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Walden University
2018

ABSTRACT

Social Media Use by College Students and Teachers: An Application of UTAUT2

by

Xiangyun Huang

MA, South China University of Technology, 2005

BS, Hunan University, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

May 2018

Abstract

Social media has been increasingly used in education to facilitate innovative instruction. Mainland Chinese people could not use popular social media platforms such as Facebook^{TM} because the government blocked them. Little research studied social media use by Mainland Chinese students and teachers in the isolated network environment. This quantitative study utilized social constructivism, connectivism, and the unified theory of acceptance and use of technology (UTAUT2) as the theoretical base. Research questions explored the influence of 6 UTAUT2 predictors on social media use intention and the influence of social media use intention on social media use behavior. The study used a convenience sample of 197 undergraduate students and 54 full-time faculty from 2 public science and technology universities in Guangzhou, Guangdong province, Mainland China. Survey data were analyzed using descriptive statistics, simple regression, multiple regression, and moderation analysis. The findings showed that performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit significantly influenced social media use intention, and social media use intention significantly influenced social media use behavior. Age moderated the relationship between facilitating conditions and social media use intention, and gender moderated the relationship between habit and social media use intention. The findings might be used to promote positive social change by providing insights of social media use by Chinese students and teachers for university administrators, government, and social media platform designers. Better understanding might facilitate adoption of social media in education and therefore improve teaching and learning for Mainland Chinese students.

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Dedication

This dissertation is dedicated to my father. He passed away one year after I started my doctoral journey. I could feel the encouragement from him just like he was around with me.

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Chapter 1: Introduction to the Study

Introduction

The topic of this study is social media use by Mainland college students and teachers in educational contexts. New technologies including social media have great impact on Chinese educational innovation (Zhang, Wang, & Zhang, 2016), and social media could facilitate innovative instruction and improve 21st century skills for the students (Chukwudi et al., 2015). Mainland Chinese college students and teachers use social media in an isolated network environment that is different from their counterparts in western countries because of government censorship. Their perception and use of social media were not sufficiently studied in previous research, and this study focused on this topic to provide more information of social media use by Mainland college students and teachers. Through empirical data collection and analysis, this study could contribute to the research of social media application in Chinese educational contexts. It could fill a gap in the literature by exploring the social media acceptance and usage by Mainland Chinese college students and teachers. Deeper understanding of social media acceptance could possibly improve the application of social media in the Mainland Chinese educational system.

Chapter 1 provides an overview of the study including the background, research purpose and research questions, theoretical framework, research design, and the implications of this study. The six sections in chapter 1 are as follows:

- Background information that describes the gap in knowledge.

- Problem statement.

- The purpose of the study and research questions and hypothesis based on the purpose of the study.

- Theoretical framework for the study.

- Design and methods: nature of the study, list of definitions, critical assumptions, scope and delimitations, and the limitations of the study related to design and methodological weakness.

- Significance of the study.

Background

Social media has developed and will develop rapidly as an indispensable part of people's life in the world. It has great impact on several areas of social interaction such as communication, entertainment, and education (Eroglu, 2016; Bingham & Conner, 2010). China, the most populated country in the world (Worldometers, 2017), is among all the other countries that experience technology progress and social media development. Social media provides new opportunities for improvement for Chinese educational system as well as other aspects of social life.

Mainland Chinese people cannot use popular social media platforms such as Facebook[TM], Twitter[TM], and YouTube[TM] because of government prohibition. They use Weibo[TM] (Chinese version of Twitter[TM]), WeChat[TM] (Chinese version of WhatsApp[TM]), Qzone[TM] and some other small websites instead. Studies of social media applications conducted on Chinese social media platforms include public affairs (Hassid, 2012; Mou & Lin, 2014; Song, Dai, & Wang, 2016), Government operation (Lu, Zhang, & Fan, 2015; Chen, Xu, Cao, & Zhang, 2016), companies and organizations (Luo, Wang, & Han, 2013;

Men & Tsai, 2013; Ngai & Jin, 2016; Xu, Kang, Song, & Clarke, 2015; Zhang & Luo, 2016).

