billion Facebook users’ personal information was leaked to Cambridge Analytica. And these personal data might be used to influence voters’ views on the 2016 U.S. election. This scandal has raised some concerns in personal information area (Grigonis, 2018).

Conger, Pratt and Loch (2013) stated that the thefts, unauthorized access and violations of personal information cause severe problems. The social media sites blur the boundaries between private and public with the participation of users. The nature of social media encourages participants to voluntarily contribute to public websites, leading to the unavoidable accumulation of personal information. In this case, marketers can utilize a lot of data the users published without their knowledge (Zhang and Amos, 2015, p.4). In addition, privacy exposures increase potential risks for all types of financial and social consequences (e.g. fraud, theft of personal information, deception, cyberbullying, etc.). Therefore, the problem of information privacy generated by social media poses a threat to the society (Litt, 2013).

Although risks and consequences exist in the use of SNSs, the passion of people for experiencing the SNSs has not been affected. In China, WeChat developed by Tencent is the most popular social media platform. The number of WeChat users increases constantly. However, it is noted that only 35.8% of Chinese social media platform users actively check the privacy controls of SNSs while 56.2% of them never notice or pay attention to the privacy issues in the use of SNSs (CNNIC, 2016). Even though some users have the awareness of protecting the personal information, most of them still chose to use social media. In such situations, what are the main reasons that people are eager to use the social media? How the reasons influence their perceptions of using social media platform in the future? In this study, these issues will be investigated qualitatively on the basis of founded knowledge.

1.1.1 Research Setting

In this research, the main goal is to study the privacy exposure issues from users’ perspectives based on a detailed investigation. So that, the qualitative research method is used in this study for researcher to better understand the participants’ perceptions and ideas about privacy awareness of SNSs. The target group is 15 Chinese students from different universities, cities and majors; the students’ ages are between 18 to 25. For better focus on social media in China, the research is conducted based on WeChat, which is the most popular social media application in China with different functions and has huge number of users. More importantly, users can post their life status, exchange information, share different context etc. Moreover, university students can represent the situation of privacy perception of younger generation. Author believes that this study can contribute to the research on privacy issues of Chinese university students and provide more information for future study.
1.2 Research Problem

This study focuses on assessing the risk of personal privacy exposure and addressing the privacy issues of SNSs. For the case study, the social media and corresponding users are selected as WeChat and university students in China, respectively. The reason is that the Internet users in China correspond to a substantial part of the users in Asia which is the area with activations of approximate half Internet users in the world. And WeChat is the most popular used social media platform which have largest number of users. The objectives of this study includes: (a) investigating the awareness status of Chinese university students’ WeChat users; (b) investigating how university students perceive the existence of exposure of personal information in WeChat and whether these views will affect attitudes for using WeChat. Based on these proposals, two research questions are formulated as follows:

1. How is the privacy perception of university students when they are using WeChat?
2. How university students’ perceptions of privacy exposure issues affect the usage of WeChat?

1.3 Research Background

1.3.1 Social Media and WeChat

Social media has been around for decades. About 30 years earlier, Bruce and Susan Abelson built the “Open Diary” which is an early social website that brought online diarists together as a community for working. At the same time, the word “blog” was first used (Kaplan and Heanlein, 2010). The popularity of high-speed Internet access led to the foundations of SNSs such as MySpace (2003) and Facebook (2004). As a result, the term “social media” was born and contributed to today’s achievements and accomplishments (Kaplan and Heanlein, 2010). According to Buettner (2016), social media is a computer medium allowing individuals or organizations to share, distribute and exchange instant messages, ideas and information of career interests, and allowing individuals to publish their personal information on various social networking communities. In today’s society, there is a wide variety of social media in China and overseas such as: WeChat, QQ, RenRen, Weibo, Facebook, Twitter, etc. The aforementioned social media have much in common. For instance, they are all web-based social interaction applications that provide platforms for users to express themselves, build relationships, have fun and share information in a networked environment. In addition, the users are allowed to instantly generate and distribute content in an existing network community (Obar and Wildman, 2015).

WeChat (or Weixin in Chinese, interface can see in Fig.1) is the most popular social media application in China, developed by one of the largest Internet enterprises in China, Tencent. The alpha version of WeChat was released on January 21, 2011 as an innovation platforms provided for people to contact friends (Xu, Kang and Clarke, 2015). It offers a variety of services, including chatting with friends in an online chat session, group chat, video calls, voice chat, “Moments” (the timeline that users can “like” or “comment”, this function is similar with Facebook), people nearby, shaking and games (Gan, 2017). In some ways, WeChat has similar characteristics to WhatsApp, both can generate text and voice messages. Users can download, install and use WeChat without fee, and it is supported by all smartphone platforms including iPhone, Android, Windows Phone, Mac and Windows operating systems (Cao and Lien, 2014). It is possible for WeChat users to send and receive messages and files between different equipment. In another word, people can login the
WeChat on the mobile phone and personal computer at the same time. Afterwards, the function of “File transfer assistant” can be used transform files between the mobile phone and the computer. WeChat provides innovative ways for users to communicate and get in touch with friends via SMS, hold-to-talk voice messaging, one-to-many messaging, sharing photo/video, location sharing and exchange contact information (Ciao and Lien, 2014).

WeChat is provided in more than 200 countries and supported with 18 different languages. With the progress of Internet usage and popularity of smartphones, 468 million monthly active users have flooded into WeChat by the end of 2014. The number of monthly active users corresponds to the total number of WeChat users who sent at least one calendar month’s message before the corresponding date (Tencent, 2014). Numerous users are using WeChat because of the variety and versatility of the functional categories. WeChat has carved out a sizable share of the global social media market. In addition to the aforementioned basic functions, WeChat also has privacy settings that allow users to select and manage settings based on their personal privacy needs. In other words, the users of WeChat have the right to decide that to whom their profile information, buddy lists and shared contents are available to access. The default setting of “automatically shared with all friends” means all the people who have been added in the buddy lists have the authority to access all the personal information including the information shared in “Moments”, if privacy settings have not been customized.
1.3.2 University Students and WeChat

The information behavior of WeChat users refers to the process of producing or forwarding contents by a group of college students. The sharing contents depend on the interests and preferences of users (Fu and Meng, 2015). WeChat supports various types of shared contents to meet the social needs of broadening users’ horizons. From the report illustrated by Tencent (2014), 50% of university students have the usage periods of WeChat for more than two years, indicating that most university students are very familiar with and accustomed to using WeChat. Moreover, the proportion of the option “open WeChat more than 10 times a day” is the highest. The value corresponds to 43.6%, which indicates that WeChat has become an essential part of daily life of university student. It is a platform for students to show the living conditions and current situation. However, it also shows that university students are more addicted to social media. According to Fu and Meng (2015), the reasons for this situation are: (a) WeChat is an entertaining APP with powerful function; (b) university students stand for new generation of young people who are willing to accept new things; (c) WeChat provides a platform to satisfy the natural behavior of human in society, that is, to develop social relations and meet the inner social demands. The frequent usage of WeChat by university students is one of the reasons why university students and WeChat have been selected as the subjects in this study.

According to the report provided by Tencent (2014), most university students post an average of three personal situations per day on WeChat, indicating that they do not share the information very frequently. The university students are more willing to know current situations of others by using “Moment” function WeChat provided. That means, although the university students are accustomed to sharing own information, the interesting news from friends are more concerned. The share for their own information is only general (Fu and Meng, 2015). The frequent usage of “Moment” by university students is another important reason for selecting them as the research objects in present study.

1.3.3 Privacy and Social Media Privacy

In the context of Web 2.0, SNSs have become one of the most valuable and popular Internet application services in current society. Social media is an important platform for people to socialize and spread information using the Internet. Besides, social media is changing people’s understanding of privacy and privacy routines. The boundaries between public and private are blurred. In SNSs, there are two types of usability including “warm affordance” and “cold affordance” (Trepte, 2015). “Warm affordance” means SNSs provides the capabilities to express social media. Users can comment on the statues of others on SNSs, upload photos, tag friends and so on. These can make users feel closer to each other. “Cold affordance” is different with “warm affordance”. SNSs depends on the legal framework set out in the Website Terms of Service, which means that users and service providers agree on privacy. Here, users allow the service providers to gather and sell their data, and also give the right to providers to delete the information. However, the privacy challenge to social media is not new. Through personal socialization process, privacy needs and behavior are constantly challenged by interactions and personal development process (Trepte, 2015). Meanwhile, the security issue of using social media shall be kept in mind (Qiu and Li, 2012). In social media platforms, the users’ private information mainly consists of four aspects as following: (a) personal information, (b) shared information, (c) interpersonal information and (d) obtained information through data mining (Qiu and Li, 2012). As stated in Conger, Pratt & Loch (2013), the trade of private information between individuals can be regarded as a kind of currency in exchange for anticipated goods and services. In 2016, EU adopted General Data
Protection Regulation (GDPR), which is a regulation in law for protecting data and privacy of all citizens within the European Union, and regulating the behavior of the organization and business. After two years’ transition period, on 25\textsuperscript{th} May 2018, GDPR will come into effect in EU (European Commission, 2018). This regulation is established for government to help citizens protect their personal data better. Compare with EU, China’s regulations on the full protection of residents’ privacy like this are not that comprehensive. Furthermore, privacy issues can arise with the development of SNSs. For instance, the users are at risk of being used personal information without permission by an unknown party. Therefore, increasing Chinese users’ privacy awareness seems to be imperative for the creation and maintenance of a better online circumstance.

1.4 Scope and Limitations

Most of information privacy problem research is conducted in Western culture, and occasionally in Asia and elsewhere (Crossler et al., 2013). This study aims to generate more knowledge in the field of information systems with focusing on the information privacy of SNSs of China. Qualitative research method is applied to perform analysis of WeChat data for obtaining reliable results of the study. The interviews are hold via WeChat video function. Because of the limitation of location and time schedule, it is impossible to use several methods and involve huge among of participants. So that, the sample size of the university students participated in this study is not large enough to obtain results which can represent the situations of all the Chinese students. Because of the time limitation, the interview period lasts 1 to 2 weeks. If the interview period extends longer, the consequence might be different. In addition, the limited data provided in WeChat data files has a negative impact on the illustration of founded phenomena that have been identified in the interviews. Moreover, the interviews are very important to this study. In this scope, this study can not only analyze some reflected issues of privacy awareness in China, but also try to bring more contributions based on the findings.

1.5 Thesis Organization

This thesis is organized in six sections. The research background and objectives are illustrated in Section 1. In Section 2, the results of existing literatures are reviewed and discussed. The methods and methodology employed in this study are introduced in Section 3. Section 4 expresses the empirical findings. The results are discussed in Section 5. Section 6 presents the conclusions and recommendations for a further study.
2. Literature Review

Chapter 2 includes the review of the literatures, which include: privacy definition; information privacy in general and on SNSs; information security awareness; SNS user’s risks perception; privacy risks on WeChat; privacy model and big data. All these knowledges will help to explore in this study area.

2.1 Privacy Definition

In this study filed, it is very important to understand what privacy is. The word “privacy” originally intended to be “the quality of being secluded from the presence or view of others”. The academic community generally believes that Samuel D Waugh, a jurist in 1890, and Luis Brandis first proposed the concept of privacy in a strict sense, by publishing the “right to privacy” (The Right to Privacy) in the fourth issue of the Harvard legal review. They defined privacy as "undisturbed rights (the right to be alone)". According to Stone et al. (1983, p.460), privacy can be regarded as “the ability of the individual to personally control information about oneself”. It also can be defined as “a basic human need/loss”, or “an extremely threatening experience” (Trepte, 2011, cited on Amyrich-Franch, 2014, p1). Nowadays, it has been accepted commonly that privacy can be identified as the right of individuals, although different people may define privacy in distinct ways based on their personal motivations.

According to Clarke (2006), privacy is very important due to its significant impacts on people’s lives psychologically, socially, economically and politically. From the philosophical perspective, people are very important to themselves. The concepts of “human dignity” and “integrity” play an important role in some countries. In some (though not all) traditions and certain jurisdictions, the concepts support the meaning of human rights. From the psychological perspective, people need private spaces; From the sociological perspective, people need to act freely and connect with others; From the political perspective, people need to think, debate and act freely; From the economical perspective, people need freedom and innovation. However, innovation has been killed by the chilling effects of monitoring (Clarke, 2006). Monitoring will crack down on behavior and speech even undermine democracy. Other than this, we can also strongly feel the basic demand of privacy which is the human’s desire of private life, personal information and independent thinking without disturbance from others. Therefore, the privacy concern has become an indispensable part of human’s life.

In addition, with the development of our society, things will always change with the process of evolution. The concept of privacy is closely related to the footsteps of history and has changed in the context of the Internet age. The Internet era has made it easier for us to collect, utilize, disseminated and exchange information, while personal information privacy is also easier to be illegally obtained and disseminated. Therefore, the privacy right in the Internet age has different characteristics compared with the traditional privacy, including the expansion of personal privacy and the highlighting of the economic value of personal privacy on the Internet. Infringement of personal privacy on the Internet is also hidden. The consequences are serious and it is hard to make up for it (Xu, 2014).

Also, as the development of the era of big data is rapid, the importance of personal information privacy is self-evident. According to UNICEF discussion paper series, Children’s Rights and Business in a Digital World, PRIVACY, PROTECTION OF PERSONAL INFORMATION AND REPUTATION RIGHTS, privacy has more recently evolved to
encapsulate a right to ‘informational privacy’, also known as data protection. The right to informational privacy is increasingly central to modern policy and legal processes. In practice, it means that individuals should be able to control that who possesses data about them and what decisions are made on the basis of that data. When users sign up for online accounts, they are obliged to provide certain personal details and may be encouraged to share additional information, whether to access news, social media, email or e-commerce. Through this way, their personal information privacy might be linked. Constant information sharing provides opportunities to illegal hackers for obtaining the transfer of personal information in these transactions, since the key source of vulnerability to illegal hackers in the fourth party is the data sharing environment (Conger, Pratt and Loch, 2013).

Regarding to the research of privacy concerns, most existing literatures investigated the intrinsic and extrinsic factors affecting the disclosure of personal information (Hyo, Won and So, 2017, p.245). These concerns influence people’s attitudes, such as the preferences for specific types of rules and the willingness to provide their information, which is more critical in informatics area. Therefore, privacy concern is facing new challenges in today’s information age compared to traditional privacy society.

### 2.2 Information Privacy

The definition and research of information privacy is originally divided into two perspectives including user's privacy attitude and user's privacy behavior. Scholars Smith et.al., (1996) divide privacy concerns into four dimensions (information gathering, unauthorized secondary use, incorrect access and error). While Solove (2006) and other scholars (Skinner, Han & Chang, 2006) divide information privacy into a series of information behaviors such as information gathering, information processing, information disclosure and information infringement from the perspective of user privacy behavior. Clarke (2006) assumed that the concept of information privacy sometimes can be referred to data privacy. It is the interest of an individual in controlling, or at least significantly influencing the handling of data about themselves. The research area of information privacy is clearly identified since Belanger and Crossler (2011) have combined personal communication privacy and personal data privacy proposed by Clarke into information privacy.

In recent years, the Internet has completely changed the state of human interaction. In particular, the wave of Web 2.0 has focused on the interests of users which include content and content creators. The great success of SNSs undoubtedly stimulated people to occupy a central position on different websites (Bichsel, Camenisch and Verdicchio, 2011, p.1310). General information and sensitive information are the main part of personal information. If personal information is leaked (mobile phone number, ID number, ethnicity, fingerprint, etc.), it will directly affect the rights of citizens. Under such circumstances, the personal information privacy is an issue that can’t be ignored. Why people is required to care about information privacy? Due to a large number of people joining SNSs, privacy issues and the associated potential risks are facing enormous challenges. According to Hossain and Zhang’s study (2015, p.246), as of January 2014, there are 74% of people who are Internet users and members of some SNSs as well. In addition, due to some specific or attractive features in SNSs, individuals are voluntarily disclosing personal information in various forms. It raises important questions associated with personal information privacy, which also have been exacerbated due to the development of smart device technology (Benson, Saridakis and Tennakoon 2015, p.426). Since users are willing to post information that “may be high relevant to users’ privacy, such as identities, locations, preferences and social relationships”
Problems will occur when personal information being exposed to privacy violations and cyberbullying or online harassment, especially among the users of younger generation (Saridakis, 2016, p.321). The personal information only can be seen by other users on the social media platforms, usually. However, at the same time, it also could be collected by the providers, even third and fourth parties. Therefore, the personal information will be easily invaded by other unexpected parties for people who don’t have awareness of protecting personal information (Zhang et al., 2014).

Close interaction in social networks may be carried out by people with incorrect privacy perceptions which may produce undesirable consequences to their personal information, since it is difficult to control users and different parties (Alshuler, 2013, p.2). In such a digital age, personal information privacy is hard to control by individuals (Conger, Pratt and Loch, 2013, p.401). According to Tucker’s study, in 2012, 75% of information data are produced by individuals, indicating that users didn’t control their personal information very well and have no idea about “what, who, where, when and how their information is disclosed, shared, reached and used” (Ngeno et al., 2010, p.1041). As a consequence, the real problem is people don’t realize the information disclosure and have weak awareness of protecting their personal information. According to Qiu and Li (2012), there are three ways that disclose personal information in social networks, which are: a) leakage from users, b) leakage from service providers and c) leakage from third or fourth parties. In other words, some units with personal information of users, such as the Internet, financial institutions, and merchants, have weak information security awareness and have not adopted personal information protection strategies, resulting in the leakage of personal information of others. Furthermore, these merchants resell personal information for commercial use without the consent of the registrant, resulting in the leakage of user registration information, personal privacy, and major security risks. In conclusion, if people want to avoid from privacy disclosure, the most effective way is that do not share in the first place. Marwick (2014) claimed that, if people shared personal information with weak awareness of protecting and managing privacy, the potential risks would show up.

2.3 Information Security Awareness

ISO (International Organization for Standardization, 2014) defines information security, which including three main aspects: confidentiality, availability, and integrity. Information security encompasses the application and management of appropriate security measures that consider a broad range of threats, to ensure business success and ongoing goals, and to minimize the impact of information security incidents.

According to Hansch and Benenson (2014), with the use of computers, smart phones and other electronic devices that have become a portion of people’s daily life, users are facing potential dangers in Internet area. Therefore, awareness of protecting their own privacy security seems to be very important. The Oxford Dictionary defines awareness as “knowing something; knowing that something exists and is important; being interested in something”. However, what is information security awareness? As Hansch and Benenson (2014) stated, information security awareness can be classified into three different meanings, which are:

- Security awareness as perception
- Security awareness as protection
- Security awareness as behavior
Regarding to security awareness as perception, it focuses on the fact that users should be aware of risks. Johnston and Warkentin (2010, p.551) stated that if “an individual perceives the threat, that individual can be described as having awareness of a threat”. And perceived security awareness is also related to the degree to which the end users believe something is safe or unsafe (Huang, Rau, & Salvendy, 2010). Having perception of security is needed for users otherwise users will not follow the security policies of the organization (Siponen and Vance, 2010).

Security awareness as protection means that users need to realize what dangers, threat and risks exist, and to know the corresponded measures for protection. According to Hansch and Benenson (2014), awareness is not the result of training, this kind of security awareness simply focuses on user’s security concern, the degree of IT security issues and concerns, and corresponding measures.

The main idea of security awareness as behavior is to reduce security incidents effectively for initiating an awareness program. This goal cannot be achieved only relying on theoretical knowledge. Users are required to have a basic understanding about the software so as to use it in a right way. If users know what kind of security measures can be used to protect themselves, the goal will be achieved (Hansch and Benenson, 2014). For example, Twitter do not have the choice of setting accounts into private accounts, while Facebook and Instagram have this function. Before using these social software, users should have the awareness of their differences on opening degree and how it affects private security. This security awareness focus on user operation and consideration regarding the information security, and the knowledge transformation associated with different factors in information security which may bring impacts on the action and behavior of users. That is to say, users are ought to have the knowledge of the functions of different social software and knowing whom they can turn to if they suffer from private information leakage, which can reduce security incidents from the origin in a way.

Based on aforementioned factors, the relationship among perception, protection and behavior can be visualized as illustrated in Fig. 2. In Fig 2, the central overlap area represents the awareness to be achieved, which requires all the three factors: perception, protection and behavior.
The purposes of this study include: (a) whether WeChat users have the awareness when using SNSs; (b) how they identify threats, dangers and risks while using it; (c) how these perceptions influence the further use of WeChat. WeChat users are required to act and think from themselves, whether they have security awareness through the three aspects aforementioned.

2.4 SNS User’s Risk Perception

For this study, it is essential to understand personal privacy awareness and social media risk perception. To obtain a preliminary insight of SNS users sharing behavior, it is required to understand their considerations for privacy risks. In addition, the perception of privacy risks can explain why the users are still using SNS under the issues of privacy exposure (Ngeno et al. 2010, p.1042). In terms of personal privacy awareness, according to Benson, Saridakis and Tennakoon (2015, p.433), SNSs users lack privacy awareness of personal information and content which could be exposed by SNSs providers and third parties. There is another study conducted by Cross and Acquisti (2005) indicating that users may have an indifferent attitude to personal privacy and assessment of related privacy risks. In 2009, there is a research studied by Sorensen and Skouby which finds out that SNSs users do have concerns about privacy situation. Based on this study, scholars Ngeno et al. (2010) continuing study in a broader demographic. And the result shows that the users want assurance of data privacy. Moreover, in the study conducted by Ngeno et al. (2010), it also states that users’ different background would have different attitudes toward privacy perception.

Some other previous studies show that SNSs users usually do not read throughout the online social protect privacy policy before the start of using social media platforms (Li, 2013). This phenomenon exists in both Western and Chinese social media platforms. Users may consider it boring and time-consuming to read and learn privacy policies (Shen, 2015). However, some
of the users are aware of privacy settings while they do not take specific actions to protect or focus on their information (Li, 2013). For instance, according to the study conducted by Acquisti and Gross (2006), most Facebook users know how to manage the visibility and searchability of their personal data, only a minority users never pay attention to these functions and options. Regarding to WeChat, the functions of WeChat are different from other western social media platforms, and there are not many studies associated with it. In the next section, privacy risks of each WeChat function will be clarified.