For educational applications of social media, there are some studies conducted in Hong Kong and Taiwan (Liu & Hung, 2016; Peng, 2016). Although these two areas share similar cultural background with Mainland China, they share the same social media platforms with western world rather than China. Empirical research of social media in educational contexts is insufficient in Mainland China (Gao, 2013; Zhang & Yan, 2015), and the role of social media in learning and instruction is unclear. Mainland Chinese students and teachers may use social media for teaching and learning in a different way with their western counterparts because of cultural differences (Xu & Mocarski, 2014). Research is needed to explore social media acceptance and adoption by Mainland college students and teachers to make better use of social media for educational purposes.

Problem Statement

Social media has a profound influence on communication, information sharing, and learning (Bingham & Conner, 2010; Chukwudi, Maduike, & Constance, 2015; Owusu-Acheaw & Larson, 2015). In the field of education, social media has had positive impact on academic performance and research skills of college students (Al-Rahmi et al., 2015; Kivunja, 2015; Kurtz, 2014; Feldman, 2015; Thalluri & Penman, 2015; White & Hungerford-Kresser, 2014). But researchers also found negative or mixed influence of social media on teaching and learning (Chukwudi, 2015; Churcher et al., 2014; Greenhow & Lewin, 2016; Gupta et al., 2013; Owusu-Acheaw & Larson, 2015; Rambe, 2012). Some studies focused perception and adoption of social media and factors that

could influence social media use, and these studies provided insights in how to make
better use of social media in educational contexts (Leafman, Mathieson, & Ewing, 2013;
Raju, Valsaraj, & Noronha, 2015).

Researchers have studied social media perception and usage in educational
settings in Asian countries such as Japan (Gamble & Wilkins, 2014), Malaysia (Al-
Rahmi, Othman, & Yusuf, 2015), and India (Gupta, Singh, & Marwaha, 2013). But there
are few studies about social media use in the Mainland Chinese educational system (Gao,
2013; Zhang & Yan, 2015). Factors that can influence social media use intention and
social media use behavior are not clear. More studies are needed to provide insights into
social media use intention and social media use behavior of Mainland Chinese students
and teachers. Understanding of social media use by Mainland Chinese students could
possibly improve social media application in learning and instruction in Chinese
educational systems, and therefore bring a positive social change through technology-
integrated educational innovation.

Purpose of the Study

The purpose of this quantitative survey study was to examine social media use
intention and social media use behavior of Mainland Chinese students and teachers in
their learning and instruction settings. Factors that can influence usage and acceptance of
social media were measured for college students and teachers using questionnaires based
on the Unified Theory of Acceptance and Use of Technology (UTAUT2) model
(Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, J, & Xu, 2012). The
independent variables were six UTAUT2 factors: performance expectancy, effort

expectancy, social influence, facilitating conditions, hedonic motivation, and habit. These independent variables were used as predictors in this study. The dependent variables were social media use behavioral intention and social media use behavior. Behavior intention is an indication of an individual's readiness to perform a given behavior. It is assumed to be an immediate antecedent of behavior (Ajzen, 2002). Social media use behavior intention is an indication of an individual's readiness to use social media. Behavior is an individual's observable response in a given situation with respect to a given target (Ajzen, 2002). Social media use behavior is an individual's observable response with respect to use social media. The moderators were age, gender, and experience. "Experience reflects an opportunity to use a target technology and is typically operationalized as the passage of time from the initial use of a technology by an individual" (Venkatesh et al., 2012, p.161). In this study it referred to the passage of time from initial use of social media by an individual. The finding results could address a gap in the literature by providing insights into acceptance and use of social media by Mainland Chinese college students and teachers in an isolated network environment. Understanding of their usage and acceptance of social media could possibly facilitate social media integration into learning and instruction and promote educational innovation in Mainland China.

Research Questions and Hypotheses

This study used the UTAUT2 model to examine social media use by Mainland Chinese college students and teachers. There were two research questions with six hypotheses in the first research question and one hypothesis in the second research question.

1. RQ1- Do UTAUT2 factors influence social media use behavioral intention of Mainland Chinese college students and teachers to use social media?

- Hypothesis 1: Performance expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 2: Effort expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 3: Social influence has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 4: Facilitating conditions has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 5: Hedonic motivation has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 6: Habit has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

2. RQ2- Does intention of Mainland Chinese college students and teachers to use social media influence their social media use behavior?

- Hypothesis 1: Intention of Mainland college students and teachers to use social media has a significant positive effect on their social media use behavior.

Theoretical Framework for the Study

The theoretical framework for this study included Vygotsky's (1978) social constructivism, connectivism (Davis, Edmunds, & Kelly-Bateman; Siemens, 2005), and the UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012).

Constructivism

Vygotsky (1978) argued that knowledge is co-constructed through social interaction in a social environment. Individual learning and group learning occur in social contexts. Social media has a profound influence on the way people communicate and interact (Bingham & Conner, 2010), so perception and use of social media of students may change their social learning process and knowledge construction. Several previous social media studies used social constructivism as the theoretical background (Mbati, 2013; Salmon, Ross, Pechenkina, & Chase, 2015). Similarly, I used social constructivism as one of the background theories in my research of social media use and acceptance.

Connectivism

Connectivism was developed according to the weakness of previous cognitive theories such as cognitivism and constructivism (Siemens, 2005). Connectivism is based on the combination of three components: chaos theory, networks, and complexity and self-organization. It was proposed as a new learning theory for the digital age (Davis et al., 2008; Siemens, 2005). Connectivism has been applied in several studies of social networking (Kella, 2014; Tinmaz, 2012). Connectivism is similar as well as different with social constructivism, and it focuses on social learning in the digital era. Social constructivism provided general theoretical support for my research, and connectivism

provided specific theoretical support for social media and social learning research in the network environment.

UTAUT2

The UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) was used in this study to explore use and acceptance of social media. UTAUT2 model is an improved edition of UTAUT, which is a model that explains technology acceptance and adoption of users in organizational context. The UTAUT model was developed based on eight previous theories and models of technology acceptance. The eight models are: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT). The UTAUT2 model was further developed based on finding results studies using UTAUT model.

The UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) includes seven factors that might influence acceptance of new technologies. These seven factors are performance, expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The seven factors have effect on social media use intention. And social media use intention has effect on social media use behavior. There are three moderating variables included in the UTAUT2 model: age, gender, and experience.

The UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) has been used in various studies of new technology acceptance such as mobile technology

(Baabdullah, Dwivedi, & Williams, 2014), Phablets (Huang &Kao, 2015), mobile

payment (Morosan & DeFranco, 2016), and online games (Xu, 2014). I used the

instrument based on the UTAUT2 model in my questionnaire survey and data collection.

Finding results in this study were compared with previous studies using UTAUT model

and UTAUT2 model.

Nature of the Study

This study was a quantitative survey study. Existing questionnaires based on

UTAUT2 model were used in the survey design. The survey was cross-sectional with the

data collected at one point of time. The participants of the study were college students

and teachers selected randomly in two colleges in Guangzhou, Guangdong province,

China. All the participants answered two survey questionnaires: a demographic

information questionnaire and measurement scales of their acceptance and use of social

media based on the UTAUT2 model (Venkatesh et al., 2012). Factors that may influence

social media acceptance by students and teachers were investigated. The finding results

were compared with previous research to check how this study can be generalized to

other learning and teaching contexts (Al-Rahmi et al., 2015; Leafman et al., 2013;

Piotrowski, 2015; Raju et al., 2015; Thalluri & Penman, 2015; Xu & Mocarski, 2014).

The general population of this study was undergraduate college students and

teachers in Mainland China. This study used a convenience sample of undergraduate

college students and teachers at two science and engineering institutions in Guangzhou,

Guangdong province, southeast China. Undergraduate college students were defined as

students studying at a college on a full-time basis during a given academic year. College

teachers were defined as adults teaching in an instructional role at the institution on a full-time basis during a given academic year. The two institutions where the survey was conducted were chosen because they represent public universities in Mainland China. There are 2,879 institutions of higher education in China, but only 266 of these institutions are private (Ministry of Education of the People's Republic of China, 2016[a]). So college students and teachers in public universities were main research subjects in this study.

I analyzed data using frequency statistics in this study. Regression analysis and moderation analysis were used to provide information about the relationship and strengths among the variables. There were six UTAUT2 factors as the independent variables: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The dependent variables were behavioral intention and use behavior. The moderators were age, gender, and experience. The relationship between the six UTAUT2 factors and intention to use social media and the relationship between intention to use social media and social media use behavior were analyzed. The impact of the three moderators (age, gender, and experience) on these relationships was also analyzed.

The detailed procedures for gathering and analyzing the data are provided in chapter 3.

Definitions

The independent variables, dependent variables, and terms used in this study that have multiple meanings are defined as the following.