2.5 Privacy Risks on WeChat

With the data provided by “WeChat influences report” (Tencent, 2016), there are more than 90% users use WeChat every day and 50% of them use WeChat for more than one hour. However, while users using WeChat, do they have awareness of privacy protection is a topic worth to explore. WeChat is build up with multiple unique functions, which attract various users with different interests, such as: Moments, Chat with friends, Official accounts, WeChat Pay, People nearby, WeRun, Shake, Mini programs, Games etc. (Xu et al., 2015). But in these popular functions, there are potential privacy risks behind the features.

2.5.1 Privacy risks in Moments

According to the “WeChat influences report” provided by Tencent 2016, Moments, Chat with friends and Official accounts are the top three ranking of WeChat function usage. There are 61.4% WeChat users open the “Moments” interface every time when they use WeChat, and 80% of users are crazy with checking “Moments”.

In “Moments” interface (Fig. 3), users can share pictures, links, texts and videos with friends, but when using “Moments”, some people will unaware disclose personal information, such as
photos of themselves, friends or family, voluntarily provide their phone number or address, real-time location, etc., which may be used by people with ulterior motives and cause bad consequences (Sun, 2017). For instance, if you post some photo about the place which showing your real-time location while you are travelling alone, and do not close the function named “Only last 10 made public”. People with bad intentions nearby may find you based on these contents and you will put yourself in danger. According to the study by Sun (2017), there are lot of users prefer to share their life marked with real-time location. But this behavior contains potential risks. Your information might be used by third or fourth parties because you have not paid attention to your personal information.

### 2.5.2 Privacy Risks in Official Accounts

There are mainly three types of WeChat official account: subscription account, service account and enterprise account. Subscription account are more emphasis on media attributes; service accounts are more emphasis on features and services; and enterprise accounts are used internally by enterprises. The official accounts depend on the encrypted serial number to distinguish users (Xu et al., 2015). When you follow an official account, the official account will define you with a specific and unique serial number. Once official account gets this serial number, it can get the users’ photo, gender, nickname, location and other privacy information.

![Fig.4. Example of Official Account](image-url)

---

13
WeChat official account (Fig. 4) is tend to help users get interesting information, most of official account will send new articles or information to users every day. When users open them, some require users to provide the real-time location, and some even require users to fill in their personal number (Sun, 2017). Part of official accounts doing promotion will launch some voting activities to attract more users’ attention. Users can share the activity link in “Moments” and ask friends vote for them. If you want to help your friends, you must follow the official account and you need to fill in your personal information such as name, phone number etc. In this way, it is common for official account to obtain personal information via voting. Many official account rely on this method to collect a large amount of user information but users may not know the privacy risks existed in this function.

2.5.3 Privacy Risks in WeChat Payment

WeChat Pay has developed quickly over past three years. In China, more that 300 million Chinese users are linking their bank account with WeChat (Tencent, 2016). WeChat Pay now available use in most shops in China. Start from 2015, people are willing to use WeChat Pay as their way of paying. Now, WeChat payment, Alipay (Alibaba Group) and Union Pay constitute the three major payment methods used by Chinese consumers. In 2016, WeChat team start to use real-name systems, which means users need to upload their ID number and real name for continue using WeChat and WeChat Pay. In this function, it also includes potential privacy risks. There is one function in WeChat Pay which named “pay vendor” (Fig. 5). It will show the QR code and 18 digits’ payment code by clicking on it, which means users can use this code to finish the payment without input pin code. This has created an opportunity for some people outside the law. Criminals often use various methods to fraudulently ask screenshots of payment QR codes and payment code numbers to take frauds.
2.5.4 Privacy Risks in Location Based Services (LBS)

There are many mobile applications currently using LBS, this technology is gradually being accepted by mobile users. The basic logic of LBS is to provide related services based on your location. In fact, if the location data can be arranged and analyzed, they can become high-quality samples of consumer behavior and consumer demand surveys. However, concerns about user privacy are the block for using LBS applications (CNW, 2013). According to the study by Microsoft, the main concern is that users are afraid of their location data will be used or gathered by the organizations they haven’t approved. In WeChat, there are two functions related to LBS which are “People nearby” and “WeRun”.

When users open the WeChat and use the function named “People nearby” (Fig. 6), a dialog box will show up: “People nearby function will get your location information, and your location information will be retained for a period of time”. When you use this function, you can see other users who are within 20 km radius of you and also use people nearby function for a period of time. Although you haven’t added someone as a friend, you can still view his or her recently content posted in “Moment”, including videos, links and even family photos. Therefore, by synthesizing these contents, you can know more personal information of that people and you can even save these pictures. Once you click on “people nearby”, this function may expose your whereabouts at any time, and your location information will be kept for a while, which will provide strangers with criminal opportunities.
WeRun is an official account provided by WeChat, users need to follow it and allow it to collect your information (basic information and location). The operating principle is to record the user’s movement trajectory through the GPS positioning chip and gravity sensing system in the mobile phone, and then converted into number of steps (Sun, 2017). WeRun (Fig. 7) also provide ranking systems, users can see their friends’ steps and can “like” it. This function can help users record the amount of exercise per day, so it is not necessary to download another sports app and it is very popular between users. However, there are also exist privacy risks in this popular function. According to the report provided by Army Daily (2016), when using WeRun, users usually need to turn on GPS positioning. Due to the particularity of military, this step count app can not only record the number of steps, but also accurately record the movement trajectory. Once soldiers have forgotten to close WeRun during military exercises, the army’s marching route will be exposed. As for normal users, due to the existence of hacking technology, the whereabouts of users and real-time locations may be expose when using WeRun.
2.5.5 Privacy Risks in Shake

The main principle of “shake” (Fig. 8) function is to use an acceleration sensor to generate and acceleration value, and send this value to the sensor system. When the sensor receives the value, it will send a request to nearby signal base station. Then the signal station will send the require to the final server system. The final server system will match you with another user who use “shake” function at the same time (Sun, 2017). In some ways, “shake” function is similar with “People nearby”, but the number of recommended users is less than the latter. If you click on the profile of recommended user, you can view his/her profile and recent content in Moment. The criminals usually use “shake” function to develop the friendship with other users, defraud the users through chatting and then carry out the next criminal activities (Sun, 2017). Although WeChat has a privacy setting function, there is no reminder function for the users’ privacy disclosure behavior. And some users may expose their privacy information due to the misoperation. So that, this function also has potential privacy risk.
2.6 Privacy Model

The problem of personal information privacy is no longer only the concern for an individual, but also an issue for other parties. The aspects beyond an individual have to be considered for the privacy of the individual. Conger, Pratt and Loch (2013) presented the expanded privacy model including aforementioned situations as shown in Figure 9. The personal-organizational interactions accommodating all aspects have been taken into account in the model. As a result, privacy discussions including relational networks are opening up (Conger Pratt and Loch, 2013).
As can be seen in Figure 9, the connection of arbitrary 2 parties has been shown. The first party represents the individuals i.e. the users of a social media (e.g. such as WeChat user) and the corresponding information. It connects with the Second and Fourth parties. The Second party is the supplier/provider benefiting from the first party with handling the relevant issues. The first party allows the second part to collect the personal information during the transactions. Therefore, the second part is known to the first party (Conger Pratt and Loch, 2013). According to Awad and Krishnan (2006), the individuals in first party can implicitly decide what data to share with second party based on the considerations of earnings, data collected, life expectancy and usage of collected data. Generally, the first party considers the required data is reasonable and related to the transaction with second party (Cheung, 2005).

The second party consists of suppliers and providers of SNSs. It provides products and services in exchange for the information and money of users. The first party considers the collected data including name, address, contact details, transformations and payment information is only used for the commercial transactions since services and products are provided for the trades. However, the data generated before, during and after the actual business transactions is collected and combined with data of other transactions and post-transactions by suppliers. Afterwards, the combined data will be sold and provided to third parties for benefits without informing the first party. (Mason, 2005). It seems to be no privacy policies of the relevant corporations and reliable organizations restraining the obligation suppliers/providers for the privacy issues of consumers (McKnight, 2004). In addition, consumers may not recognize when the transaction history is automatically shared with third party partners upon the completion of transaction. If it is a truth, that means the data has its own life and it is no longer under the control of first and second party. Whether the users know about the usage of data is entirely unknowable (Conger Pratt and Loch, 2013).

The third part is data sharing partners, which receive data from the second party upon the completion of the transaction. Some third parties are legitimate external data-sharing entities. The purposes of collecting and consolidating data are regulating the credit reporting and marketing for government. Other third-party organizations operate in the area lack of policy and law. The consequence caused by unauthorized use and use of unauthorized data is
unknown. The data is obtained by these third parties in a way that may not be related to the transaction and consumers even don’t know. The problem of private sector is to balance the need of personal privacy and corporate usage data due to the social benefits of economic growth and development (Culnan and Bies, 2003). In the perspective of government, individuals are obliged to confiscate personal information for personal safety and collective benefit. The problem of collecting and using data seems to be without borders. Therefore, defining the borders of the data collection and usage cannot be ignored.

The fourth party is the illegal entity; the members of this party consist of illegal hackers, thieves and third party employees who ignore the policy of company. The hackers in fourth party use increasingly sophisticated technologies (e.g. spyware) to embed Trojan virus on the devices of the users (e.g. computers and mobile phones), in order to steal passwords and credit information (Wang, Lee and Wang, 1998). Regarding on the problem of data stealing, it is not only the consequence attributed to the lack of control by fourth party, but also a global severe situation. The fourth party members are various malicious entities and connected to the arbitrary parties. It is possible to attack each of aforementioned parties. Constant information sharing provides opportunities to illegal hackers for obtaining the transfer of personal information in these transactions, since the key source of vulnerability to illegal hackers in the fourth party is the data sharing environment (Conger Pratt and Loch, 2013).

In this study, the privacy model provides general relationship between each party. WeChat users are the first party who share information and privacy such as their name, preferences on information, messages, sports record, etc. on WeChat, the second party in the study is Tencent who provides various kinds of service such as QR Code to pay bills, WeRun to record walking steps, People Nearby to meet new online friends for WeChat users. The third party in WeChat such as various kinds of Official Accounts, psychological tests, advertisements are legally authorized. For example, luxury brands such as Cartier, Channel, Benz, etc. will run advertisements on WeChat. Users can give these advertisements thumbs up or make comments below these advertisements. Therefore, these third parties will know whom their target clients are quickly. In addition, there are the fourth parties on WeChat such as some cheat test links. When users click into these links, their information will be acquired by the fourth party and be sold out to other people. Through using this model, this study can have a clear partition on different parties on WeChat.

2.7 Media technology and Big Data

The concept of media technology defined in Kingston Smith’s article (2014) is a technology can be used to stores, disseminates or produces media content. In this study, the privacy information includes photos, videos, sounds, texts etc. post on the Internet. In China, some good examples of today’s Internet content providers are WeChat, Youku, RenRen, WeiBo, QQ music and so on, all of them are the main elements in media streaming industry. WeChat is a communication platform includes several functions and it also connect with many media platforms such like Youku, WeiBo etc., which means WeChat play an important part in today’s social media technology world (Sun, 2017). WeChat can generate and utilize large amount of personal data trough users and various media content by using media technology (such as data warehousing). So that, relevant privacy issues have occurred and these threats have also increased due to the development of Big Data.
The concept of “Big Data” has an uncertain historical origin, according to Diebold (2012), it is a mixture of academic and industrial involvement, when stakeholders began to notice the – at the time- newborn phenomenon. The same author claims that big data can be traced back to half of the 1990s, in silicon graphics (SGI) where their chief scientist produced a slide dealing with the topic. For better define Big Data, Laney (2001), Chen, Chiang and Storey (2012) and Kwon, Lee and Shin (2014) tend to evoke the 3Vs (Variety, Volume and Velocity).

According to Gandomi and Hider (2014), “Variety” is referred as the difference in data. Due to the variety of possibilities, there are three different categories: structured (table data), semi-structured (data that does not follow fixed standards), and unstructured (text, video, audio, and images). In social media platform, these kinds of data normally provided or created by users). For “Volume” of data, the same authors claim that it stands the amount that can be generated. They informed that usually Big Data includes several TB or even several PB data. By clarifying the amount of data, we can categorize it as “Big Data”, depending on the industry, current storage and data mining technologies, and finally what type of data is being interacted with, and these data can also affect analysis. Finally, “Velocity” can be think as how fast the data is generated, analyzed and sense is make out of it (Gandomi and Hider, 2014). Since the concept of big data varies depending on the industry and the nature of the data itself (Gandomi and Hider, 2014), such inconsistency between attributes that can be used to define big data may exist. After extensive research, De Mauro, Greco and Grimaldi (2015) created a general meaning for it, which is:

“Big Data represents the Information assets characterized by such a High Volume, Velocity and Variety to require specific Technology and Analytical Methods for its transformation into Value.”

From a research perspective, social media can be treated as a living laboratory that allows scholars to collect a large amount of data generated in a real-world environment (Stieglitz et al., 2014). According to the study by Gandomi and Haider (2014), big data is widely used in social media. The data from social media can mainly divided into two groups, one group consist of relationships and interactions between entities; the other group is user-generated content, a large amount of data is generated by users on social media, due to this situation, the risks of unintended privacy exposure exist in social media and that’s why big data topic is very important in this study. Figure 10 illustrate the several of the most commonly used software in China, these software or social media collect a large amount of user data every day. In research studied by Obole, Welsh and Cruz (2012) explains how the sum of data from different devices bring a risk to users, due to it is very convenient to use the login information from Google and Facebook to other services, it makes these companies easier to gather users’ data about their daily lives. In China, this phenomenon also exists. For instance, when using Xiami (one music app as Spotify), you can choose to log in with your WeChat account, WeiBo account or Alibaba account, and for browsing history, you can easily login to your account without input your pin-code once you allow this browser to save your information.
One of the effectively ways to reduce the concerns from social media users about their privacy is to clarify how these social media collect their data, how their data will be used and the impact these data brings to them. According to (Stieglitz et al., 2014, p.90-91), in last few years, a new interdisciplinary research area called Social Media Analysis (SMA) has been established to accurately solve the problems. There are three mainly method in SMA: “text analysis/mining, social network analysis and trend analysis”. After SMA, the sentiment, opinions of the users’ text can be identified and the future behavior and interested topic of users can be forecasted. Besides this, SMA can also help service providers to solve the problems from different disciplines and develop decision-aiding frameworks after analysis the big data collected by social media.

2.8 Summary

Through the review of the literature on the general concepts and models of privacy, information privacy and information security, it has learned that when these concepts were first proposed, how the concepts are defined and how their notions and applications have been consummated and interrelated in different research, which also establish a larger theoretical background for the analysis of this thesis. Then, from reviewing the existing research on people's information security awareness and user's risk perception, the focus is shifted to privacy and information security in the online area, which also leads to the following study about the potential dangers faced by users in the Internet.

In order to respond to the topic of WeChat privacy exposure research, the literature also includes scholars' summary of WeChat and its various functions, some official data and descriptions, and research on security privacy risks in each function, such as Moments, Official Accounts, WeChat Payment, Location Based Services and Shake. Finally, the extended privacy model of Conger, Pratt and Loch. (2013) was proposed and analyzed. This privacy model will also serve as a reference for the interview questions settings in this study, and provide a general relationship between the parties such as WeChat users, Tencent, and the third party in WeChat for subsequent data analysis.
3. Methodology

In this chapter, relevant methodology is presented. Methodology is applied for systematic, theoretical and structured analysis in this study including the methods of Data collection and analysis. Issues of validity, reliability and ethical considerations are described in this part as well.

3.1 Interpretive Research

According to Chua (1986), the research approach can be classified into positivist, interpretive and critical. These assumptions facilitate the conduction and implementation of study, as they have different ontological and epistemological backgrounds. In particular, it will guide researchers to understand the examined phenomena, apply appropriate methods to seek answers, analyze and interpret the data, and then produce results (Myers, 2003).

In this study, interpretivism is selected as the philosophical assumption since the concerns of the study is on users' perspectives. According to Klein and Myers (1999, p67), interpretive research is used to help IS researchers interpret human needs and thoughts associated with behaviors in social and organizational context. The interpretive approach is appropriate in this study because it gains an understanding of information system context. The process whereby the information system operation and context are interacted on each other (Klein and Myers, 1999, p.69). This study intends to investigate the university students’ attitudes toward privacy exposure on social media platforms, and how those attitudes influence the future use of WeChat. Therefore, the second reason why the interpretive method is applicable to this study is that, it involves efforts to understand the phenomena by giving them the meaning of the world and reality.

For the positivist approach, the actual situation is objective and independent to observer and his tools, while relying on quantitative data. At the same time, the hypothesis of positivism approach is that the phenomenon of interest is singular, with unique description of the selected aspects of the overall phenomenon (Guba and Lincoln, 1994). For this reason, the positivism paradigm is not used in this study which relies more on qualitative data than quantitative data. For critical approach, it seeks liberation because it aims to eliminate the causes of unreasonable alienation and domination, thereby increasing the chances of realizing human potential (Klein and Myers, 1999, p69). This paradigm is not suitable for the purpose of this study to investigate attitudes toward the specific questions and then propose recommendations for improving the relevant issues.

3.2 Qualitative Research Method

According to Myers (2003), qualitative and quantitative research methods have been commonly used in relevant research. Each or both of them can be selected for application to the study based on essential assumptions. The conduction process of the research depends on the method applied to the study. To some extent, qualitative and quantitative methods refer to the nature of knowledge, used to understand the differences between the world and the ultimate goal of research. In other words, these terms refer to the research methods (data collection and analysis methods) obtained from the data and the types of aggregation and demonstration (McMillan and Schumacher, 2006, p.12).
According to Creswell (2009), qualitative research requires researchers to analyze participants’ subjective thoughts and bring their personal value into the study. When researchers or the investigator are studying on new areas or trying to identify and emphasize theoretical issues, qualitative research methods are considered appropriate (Jamshed, 2014). The qualitative research provides a deeper and more specific understanding for the research area. According to Myers (2003, p.5), “Qualitative research methods are designed to help researchers understand people and their words and deeds”. For qualitative research, it “involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena” (Myers, 2003, p.5). When studying complex and unmeasurable social and cultural phenomena, researchers should follow the guidelines of qualitative research (Myers and Avison, 2002, p4). If people’s motivations, specifically, the action, belief and behavior background need to be understood, the reason of doing something are required to investigate, qualitative research method may be the best choice (Myers, 2003). In this study, the qualitative method is used because the research intends to find out the personal privacy awareness of Chinese University students when using WeChat, and what results will be produced by analyzing oral and textual data, which is related to analyzing the subjective thinking of participants, and requires an in-depth understanding of the interviewee’s motivation. If researchers want to understand some social phenomena from the perspective of users, qualitative research methods are better choices for research (Myers, 1997).

Compared to qualitative research methods, quantitative research requires researchers to collect and deal with large amounts of data that need to be processed using statistical tools in order to obtain accurate results for inspection phenomena. This method is suitable for seeking objective knowledge that can be analyzed through statistical analysis and is therefore more suitable for positive paradigms.

3.3 Data Collection Method

Qualitative research methods can be used to better understand people living in different cultures and environments. According to Creswell (2013), understanding the goals of phenomenon depends on participants’ participants. The specific society and institutional context are mostly lost if textual data are quantified. In this study, the qualitative method will be conducted with semi-structured interviews and document analysis as resources of data, which will be collected from the student users of Chinese WeChat university. According to Myers and Klein (1999), tactical interpretation is based on repeated on-site contact, so that all the participants are allowed to return to collect more data, and will be contacted if there are any problems or misunderstandings during the interview and analysis process.

3.3.1 Interview

Regarding to the data collection, required information and data for the study are collected and gathered through interviewing the participants. Qualitative research method is applied to investigate user arguments about privacy exposure in social media. Interviews are the most common data collection format in qualitative research. According to Oakley (1998), the qualitative interview is a framework that includes not only documents practices and standards, but also implementations, challenges and reinforcements. According to Crang (2007), interview coverage ranges from highly structured to unstructured. Interviews conducted in this case will be in the middle of this range. For semi-structured interviews, participants need to answer pre-defined open-ended questions, which have been widely used as forms of
interviews, and may interview individuals or even a group sometime (Jamshed, 2014). Semi-structured interviews are based on semi-structured interview guides, which are schematic documents of questions or topics that needed to be addressed by the interviewer (Dicicco and Crabtree, 2006). It is worth noting that the participants are Chinese university students and Chinese language is chosen for the interview guide, although WeChat have several language versions and can be used in everywhere around the world. The two content forms and interviews guideline in English and Chinese are attached to Appendices A and B.

Based on previous studies, this study focuses on privacy perception and how will it influenced future usage of WeChat, so that, users’ behaviors, attitudes and thoughts need to be discussed. Several questions are prepared for leading the interview to a further discussion on this topic. Therefore, the category of interviews conducted in this study fits into semi-structured as well. The topics for discussion are listed as follow:

- Sharing behavior on WeChat.
- Benefits of using WeChat.
- Knowledge of privacy leakage on WeChat.
- Attitudes towards privacy risks.
- Awareness of protecting private information.
- Views on further use of WeChat.

To propose the interview questions, there are several aspects to consider. Firstly, all questions need to be related to research questions. Robson (2011) suggests that the goal of the researchers is to create short, unbiased questions without any unknown words to participants. After proposing the questions, author found three volunteers (all of them are from Chinese university with different background but not include in the final results) to test the questions. Based on feedback from these test respondents, some questions need to be adjusted for further interviews to gather more accurate answers.