Behavior: An individual's observable response in a given situation with respect to a given target (Ajzen, 2002).

Behavioral intention: An indication of an individual's readiness to perform a given behavior. It is assumed to be an immediate antecedent of behavior (Ajzen, 2002).

Collaborative learning: "It is a situation in which two or more people learn or attempt to learn something together" (Dillenbourg, 1999, p.1).

Compatibility: "The degree to which an innovation is perceived as being consistent with existing values, needs, and experiences of potential adopters" (Venkatesh et al., 2003, p.454).

Complexity: "The degree to which a system is perceived as relatively difficult to understand and use" (Venkatesh et al., 2003, p.451).

Constructivist pedagogy: To teach in a constructivist manner with characteristics conforming to constructivist principles (Richardson, 2003).

Course management systems. "A CMS is Internet-based software that manages student enrollment, tracks student performance, and creates and distributes course content. In this way, the CMS enables teachers to extend the classroom beyond its traditional boundaries of time and space" (Ullman & Rabinowitz, 2004, p.2).

Ease of use: "The degree to which using an innovation is perceived as being difficult to use" (Venkatesh et al., 2003, p.451).

Effort expectancy: "The degree of ease associated with the use of the system. Three constructs from the existing models capture the concept of effort expectancy:

perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT)" (Venkatesh et al., 2003, p.450).

Experience: "Experience reflects an opportunity to use a target technology and is typically operationalized as the passage of time from the initial use of a technology by an individual" (Venkatesh et al., 2012, p.161).

Extrinsic motivation: "The perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions" (Venkatesh et al., 2003, p.448).

Facilitating conditions[1]: "The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. This definition captures concepts embodied by three different constructs: perceived behavioral control (TPB/DTPB, C-TAM-TPB), facilitating conditions[2] (MPCU), and compatibility (IDT)" (Venkatesh et al., 2003, p.453).

Facilitating conditions[2]: "Objective factors in the environment that observers agree make an act easy to do, including the provision of computer support" (Venkatesh et al., 2003, p.454).

Formal learning: Formal learning is always organized and structured, and has learning objectives. From the learner's standpoint, it is always intentional: i.e. the learner's explicit objective is to gain knowledge, skills and/or competences (OECD, 2017).

Habit: "The extent to which people tend to perform behaviors automatically because of learning" (Limayem, Hirt, & Cheung, 2007, p.705).

Hedonic motivation: "Hedonic motivation is defined as the fun or pleasure derived from using a technology, and it has been shown to play an important role in determining technology acceptance and use" (Venkatesh et al., 2012, p.161).

Image: "The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Venkatesh et al., 2003, p.449).

Informal learning: Informal learning is never organized, has no set objective in terms of learning outcomes and is never intentional from the learner's standpoint. Often it is referred to as learning by experience or just as experience (OECD, 2017).

Job fit: "How the capabilities of a system enhance an individual's job performance" (Venkatesh et al., 2003, p.448).

Knowledge construction: A collaborative process which aims to produce new understanding or knowledge which exceeds something that anyone alone could not achieve (Oksanen, Lainema, & Hämäläinen, 2017).

Knowledge management: Knowledge management is the process of capturing, distributing, and effectively using knowledge (Davenport, 1994).

Learning objects: Minimal learning content units, with self meaning, formed by interactive and multiple format information packages, identifiable through metadata, designed to reach a single learning objective, integrating learning content, assets, activities and evaluations (Del Moral & Cernea, 2005).

Online courses: Courses where all or most of the content is delivered online without face to face meetings between students and instructors (Allen & Seaman, 2008).

Outcome expectations: "Outcome expectations related to the consequences of the behavior…they were separated into performance expectations (job-related) and personal expectations (individual goals)" (Venkatesh et al., 2003, p.449).

Perceived behavioral control: "Reflects perceptions of internal and external constraints on behavior and encompasses self-efficacy, resource facilitating conditions, and technology facilitating conditions" (Venkatesh et al., 2003, p.454).

Perceived ease of use: "The degree to which a person believes that using a system would be free of effort" (Venkatesh et al., 2003, p.451).

Perceived usefulness: "The degree to which a person believes that using a particular system would enhance his or her job performance" (Venkatesh et al., 2003, p.448).

Performance expectancy: "The degree to which an individual believes that using the system will help him or her to attain gains in job performance. The five constructs from the different models that pertain to performance expectancy are perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT)" (Venkatesh et al., 2003, p.447).