In this study, due to the limitation of location, all interviews were conducted through the Video function on WeChat, and the time was selected at least one day before the start of each interview, so that the respondents felt comfortable to have enough time. At the beginning of each interview, each interviewee was asked if he/she agrees to the recording. In order to get accurate results, it is important to take notes for each interview.

Purposive sampling is used to select participants in this study. 15 students from different universities in different cities are involved. Because China has a large land area, there are exist some geographical differences (including culture, environment etc.), which could influence students’ attitudes towards privacy exposure and future usage of WeChat. Considering geographical differences during sample selecting can avoid the problems caused by different living environment, culture etc. and improving the accuracy of the results. Since author has obtained internship experience in an English teaching organization with the permission of other teachers, author could obtain the contact information of students from different cities of China, which ensured the reality of the study. The details of each interview (gender, age and city) are presented in Table 1, and the duration of each interview was controlled within 1 hour.
Table 1. Interview Characteristics.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Age</th>
<th>Origin City</th>
<th>Education Background</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Female</td>
<td>20</td>
<td>WuXi</td>
<td>Statistics</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P2</td>
<td>Male</td>
<td>21</td>
<td>HuZhou</td>
<td>Marketing</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P3</td>
<td>Male</td>
<td>24</td>
<td>JiNan</td>
<td>Architecture</td>
<td>Master</td>
</tr>
<tr>
<td>P4</td>
<td>Female</td>
<td>23</td>
<td>ShanXi</td>
<td>Pharmaceutical</td>
<td>Master</td>
</tr>
<tr>
<td>P5</td>
<td>Male</td>
<td>25</td>
<td>ShangHai</td>
<td>Computer science</td>
<td>Master</td>
</tr>
<tr>
<td>P6</td>
<td>Male</td>
<td>19</td>
<td>WenZhou</td>
<td>Accounting</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P7</td>
<td>Male</td>
<td>23</td>
<td>BeiJing</td>
<td>Informatics</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P8</td>
<td>Female</td>
<td>22</td>
<td>HangZhou</td>
<td>Global business</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P9</td>
<td>Male</td>
<td>24</td>
<td>WeiFang</td>
<td>Management</td>
<td>Master</td>
</tr>
<tr>
<td>P10</td>
<td>Female</td>
<td>22</td>
<td>XiaMen</td>
<td>Healthy administration</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P11</td>
<td>Male</td>
<td>20</td>
<td>XinJiang</td>
<td>Chinese Literature</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P12</td>
<td>Female</td>
<td>24</td>
<td>NanJing</td>
<td>Mathematics</td>
<td>Master</td>
</tr>
<tr>
<td>P13</td>
<td>Female</td>
<td>19</td>
<td>TianJing</td>
<td>Economic</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P14</td>
<td>Male</td>
<td>20</td>
<td>WuHan</td>
<td>Archeology</td>
<td>Bachelor</td>
</tr>
<tr>
<td>P15</td>
<td>Male</td>
<td>19</td>
<td>GuangDong</td>
<td>Psychology</td>
<td>Bachelor</td>
</tr>
</tbody>
</table>

3.4 Data Analysis Approach

3.4.1 Memoing

In a qualitative research, the researcher must study the world of participants to reach a consensus on how the existence of this social field affected by specific phenomena. In order to achieve this goal, appropriate techniques are required to explore issues for confirming subjective influence and maintaining quality during the research process (Birks, Chapman and Francis, 2008). Memoing enable researchers to intergrate data into a difficult-to-achieve depth.

By using a memo, researchers can immerse themselves in data, explore the meaning of the data, maintain continuity and sustain research progress. As a methodological strategy, memos are usually associated with grounded theory, but all qualitative methods can be enhanced by using memos(Clarke, 2005). With the use of memos, a close relationship is established, making researchers more sensitive to what they contain.

Memoing is not limited to the analysis stage of research (Birks, Chapman and Francis, 2008), it provides a way to clarify the views of research topics, clarify assumptions about subject areas and subjective opinions, and promote the development of research designs. In this study, it has been used to clarify the progress of research and how author develop concepts and thopics in the analysis process.

3.4.2 The three Cs: Coding, Categorizing, and Identifying Concepts

In the process of data analysis, according to 3C approach proposed by Lichtman’s (2013) (from Coding to Categorizing to Concepts), there are six steps to analyze the data after the phase of generating data:
Step 1: Initial coding. Going from the responses to some central idea of the responses.
Step 2: Revisiting initial coding.
Step 3: Developing an initial list of categories or central ideas.
Step 4: Modifying the initial list based on additional rereading.
Step 5: Revisiting your categories and sub categories.
Step 6: From categories to concepts (themes).

According to Flick (2014, p.237), each recorded audio will be transcribed after the interview. In this study, these recorded audios were transcribed by combining with memos, because took memos could write down some authors’ thoughts which might help with analyzing data. After that, the code will be rewritten and relevant categories will be developed. During this process, some unrelated code is excluded from the data set. Then, the created categories will be discussed and modified to generate subcategories. After this process, the importance and connections of each category need to be considered in order to select the most important concept related to research issues.

3.5 Reliability and Validity

Reliability and validity can determine the quality of the research. According to Easterby et al. (2008), reliability indicates to what extent a data collection technology will produce consistent conclusions. In other words, “reliability is the degree of consistency (Silverman, 2013, p.301)”, which means reliability shows the consistency of the decision-making process in the research process, especially in analysis section. Validity is about whether the results of the study really relate to what they seem to be (Saunder, Lewis and Thornhill, 2007). That is to say, “validity is another word for truth (Silverman, 2013, p.301). For each research, it is very important to ensure reliability and validity. For solving the reliability and validity problems, the “refutability principle” and “constant comparative method” stated by Silverman (2013, p.301) will be used. The basic, rebuttable explanation is that the scholars need to refute the initial assumptions generated from the collected data. In each discussion, the premise is mentioned and the outcomes are compared to the focused key concepts. As part of the research, accurate description of the empirical settings, knowledge background, research method and analytical process can improve the reliability of the results. The process of coding, categorizing and identifying concepts is based on the description of Lichtman (2013). This analysis method was studied by researcher to ensure the consistency of this process in this study.

3.6 Ethical Considerations

The reliability of the survey, more specifically, the reliability of the collected data and the results of analysis, depends on the investigator's decision to address ethical issues. Ethical issues have to been considered seriously before starting the research process. The consideration of ethical problems is even more important compared with the research contents applicable to human research (Merriam and Tisdell, 2015). According to Codex.vr.se (2018), the important matters that all participants need to be noticed include:

- The overall research plan
- The aims of the research
- The methods to be used
- The consequences and risks
• The principal investigator
• The voluntary for the participation
• The right to cease participation at any time

An informed consent form that contains sufficient and accurate information about the research plan will be established based on the information above. According to Merriam and Tisdell (2015), the relationship between researchers and participants is important for ethical dilemmas. It can be explained by considering the relationship between the respondents and the research proposal affects the data collection process. In other words, the participants would like to share more information with researcher to improve ethical issues if the relationship between the researcher and the participants keeps well. As recommended by Robson (2011), this content should not be more than one page to avoid psychological stress on participants. The informed consent form for this study is given in Appendix A.
4. Empirical Findings

In this section, the author will lay out all the important findings based on the research methods and strategies introduced in the previous section. The results are based on two research methods: semi-structured interview and data analysis. To provide reliable results, the analysis utilizes all the interview records and memos. As mentioned above, the participants are the 15 university students aged from 19 to 24 and all of them are studying in Chinese universities. The participants are balanced in terms of gender, education area and culture background. As per the confidentiality agreement with the participants, they are anonymous in the research and will be named by P1 to P15. In order to protect of their privacy and based on the principle of research ethics, in some part of the analysis part.

The Three Cs method provides a very detailed guideline for analyzing the data collected by interviews. The process begins with reviewing the records and notes during of the interviews, and then proceeds to creating codes. At the beginning of coding stage, there were more than 50 codes generated from the interviews. After we have run over and selected codes, the unnecessary and unrelated codes have been eliminated. 24 essential codes are kept and used in the categorization phase. After coding stage, the codes need to be categorized (Lichtman, 2010). From the initial code list to central ideas, some of the codes are used as main categories, while other codes are changed or removed from the code list, and the relationships between codes are developed. During the final stage, some of the most powerful concepts must be recognized and decided. The ultimate concept should be a central category or a central phenomenon (Lichtman, 2010).

4.1 The Results of Initial Coding

The first step is to transform interviews to correspond to central ideas. Due to this reason, the recorded interviews are used several times to convert them into transcripts, ensuring there is nothing of value left out at this stage. In this process, there are lots of codes produced and some of them need to be redefined or renamed to get most suitable codes for this study. As a result, there are 24 categories generated from the coding process. The final codes are as follows:

1. The number of WeChat users is huge and covers all ages and different locations.
2. Users are influenced by people around them when using specific applications.
3. Users find the different WeChat functions very convenient (WeChat Pay, WeRun, Official account etc.)
4. Almost all interviewees notice the privacy issues in WeChat.
5. Different people have different thoughts on privacy boundary.
6. Almost all interviewees have the awareness of protecting personal information.
7. Frequently used function besides sending messages and Moments are WeChat Pay, WeRun, Official account platform and conversion of documents.
8. The environment has changed in China which lead to the change of payment method, lifestyles and perceptions.
9. Participants think they cannot change the status that how their personal data be used or processed by Tencent.
10. Participants know that their information can be used by government.
11. Participants think the link (voting, testing, etc.) and some official account platform are the most risky parts for privacy security.
12. Different people have different definition of privacy information.
13. Participants pay more attention when third-parties or friends ask for sensitive information.
14. Participants indicate that they believe Tencent can control their personal information in a safe way but they do not trust third-parties.
15. Participants prefer more complex verification process for information safety such as additional steps for verification when using WeChat Pay.
16. Participants want WeChat to provide more warnings when users may be at risk of providing private or sensitive information.
17. Participants think the private information which users can control is limited.
18. None of participants have read “WeChat privacy policy”, but almost all participants know the existence of this policy in WeChat and users need to accept it to continue using WeChat.
19. Participants want providers to think from users’ point of view to improve privacy protection functions.
20. Participants state that the positives are clear to see but the negatives is inconspicuous.
21. Most participants indicate that these risks will not affect their future use of WeChat, but some participants think if the privacy issues become more serious, they will try to find another social app to replace WeChat.
22. Participants state that they want WeChat change “mandatory authorization” on Official account platform to “optional authorization” options to protect their private information.
23. 87% of participants restricted shared content and cleared up published information
24. Some participants state that they are ready to bear the consequence.

4.2 Categorizing and Concepts

According to Lichtman (2010), the classification will improve and distinguish the categories generated by the initial coding. As results, there are eight concepts are identified in a total of 24 categories. In the categorizing process, the selected categories are most relevant to the research tasks and extracted from the related code notes and developed codes. Many parts of the texts are required as evidence of these related codes to detailed the categories according to the previous research questions.

The final step in the finding process is from Categories to Concepts. After I read and reread many times of the data, some ideas were similar and could be summarized to one concept. The collected data was carefully analyzed to identify themes and concepts. As results, in table 2, there were eight concepts used to answer research questions and shows the detailed correlation between the initial codes and the concepts to better understand the information collected from users. The concepts are: Perception of privacy risks, Irreplaceable tool and environment background, Knowledge of privacy risks, User’s acceptance of personal data usage, Control power and security responsibility, Personal information control, Balanced usage and Preparation for the consequences.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of Privacy risks</td>
<td>4.6.13.18</td>
</tr>
<tr>
<td>Irreplaceable tool and transformed environment background</td>
<td>1.2.3.7.8</td>
</tr>
</tbody>
</table>

Table 2: Summary of Findings
4.3 Perception of privacy risks

The first concept is perception of privacy risks. The key word is “perception”. Due to their different background, users will have different perceptions of privacy. In this study, the participants differ in terms of their majors and education levels. “What you feel decide what you do” is appropriate saying to describe user information sharing behavior and the perception of privacy risks.

From table 1 we can see that there are two participants who study in computer science and informatics. During the interview, they show strong perceptions of privacy risks, compared with others. P5 says “because I study computer science, when I am using WeChat, I can easily notice that some privacy risks exist in WeChat”. Almost all participants notice that WeChat has privacy risks and they have awareness of protecting their personal information. P3 says “I divided my friends into different groups and some of them can’t see what I post in ‘Moments’, at the same time, I set up time limit for my ‘Moments’, people can only see what I post in ‘Moments’ in the past six months”. P9, P13, P14 state that they will never use location based services. Besides, they do not use their selfies in their profiles. Some participants also mentioned that they will become wary when their friends ask for their sensitive information and when they are asked to open the link from third-parties. However, it is significant that none of the participants read the “WeChat privacy policy”. 8 participants did not even have any impression of this policy, but they could remember that when the first time they opened this app, they had to accept some policy to continue using it. Other participants have some impression of it but never read it carefully. They thought it is time-consuming and that they had to accept the policy. All in all, participants have a certain perception of privacy risks but in some ways, users need to change their mind so that they can better protect their personal information.

4.4 Irreplaceable tool and transformed environment background

In the report provided by Tencen (2014), WeChat is the most popular social media app in China, and it has large number of users, covering all age groups and different locations. The main functions of WeChat are communication, information collection and social participation, which is a good social media tool for users to display their daily life. Even though participants know WeChat have some potential risks and some undesired consequences, they still believe that WeChat is irreplaceable, because in this society, taking part in online communication is necessary in peoples’ life. All participants expressed that WeChat is a communication tool they use very frequently. Table 3 shows how long they usually spend on WeChat every day. The
number of hours shows that social media platform is an indispensable tool and takes a large amount of time in peoples’ life. The interview also shows that for students, especially those who are studying away from their home city or province, WeChat is the best tool with which they communicate with their family and friends. Therefore convenient communication and connection can be seen as a main benefit of WeChat.

Table 3. Daily time spend on WeChat

<table>
<thead>
<tr>
<th>Hour(s)</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 hour</td>
<td>0</td>
</tr>
<tr>
<td>1~2 hours</td>
<td>1</td>
</tr>
<tr>
<td>2~3 hours</td>
<td>3</td>
</tr>
<tr>
<td>3~4 hours</td>
<td>6</td>
</tr>
<tr>
<td>More than 4 hours</td>
<td>5</td>
</tr>
</tbody>
</table>

All participants emphasize that WeChat is a convenient tool with several useful functions, such as WeChat Pay, Official Account, and WeRun. In China, WeChat Pay is used everywhere in both cities and countryside. People can transfer small amount of money to sellers by scanning QR code or put money in “red package” on WeChat for their friends. P1, P4, P7 and P15 state that WeChat has already taken the place of the real currency. P15 says, “I use WeChat Pay every time when I shop in the supermarket. It is really convenient and everyone can quickly finish their payment. Besides this, I don’t need to worry about losing my wallet because I don’t need it anymore”. P4 states, “As I use my free time to be a buyer, WeChat Pay become a important part of my life. It can transfer money between people immediately and I don’t need to worry about carrying a lot of money”. P2, P6 and P14 say that they check WeRun every day, because they care a lot about their body and when they check WeRun, they can also know the steps of their friends. P8 says, “I used WeChat as a tool to transfer files. compared with using e-mail to send documents, it is more simple and efficient”.

However, users spend the most time on “Moments”, where users can get more information about other’s life. This function can make participants feel closer with people they care about. Just like P3 stated, “I really like checking ‘Moments’ because it can make me feel like I’m not alone. By checking ‘Moments’, I can quickly know what happened in other’s life. And because of I’m studying in another city, lots of my close friends are not around me. By checking ‘Moments’, I can know how the people I really cared about are doing”. It is not difficult to see that WeChat has already become a strong symbol of Internet culture and many users start using WeChat because many of their friends or the people around them are using it.

In conclusion, the communication and various functions make WeChat more attractive and convenient in Chinese social media market. From the users’ perspective, WeChat is not only a communication app, but also a convenient tool in their daily life. Within this environment one is almost compelled to use this application, so it is very important to develop a suitable method to protect personal information.

4.5 Knowledge of privacy risks

In this concept, “knowledge” is the key word. It means that users have knowledge in protecting personal information and they also realize that personal information and shared information on WeChat is not that secure. Different people have different definition of privacy, which means that some people think that this information is private but in others’ eyes it is not that important. For example, P2 says “I don’t think using my real-photo in personal profile is a big problem.
It’s just a photo and it stands nothing”, but for P10, “I’m very care about posting my photo on internet, I think it will bring some potential risks for me or even for my family and friends”. Different age and different educational background can also affect users’ knowledge of privacy. Some participants admitted that they intentionally or unintentionally shared too much information on WeChat because they might not have enough knowledge on privacy. “In the first half of the year I started using WeChat, I can post more than 5 posts on ‘Moments’ every day. I want to let all my friends know everything I have done”, says P6. P14 also states, “During the time you just use a new social media platform, you have not much understanding about it. When you become a little bit older and you hear or see more issues on the Internet, you will know it is important to protect your personal information instead of posting it to everyone”.

Apart from this, participants have their own thoughts and attitudes about risks. According to their own knowledge of privacy, they believe in WeChat, the most risky part of privacy security are the links from third-parties and some Official Account. “I always see some voting links and testing links shared by my friends. If I click to open the link, it always asks for access to my personal profile and other information. Sometimes it even asks me to fill in my real-name and real contact information if I want to get the test result or vote successfully” says P4. Another participant says, “Because I’m studying in computer science area, I know that all third-parties and some of Official Account want to gather user information as much as possible. They will use different ways to achieve this goal, such like posting testing links to attract more users. When I’m using WeChat, I see many testing links but I never click it, so that I can reduce the possibility of exposing my personal information”. When friends or third-parties ask for sensitive information such like bank account and codes, all participants express that they will be more vigilant. They state that they are not that easy to be deceived anymore because they have some privacy knowledge through their education and life experiences.

4.6 User’s Acceptance of Personal Data Usage

This concept shows the level people can accept their privacy information is used. Participants believe that the private information they can control is limited. “As a WeChat user, I know I can set some settings to protect my information, but I also know that these settings can’t protect all my information. I can divide my friends into different groups, set time limit to ‘Moments’ and close location based service, but I can’t control Official Account I followed and authorized third-parties.” says P9. Other participants such as P13 mention that “I know that third-parties and some Official Account tend to gather my personal information, and I also know that Tencent controls users’ personal information. I can understand that WeChat is a free social media app and it must utilize user information to gain some profits, but as a user, I hope WeChat can carefully select companies which can obtain the user information. Besides these, I also know that government can get access to users’ personal information”. Participants think that they can accept government to collect or use their data for some reasons, they know that it is difficult for them to reject it due to some policy reasons. Even government emphasize accessing to citizens’ personal data on social media is for better protecting national security or for criminal investigations. In some ways, it is the responsibility for citizens to help the government for achieving a better society, but this reason cannot be an excuse to violate the privacy of citizens without considerations of morality and restrictions. P5 states “I can accept that the government gets access to my personal information but it should have some limitations. If the government needs my personal information for the analysis of certain phenomenon, it should notice me before using it.”
Furthermore, another factor affecting their acceptances of personal data usage is the limited ability for users to change how their data is used or processed. Many participants state that they can do nothing about it. Besides this, like P1 says, “If I want to continue using WeChat, I have to accept all rules created by Tencent. In other words, although I don’t accept some rules in it, I can do nothing to change it”. P7 says “I can accept it now but it doesn’t mean I will accept it forever. If Tencent use my personal data to do something I can’t stand, I will uninstall WeChat and choose another app instead”. With all the analysis above, users choose to continue using WeChat because of they have a level of acceptance of the usage of private data, once the provider goes beyond the acceptance level of the users, they may consider changing to use another social media platform.

4.7 Users’ Expectations

After the interview, there is one important reason for users still using WeChat which is users’ belief that Tencent can keep their personal data in a safe way and their expectations of Tencent. Although Tencent controls a lot of users’ private information, users still believe that their information can be safe with Tencent, but they do not trust other third-parties. As P11 says “Tencent is one of the most famous internet company in China and I believe it have a mature system for keeping users’ personal data. But I don’t know how my data is processed and who else can get my data. I know that some third-parties can have my personal data but I can’t trust them.” All participants mention that they do not trust unverified links from third-parties, which make them feel unsafe. Users expect that when facing sensitive information or problems, WeChat can promptly remind them to take care of their personal information. “Although WeChat does not remind users every time when sensitive information is involved, there are times when WeChat do remind users to take care of personal privacy. I think WeChat will strengthen management in this area in the future, and that’s why I will continue to use WeChat because I have expectations of it” said by P6.

Users expect WeChat can think from users’ point of view to establish or improve some functions which can make user information more safe. P2 mentions that “I think WeChat need to make some changes in protecting personal data from users’ point of view. It will help WeChat preserve more users and increase the users’ loyalty”. Besides this, WeChat Pay is one of the function many users mentioned in the interview, and most participants expect WeChat can make the process of payment more complex. One participant says, “WeChat pay is an innovative function which exist in everywhere in my life. The reason why I choose continuing using WeChat is because of WeChat Pay. However, I still expect WeChat can improve this function because QR code is not that safe for me. My friends who knows the pin-code of my phone can use my account to finish the payment, which has huge potential risks. I believe Tencent will fix this problem in someday and I’m very much looking forward to it”. Therefore, having expectation is another reason for users choose to continue using WeChat. They trust that Tencent has a comprehensive system to protect their personal data and they have faith and expect that WeChat can improve some of the functions to better protect users’ private data.

4.8 Personal Information Control

In this concept, the key word is “control”, which stands for the attitude to users’ personal information control and shared contents. As mentioned in the analysis in the previous part, participants think using WeChat is an essential part in their life, and it is necessary for users to control what to share and who can see the content. According to the interviews, different people have different definition of privacy based on the individual’s value. This boundary
decides the limit of users of what information to share and how much to share, but the boundary is flexible and highly affected by personal experience. Table 4 shows different information participants chose to share with the public. In table 4, “√” means information participants would like to share with the public and “X” means information they think is private and not to share with others.