Relative advantage: "The degree to which using an innovation is perceived as being better than using its precursor" (Venkatesh et al., 2003, p.449).

Scaffolding: Support provided by a teacher or a parent as a tutor that allows students to meaningfully participate in and gain skills at problem solving (Wood, Bruner, & Ross, 1976).

Social factors: "The individual's internalization of the reference group's subjective culture, and specific interpersonal agreement that the individual has made with others, in specific social situations" (Venkatesh et al., 2003, p.452).

Social influence: "The degree to which an individual perceives that important others believe he or she should use the new system. Social influence as a direct determinant of behavioral intention is represented as subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT" (Venkatesh et al., 2003, p.451).

Social media: "A group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010, p. 61).

Subject norm: "The person's perception that most people who are important to him think he should or should not perform the behavior in question" (Venkatesh et al., 2003, p.452).

Traditional courses: Courses where all content is delivered in writing or orally without online technology integrated (Allen & Seaman, 2008).

Assumptions

For the purpose of the study, I assumed the following:

1. The use of social media by respondents in colleges in Guangzhou, Guangdong province can represent the use of social media by Mainland Chinese college students and teachers.

2. Respondents provided honest and forthright responses to the questionnaires.

3. Respondents could understand terms in the UTAUT2 questionnaire with explanation and have basic knowledge about computer technology.

4. Respondents had access to a computer and the Internet at home or in the office to read E-mails.

5. The UTAUT2 questionnaire used in this study could be applied in Mainland Chinese educational contexts although students and teachers use different social media platforms with other places in the world.

6. Validity test and reliability test in previous studies could be used as a reference in this study.

7. Regression assumed a linear relationship between the dependents and the independents. The outcome variables should be linearly related to any predictor. For predictors, their combined effect was best described by adding their effects together.

8. Independent errors. For any two observations the residual terms were independent.

9. At each level of the predictor variables, the variance of the residual terms was constant.

10. The residuals in the model were random, normally distributed variables
with a mean of zero.

Scope and Delimitations

The scope of this study included full-time college students, male and female,
studying at two institutions in Guangzhou, Guangdong province, southeast China during
the 2017-2018 academic year as well as full-time college teachers, male and female,
employed at the same two institutions during the 2017-2018 academic year. All the
respondents are Chinese people. The two institutions are both public, 4-year science and
engineering institutions. I hoped to obtain responses from 200 college students and
teachers. I expected 50 responses from the teachers as collecting data from teachers might
be more difficult than collecting data from students. So the sample would include 150
students and 50 teachers. After eight days' data collection, the final sample was 251
including 197 students and 54 teachers. The number of teachers was as expected, while
the number of students was a little more than I expected.

A questionnaire based on UTAUT2 model was used to gather data. Data was
collected through an online survey. I used the platform of Sojump^{TM} (an online survey
company in China. The website is https://www.sojump.com) to create an online
questionnaire and put the link on the forum and chat group of the two universities.
Detailed explanation of the questionnaire was attached to the questionnaire, and I left my
contact information so the participants could ask me if they had any questions. I had one
liaison in each university to help me solve problems during the data collection. There was
no participant contacting me during data collection, and neither of the two liaisons

reported unexpected incidents in the two universities. After the data collection, I statistically analyzed the data to identify relationships between UTAUT factors and social media acceptance and use. Social media here was social media platforms used in China such as Weibo^{TM} and Wechat^{TM} rather than the popular social media platforms used around the world such as Facebook^{TM} and Twitter^{TM}.

Limitations

One limitation of the study was that the sampling range was too narrow compared with the general population. There was a limitation in generalization and inference about the entire population because of the use of convenience sample. The study was conducted in Guangzhou, Guangdong province, one of the most developed areas in China (GDSTATS, 2016). The finding results might not represent other areas where Internet and social media were not so popular. The two universities in the study are both science and technology institutions, which might not represent other institutions such as literature and arts institutions. Respondents were undergraduate students and teachers although the two institutions also offer graduate programs. These limitations had an impact on the generalization of the study in that the findings were specific to these settings and might not hold true for all college students and teachers in the country. However, the finding results were useful for understanding social media acceptance and adoption at these two universities and in other institutions of similar size and demographics in spite of the limitations. This study could be a reference for future research focusing on social media use in different educational contexts located in various parts of China.