Privacy setting management seems a good way for all users to control their data. WeChat provide several settings for users to protect themselves. Figure 11 shows the options WeChat specifically provides for users. 87% of participants illustrate that they use these settings to decrease the possibility of privacy exposure. P5 states, “I think these settings are necessary. I use the friend confirmation which I think is the first step to filtrate the privacy risks that strangers bring. I never add people who I didn’t meet in my real life. And I close the location based service because I know that some people with bad intentions will utilize this function to put me in danger”. After analyzing the interviews, we find that one function is most mentioned by participants which is dividing friends into different groups. Users can assign people into different groups such as family, collage friends, unfamiliar people, and restrict who can see their personal data or some specific content. According to most participants, they believe that for users, the most effective way to protect their information is controlling the initiative to share information, and dividing different groups is one way to achieve it.
Besides these, most participants mention that they have a habit of managing friends list and posted content. Some users have no impression as to why someone is in their friend list and why some content are posted. According to P8, “when I check ‘Moments’, sometimes I can see the people who post some content, but I didn’t remember who they are. Maybe I added them in some specific situation. Maybe I added them to get some discount in the restaurant. It is very common for shops to gain more costumers in this way. So, it is important for me to manage my friends list and remove them from WeChat”. For posted information, as participant 3 states, “I have a habit to check posted information in my ‘Moments’. When I checked it, I can delete some contents which are meaningless and inappropriate. For instance, I used to have a close friend but due to some reasons we do not contact anymore. If I keep our photo in my ‘Moments’, it is not a good thing for both of us and maybe it is a little bit embarrassing”.

To provide more evidence for the study, participants are asked to provide the screenshot of their privacy settings (Fig. 11). Most of participants set the privacy settings but a few of them did not change the settings from default settings, which means that they allow everyone who can search their account to see their profile information and content posted in “Moments”. One of the reasons why some participants do not want to share the information is their concern about their family. They know that older people are easier to be scammed by Internet. P10 states, “I don’t allow strangers to see my profile and the information I posted in my “Moments” because I am afraid criminals will use the information such as portrait, username, e-mail, photos to create a similar account and use it to deceive my friends and family. I know my parents are not that familiar with using the Internet and new media technologies such as ‘WeChat’, so that they will be more easily cheated”. Moreover, to better control their personal information, participants want WeChat to change “mandatory authorization” to Official
Account to “optional authorization”. They believe that effective personal information control can maximize the benefits for both users and Tencent company.

### 4.9 Balanced usage

As analyzed above, every participant has different risk perception and their own understanding of the benefit that WeChat brings. Balancing benefits and risks is one important concept for users when they use social media. It is a key factor that influences their use of social media. Some of the participants believe that balancing the usage of WeChat is important, in order to benefit more from using WeChat without exposing more personal information. As P11 states, “For users, it is important to know what benefits you can get and what risks you may take when you use WeChat. You need to find a balance between them. Users need to build a boundary of their privacy: for instance, what to share, how often to share and with whom to share. If users feel the risks outweigh the benefits, users should be able to opt out of it”. During the interview, all participants state that they think the benefits they obtain from WeChat is more than risks, which also illustrate that positive influences play an important part when using WeChat. Under most circumstances, users will feel the conveniences and the benefits when using social media platform and they also can get lots of advantages from it. Users believe that they can gain obvious benefits by using WeChat. According to the analysis above, WeChat is a necessary tool and it becomes a part of people’s life, which has stimulated further participation. Besides this, participants are more willing to see the advantages, because the risks are to some distance hidden from them, which makes users hard to find them out. Therefore, peoples’ decision to use WeChat is not based on rational calculation of risks and benefits. During the interviews, some participants also mentioned that they have already prepared for the consequences. If the privacy issues become more and more serious and they cannot maintain the balance, they will consider finding another social media app to protect themselves.

### 4.10 Preparation for the Consequences

From the interviews, participants state that when using WeChat, users should make many decisions and choices. In WeChat, all shared information should be willingly provided by the users. Every user should be able to control the sharing behavior by themselves, so that they need to prepare to face the consequence of disclosed data. Besides this, some participants also mentioned that the ability to change social media is limited so that shared information cannot be deleted by users. Before they click “post it”, they need to think carefully so that this information will not harm them. About the way they share information, different participants have different options. Some of them notice there are some risks when they are using the social media and they can choose not to use it anymore, but shared information cannot be deleted by deleting the account. Therefore this function cannot protect their information. Of course, people can decide not to use WeChat at all but this is an information society, especially for younger generation, and keeping contact with others and get in touch with global communication technology is significant. At the same time, they will also miss the benefits social media can bring. P14 states, “it’s the 21st Century. People cannot live without communicating with others. More and more people prefer to show themselves in varies social media. When I chose to use WeChat, I have already thought about the consequences”. The interviews show that the participants have their own judgment about what information to be posted and they have clear purpose when sharing content. According to P10, “I have a clear goal when sharing information and know my target audience. And as an adult, you must think about the consequences of each thing you do”. These illustrate that participants actively decide
the content and target audience of their shared information. In the long run, these decisions and choices are very important for controlling their private information.

Preparation for the consequences is an important category which is mentioned by participants in interviews many times. They know that posted information cannot be deleted in the Internet, and that is why it is important to think about all shared information. P6 stated “I think we cannot change the situation of the Internet and we also cannot change the law. All we can do is to prepare for the consequences”. According to the interviews, participants know that potential risks exist in posted information. How big data technology is used to analyze users’ data is also a new area for users, and users are not familiar with it. “I think we do not know how big the consequence of sharing information can be without thinking carefully. Users may not know how significantly their behaviors may impact the Internet environment”. Users need to regulate the content shared and think about the possible consequences to better protect their information.
5. Discussion

Chapter 5 consists of the discussion about the main findings from both literature and qualitative study. The discussion of the results is divided into two subsections. First, a discussion based on core findings in the above section. Additionally, an overall conclusion will be given.

5.1 Discussion of the Empirical Findings

The aim of this study is to understand the situation of privacy perception and how these perspectives of privacy issues influence the future use of this social media platform. These topics are conducted by RQ1 and RQ2 and other related concepts. In this section, the empirical concepts presented in the empirical findings section will be discussed and we will further explain the implications and connections between them.

5.1.1 Discussion of RQ1

*RQ1: How is the privacy perception of university students when they are using WeChat?*

First of all, it is necessary to mention the *perception of privacy*. This concept shows the situation of privacy perception of WeChat university student users. After analyzing the interviews, all users can feel that privacy issues exists in WeChat. It can be seen that users have perceptions of privacy risks when using WeChat, which is similar with the research conducted by Johnston and Warkentin (2010). But users have different level of perception of protecting their private information. According to Ngeno et al (2010), users’ attitudes towards privacy perceptions can be influenced by the educational background. This is in accordance with the findings of this study. People who study subjects related to computer technology and Internet have better awareness of privacy protection. According to our analysis, users have some basic *knowledge of privacy risks*, but they cannot express their understanding and identify specific privacy risks in a good way. This result is close to the previous study of Ngeno et al (2010), who identified users’ understanding about privacy in not enough. Sometimes, people can be easily effected by others, there is one old Chinese saying, “I do this because of others do this”, everyone can be potentially led by others. Therefore more knowledge of privacy risks can help users think independently. Users may not realize the seriousness of sharing personal information, and they may not know how valuable their shared information is. Some third-parties or fourth-parties can gain benefits or profits by analyzing their personal information, but users may not have enough awareness of it, which is similar to the conclusion of the study conducted by Conger Pratt and Loch (2013). What is unexpected is that almost none of the users read the “WeChat privacy policy”, which is an essential part for users to understand how their data will be used and how to better protect themselves. That means users need to build a more comprehensive sense of privacy perception and change the attitudes towards privacy policy. To the surprise of author, besides the sensitive information (pin-code etc.) some of the users noticed that third-parties were most likely to expose their information. Users believed that the privacy situations related with third-parties now was hard to change because if one wants to use some functions provided by third-parties, one has to allow them to gather your information although users have no idea about how their data will be processed.

Moreover, for people who are using WeChat, having awareness of *personal information control* is significant. Different people have different privacy boundary, which is an invisible boundary to express users’ definition of privacy. For some people, information that others
consider to be private is to be shared in their eyes. Beside the context, users also have different attitudes regarding who to share with. This information control can be affected by many factors which is similar to the findings in the study conducted by Qiu and Li (2012). Privacy settings can also show the peoples’ perception of privacy and it is essential for users to better protect themselves. According to the interviews, 83% users set privacy setting and 87% users have the habit to review and modify the information they posted in WeChat. However, when more privacy questions are raised to the interviewees, we find that the reality is not that optimistic. Most of the users are unaware of many potential factors that may cause privacy issues. But it is worth mentioning that some participants proactively indicate that they will change their privacy settings in order to better protect their personal information after the interviews, which means that this study do contribute to raising awareness of personal privacy protection.

Therefore, to some extent, the awareness of privacy perception among WeChat Chinese university student users seems positive but there does not exist complete understanding of privacy. For users, there are still a lot of blanks to be filled in terms of knowledge of privacy area, and the problems of personal information control also needs to be solved. Therefore it is necessary to provide more information and knowledge on privacy to Chinese university users in order to increases users’ perceptions of privacy issues.

5.1.2 Discussion of RQ2

RQ2: How university students’ perceptions of privacy exposure issues affect future usage of WeChat?

From our analysis of the interviews, we find that users choose to continue using WeChat although they know it has privacy issues. During the analysis of gathered data, the concepts introduced earlier were brought up and these concepts are connected and affect each other. Firstly, from university students’ perspectives, WeChat is a communication tool which includes several convenient functions, and it becomes more and more essential in people’s life. This phenomenon illustrates that people have the desire to communicate and connect with others. This conclusion is close to the findings in Xu et al. (2015)’s study. Due to this human’s instinct, the communication technology is developed and the demands of social media application are increased. Besides this, with the development of technology, many new functions have changed people’s lifestyle, such as WeChat Pay, WeRun, Official Account. In some ways, WeChat has already changed the environment of society, as the study by Ciao and Lien (2014) shows. The analysis of the interviews shows that social influences can also play an important role in effecting the usage of WeChat. When users consider using WeChat, they might be affected by important people around them. This is also a reason that cannot be ignored for the continuing usage of WeChat.