Another limitation was that an online questionnaire was used in the survey, which might cause sample deviation. Students and teachers who would like to answer an online questionnaire might use computer and Internet more frequently in their work and life than students and teachers who would not. The sample could include much more participants in favor of social media than participants rejecting social media. Technology access is challenging for some older teachers, so this problem was especially serious for teacher participants. In addition, online survey has lower response rate than paper questionnaire although it is convenient (Frankfort-Nachmias, & Nachmias, & DeWaard, 2015). I had to distribute a great deal of questionnaires to collect enough responses for my research because of the relatively low response rate.

A third limitation was that the independent and dependent variables were self-reported on a Likert scale. Individuals could not have the same objective definitions for terms and scale rankings. Different definitions and interpretations of the terms might cause error in the results. When people self-report data, they are influenced by their subjective beliefs, and sometimes they even select answers that they think the investigators want. People often construct descriptions of their opinions and attitudes on the spot when they are asked a question because they may not have thought it before (Leedy & Ormrod, 2005). So their responses might be influenced by recent events, current contexts, or even their mood at that time. In this study, participants' answers to the questionnaire might be influenced by recent events, current contexts, people around them, or even their mood.

In addition to the limitations caused by data collection methods such as sample select and questionnaire form, data analysis technique was also related to limitations. Regression analysis seeks to determine a predictive relationship between the independent and dependent variables. "Regression analysis is sometimes interpreted to suggest that the independent variables cause the outcomes, a more accurate term to use is "affect" the outcomes. The magnitude of these effects can be quantified, but this does not suggest other, unmeasured or latent, factors don't play important roles as well" (Thomas, 2005, p. 84). In this study, six factors were included as the independent variables, but there might be other factors that also influence the intention to use social media. In addition, the interaction of the six factors was not be examined in this study.

Finally, this study was a cross-sectional survey research without any experiment design. The finding results could only suggest there was positive or negative relationship between the independent variables and dependent variables. The exact causal relationship could only be checked in an experiment design with experiment groups and control groups. Further research can focus on causal relationship between UTAUT2 factors and social media use intention and behavior based on the finding results in this study.

Significance

New technologies including social media have great impact on Chinese educational innovation (Zhang, Wang, & Zhang, 2016). Social media could facilitate innovative instruction in a networked era and improve 21st century skills for the students (Chukwudi et al., 2015). Through empirical data collection and analysis, this study could contribute to the research of social media application in educational contexts. It could fill

a gap in the literature by exploring the social media acceptance and usage by Mainland

Chinese college students and teachers. This large group used social media within a

cultural background and isolated network environment that was different from their

counterparts in western countries. Social media was one of the new technologies included

in innovative instruction and learning, and deeper understanding of social media

acceptance could possibly improve the application of social media in the Mainland

Chinese educational system. This study could also contribute to the UTAUT2 research as

a new application of UTAUT2 model – the use of social media in educational contexts.

The UTAUT2 model has been used to study acceptance of new technology in the areas of

consumption and education (Baabdullah, Dwivedi, & Williams, 2014; Huang & Kao,

2015; Morosan & DeFranco, 2016; Slade, Williams, & Dwivdei, 2013; Tan, 2013). For

example, Xu (2014) used the UTAUT2 model to explore online games participation in

China, but there were few studies using the UTAUT2 model to investigate social media

use in the Chinese educational system. This innovative study could address a gap in the

literature by applying the UTAUT2 model to investigate social media usage and

acceptance by Mainland Chinese college students and teachers. It could contribute to the

development of the UTAUT2 model as well as inform the development of innovative

practices in the Mainland Chinese educational system.

Summary

This chapter provides an overview of social media use in different aspects in

people's life all around the world, and then focuses on social media use in educational

contexts. Social media has been used for teaching and learning in several areas in the

world including Asia, but social media use in Mainland Chinese educational system has not been fully studied. The Internet environment in Mainland China was different with other places in the world including Hong Kong and Taiwan although the two places have similar cultural tradition with Mainland China. There was little understanding of how and why students and teachers used social media for educational purposes in this special Internet environment. The topic of social media acceptance and usage by Mainland Chinese students and teachers was proved to be necessary and significant because of a gap in research in this field.