Moreover, users think they cannot change the situation that Tencent collects their information. So, the acceptance of personal data usage is another reason that users choose to continue using WeChat. In Sun’s study (2017), the level of users understanding of service providers can influence their usage to specific service, which means that the acceptance of service might decide whether they will continue use the social media or not. Users state that they can understand WeChat is a free service and Tencent need to profit from it in order to run the company, and they can accept WeChat and government gathering or using their personal data in some specific ways. However, if anything that exceeds user’s level of acceptance, they will consider using another social media app instead of WeChat. Interestingly, although users say they are concerned about the privacy issues, they do not want to spend time reading “privacy
policy”. It shows that user’s words and deeds might be contradictory. Therefore, if something unexpected happens, whether they will really switch to another social media application is not that clear. Even they use another app, the same problem might rise again, because they are ignoring the basic privacy policy. Moreover, sometimes users have low tolerance for government to fully control their data because it makes users feel like they are under surveillance, and this is similar to the findings in the study conducted by Greenwald and MacAskill (2013). They can understand government might protect users by comprehensively monitoring them, but it should not be the price users pay for joining social media society and it might make users feel uncomfortable. This phenomenon can be a factor that will influence the future use of WeChat. In general, from user’s perspectives, the ability to influence how WeChat process user information is limited and user usually consider they are in a weak position when using social media applications. Although they realize that the use of their information makes their uncomfortable, they think that they have nothing to do to change this situation, they will also accept it in some ways and choose to continue using WeChat in future. Another reason for continuing using WeChat is users have expectations on it. Over time, WeChat has gained part of loyal users and these users have positive attitudes toward WeChat’s future. They expect WeChat to improve some functions, especially those contain sensitive information and hope WeChat will let users know where their information going and how their information be used. Because of the high expectations and trust, users still choose to use WeChat despite knowing it exist some privacy issues.

In addition, users weigh the benefits and potential privacy risks or consequences as they decide whether to continue using the app. Finding out the balanced usage of WeChat is an essential point that users can positively use it and avoid potential risks. At present, most users believe that the advantages of using WeChat outweigh the disadvantages. In the case of loss of balance, users will choose another app instead of WeChat. Due to these reasons, users must be prepared for the relevant consequences. Many participants illustrate that before the interviews, they did not consider this topic even it is very important and close to their daily lives. It also shows that even though users have knowledge of privacy, this knowledge might not be used because risks tend to be hidden and the benefits are easy to see. Therefore, users need to have the preparation and ability to jump out of the situation which cause by insufficient awareness and inappropriate behavior when using SNSs. Therefore, from analyzing the interviews, the author believe that it is necessary to have some privacy education to help citizens build up strong awareness of privacy and bring more privacy knowledge, which can help people protect themselves in the future use of social media.

5.2 Reflections

Based on the aforementioned results and discussions, the findings can be summarized as follows: from the personal perspective, social media is irreplaceable in this digital society which is already illustrated by the study conducted by Ess (2013). When using SNSs, it is very important for users to have perception of privacy and related privacy knowledge at the same time. According to the analysis, most of users have different level of privacy knowledge. Moreover, different educational backgrounds can impact the perception and knowledge of privacy. Building privacy boundary is important for users and they have their own definition of privacy and the boundary cannot be strictly fixed. Besides this, although some participants state that they already pay attention to the privacy issues but not all of them set suitable privacy settings in order to protect their personal information. The privacy settings in SNSs can help users restrict people who can get access to their personal information. It is worth mentioning that privacy settings may help users build the boundary between them and other people but it
cannot limit the possibility of WeChat or other third parties to collect or utilize the data. Therefore it is argued that users need to have ability of protect their personal information and knowledge of social media technology (Stieglitz et al., 2014). Besides, balancing the benefits and risks is significant for users and it is also an important way to positively join in the social media. Therefore, users believe that to avoid the problems caused by privacy exposure and reduce personal loss, preparing for the consequences is another essential way to protect themselves. However, the expectation from users is also one significant reason for users to continue use SNSs. Users have expectations that service providers will protect their personal information and they believe the providers will improve the product by thinking from the perspective of the users.

Form service provider’s perspective, this study brings positive influences on SNSs providers, especially for privacy controlling part. Based on this study, providers can get more information about the situation of university students’ privacy perceptions, their attitudes toward privacy exposure issue and how the attitudes will influence their future usage of SNSs. Providers can utilize these results to improving privacy settings and make some changes on some specific functions to better meet users’ expectations in the future. This will help providers keep and attract more users at the same time. Moreover, understanding what users’ needs and thoughts are is very important for providers to improve users’ loyalty. Furthermore, because the environment of Chinese Internet is not that mature compared with Western countries, there exists more privacy black space that needs to be filled in. More online privacy policies might be implemented to better protect the personal information of citizens and to create a better Internet environment.
6. Conclusion

In the final chapter, general conclusions are made about the research. The key purpose and main results of the study are summed up. The contribution of the research is also shown in this chapter. At the end of this chapter, the suggestions for future research are given.

6.1 Conclusion

The aim of this study is to investigate the awareness Chinese university students possess regarding the privacy risks in WeChat and whether this impact the future use of this application. The main purpose is to understand the user’s perception of privacy risks and their knowledge of the ways in which they can protect their information when using WeChat. This study selected 15 Chinese students from 15 different cities as a target group to explore their awareness of privacy issues and risks present in WeChat. The method used in this study is interpretive qualitative research method and we adopt 3Cs to analysis the interviews to gather deeper understanding about the participants. As a result, eight important concepts are identified, which are:

1. Perception of privacy risks
2. Irreplaceable tool and transformed environment background
3. Knowledge of privacy risks
4. User’s acceptance of personal data usage
5. User’s expectations
6. Personal information control
7. Balanced usage
8. Preparation for the consequences

The answer to first research question can be found by the first concept. According to the analysis, almost all users have perception of privacy risks, but different educational background can cause different levels of awareness. People who study in computer and media area have higher awareness of privacy risks than people who study in other field. Based on this finding, the second research question can be answered by other concepts. Through the analysis, we can know the results of how these will influence future usage of WeChat. According to the analysis, the user’s attitude toward this issue is positive, which means that it will not affect future use of WeChat. The first reason is that WeChat is an irreplaceable communication tool and the nature of society is changing. People are living in a digital society and some lifestyle already changed due to the development of Internet technology (such as e-payment). WeChat is not only a communication platform but also a tool to make life more convenient. The second reason is that users believe that they have some knowledge of privacy risks which will help them to protect themselves when using WeChat. People think this knowledge can help them control their personal information exposed on WeChat. The third reason is the acceptance of WeChat, which means users can accept WeChat and the government to collect and use their personal data to some extent but at the same time they feel that they are unable to change this situation. User’s expectations of provider is another reason. Users have loyalty to this service provider and they believe the provider will improve the service from users’ perspectives. Users set privacy settings to protect their private information and they have the habit to recheck their posted information. Balancing between benefits and risks is another factor affecting the future use of WeChat. People believe that the benefits from WeChat is more than the risks but once the risks beyond users’ tolerance, they will think about using another app instead. Users also need to prepare for the consequences to avoid more harm.
6.2 Contribution

This study seeks the users’ perceptions of SNSs privacy risks and how the attitudes will influence their future use of SNSs. To some extent, this topic deserves attention in the field of social privacy in China and it can fill the gap in Western countries’ study in Asian SNSs’ privacy issues. As a result, there are eight concepts identified to answer the research questions of this study. Some concepts have already been discussed by other scholars. These concepts include personal information control (Qiu and Li, 2012), irreplaceable tool and transformed environment background (Ciao and Lien, 2014) and knowledge of privacy risks (Conger Pratt and Loch, 2013 and Zhang et al, 2014). This study is in line with previous studies, but it also brings more comprehensive understanding about the first party of privacy model, such as at what stage of the Chinese users’ privacy perception is and what other concepts might influence future usage. Moreover, this study can supplement the research on privacy issues of younger generation. The interview includes 15 students from different Chinese colleges, cities and majors, and the interviews provide valuable material for this study. From the whole study, it can be found that the users’ understanding about privacy risks is enhanced and the perception of personal information is increased. However, users still do not pay enough attention to the “privacy policy”, and this phenomenon might lead to inconsistency in users’ thoughts and behaviors. Furthermore, university students ought to make full use of privacy settings. Besides, it is worth to mentioning that this study can also help service providers to get more information about how users think of privacy exposure issues and make some improvement on privacy protection settings in the service to attract and keep more users.

6.3 Future research

The result of this study can inform further research. In this research, eight concepts have been identified and some of the concepts are interrelated with each other. For future research, more clear connection between those concepts can be studied and how they influence each other. Maybe a privacy theory can be built for people’s perception on social media usage. This study is conducted among WeChat Chinese university students’ users, and it touches upon some aspects of privacy exposure research. For future research, because WeChat can be used in more than 200 countries and supported with 18 different languages (Tencent, 2014), the research can select wider people to be the target group and can study users from different culture background or countries. Participants with different nationalities and culture backgrounds may have different perceptions of privacy risks. Therefore, the result might be different. Besides, including more participants and using different research methods (such as quantitative research method) might bring additional findings in this area. Additional participants might show different attitudes towards privacy. All researches tend to raise users’ privacy awareness and increase knowledge of personal information for better understanding the digital society and reflecting on suitable solutions. It is very significant for the creation of a better ICT society and it requires not only second-parties, third-parties, and fourth-parties, but also people in first-parties to work towards it together.
Reference


Xu, X. 2014. *The research on the problem and protection of mobile social network user’s privacy security*. Master degree. College of Journalism of Chongqing University.


Appendix. A: Informed Consent

Hi, my name is XiaoTong Liu and I’m working on Degree project in Informatics at Master Level in Linnaeus University. And my e-mail address is tiffanyliuxt@gmail.com If you have any question after the interview, you can contact me any time you like.

The title of the thesis is “Privacy exposure on WeChat from user’s perspective: A study among the university students in China”. The motivation of this thesis is to understand a critical issue by studying in information privacy area from users’ perspectives. The number of Internet users continue growing in recent years, besides this, sometimes we can see some reports or articles about personal information disclosure in Internet. This problem become more and more serious in social medias. The main goal of this thesis is to generate more knowledge in information privacy on social media area and provide the results about awareness of privacy risks from Chinese university students perspectives. The results will be generated through interviews and analysis of documents related to WeChat.

It is very grateful that you are willing to be the participant in the study. Before start the interview, it is important to inform you some essential information:

1. Your participant in this study is entirely voluntary.
2. You can quite the interview at any time without any reason.
3. If you don’t want to answer some of the questions, it will be OK.
4. Your name will not be used in the thesis and all your information will be kept strictly confidential.

Due to the topic of the study is about privacy, you may feel uncomfortable before or after you finish the interview. If you feel stressful in any answer, you can contact me at any time and I promise this answer will not be used in the thesis. All collected data will not be contacted by other parties.

Please sing on this document to make sure that you understand the research plan and your rights.

Signature (Participant)                                            Date:

Signature (Researcher)                                            Date:
Appendix. B: Interview Questions

Warm up questions:
1. How long have you using WeChat?
2. How often do you use WeChat?

Main questions:
3. Do you like to check “Moments”?
4. What kind of information you usually post on “Moments”? Do you consider yourself over sharing?
5. What other functions on WeChat you usually use besides chatting with friends and “Moments”?
6. Do you think your personal information will be disclosed when you using these functions? How?
7. Did you read the privacy policy on WeChat? Why?
8. What kind of information you think is private information, how do you see your private information is being exposed on WeChat?
9. How do you control your private information on WeChat?
10. What benefits would you consider when using WeChat?
11. Is there any risks or consequences you recognized for your exposed private information?
12. How you think the benefits and risks, will it affect you using WeChat? How?
13. In your perspective, what can be changed or improved by WeChat in terms of protect your privacy?
14. In the privacy topic on WeChat, do you have something more to add?