The purpose of this non-experimental, quantitative study was to examine the use of social media by Mainland Chinese college students and teachers and to identify factors that could influence their social media use intention and social media use behavior. Two research questions would guide the study. For the first research question, there were seven hypotheses. For the second research question, there was one hypothesis. The research questions and hypotheses were based on the UTAUT2 model, and a questionnaire based on UTAUT2 model was used to collect data. In addition to the UTAUT model, social constructivism and connectivism were the other two theories that constitute the theoretical basis for this study. Research design, data collection and analysis, and summary of finding results were conducted within this theoretical framework.

Data was collected in two science and engineering institutions in Guangzhou, Guangdong province, southeast China. Participants were undergraduate college students and teachers in these two institutions. Online questionnaire was used in the survey. A link

of the questionnaire was put on the forum and chat groups in the two universities with

detailed explanation of the questionnaire and the contact information of the researcher.

Logistical regression was used to predict the relationship between the six UTAUT2

factors and intention to use social media and social media use behavior. The definitions

of critical terms used in this study are listed in this chapter. The assumptions, scope and

delimitations, and limitations are explained.

The significance of the study is outlined in the last part of this chapter. Social

media is one of the new technologies that influences teaching and learning in educational

contexts. Perception and acceptance of social media by students and teachers could

impact their use of social media for educational purposes. Deeper understanding of their

acceptance of social media could provide insights for social media application and social

media integration in curricular design. The digital natives have grown up in an

environment rich with computer and Internet technology, and social media is an

indispensable part in their life. Educators cannot ignore the social media but have to

consider the possibility of integrating social media in teaching and learning. And they

also need to reflect their own use of social media. This study could make contribution to

instructional innovation by providing information about social media acceptance and use

by both students and teachers.

This chapter presents a general introduction of the study. And chapter 2 provides

an overview of literature about social media use in various areas including education

system. Related studies regarding social media use and perception are explained in detail

with their significance to this study. The theoretical framework is elaborated, and social

media studies based on each of the three theories are introduced. Chapter 3 describes the research design and rationale. Information about the general population, sampling procedure, instrument selection, validity and reliability of the instrument, data collection methods, and data analysis methods are presented in chapter 3. Chapter 4 includes the data analysis procedure, descriptive statistical results, results of the regression, and discussion. Chapter 5 summarizes the whole study including final conclusion of the study, limitations of the study, suggestions for future research, practical applications, and social change implications.

Chapter 2: Literature Review

Chapter 2 includes the literature review of the theoretical support for the research topic, research questions, and methods of data collection and analysis of this study. This research explored social media usage by Mainland Chinese college students and teachers and the factors that can influence their acceptance of social media. Theoretical foundation of this study included constructivism (Vygotsky, 1978), connectivism (Siemens, 2005), and the Unified Theory of Acceptance and Use of Technology (UTAUT2) model (Venkatesh, et al., 2003; Venkatesh et al., 2012). Quantitative data collection and analysis were based on the UTAUT2 model and its corresponding questionnaire.

There are six sections in chapter 2 as the following:

- The literature review strategies.

- Theoretical foundation of this study: constructivism (Vygotsky, 1978), connectivism (Siemens, 2005), and UTAUT2 model (Venkatesh, et al., 2003; Venkatesh et al., 2012)..

- Overview of social media development in the world and an introduction of social media used in an isolated network environment in Mainland China.

- Introduction of social media applications in educational contexts. The three sub-sections in this section are: social media use in educational settings, social media impact on learning, and perception of social media by students and teachers.

- Summarization of the independent and dependent variables used in this study.

- Introduction of the methodology in this study.

Literature Review Strategy

The research studies selected for this literature review focused on social media usage and acceptance by students and teachers. Six databases in English were employed to search for relevant research studies. These databases included ERIC-Educational Resource Information Center, Education Research Complete, Education Source, ProQuest Central, Academic Search Complete, and SAGE Premier. The website of National Academies Press (www.nap.edu) was used to search books in education. The website of ResearchGate (www.researchgate.net) was used to follow the latest research in education. China National Knowledge Infrastructure (CNKI) database was used to search articles in Chinese. This database includes several sub-databases such as China Academic Journals Full-text Database, China Doctoral dissertations Full-text Database, and China proceedings of Conference Full-text Database. The following organizational websites were consulted: National Education Association, the Department of Education's National Center for Education Statistics, Facebook[TM], Twitter[TM], YouTube[TM], WhatsApp[TM], website of Viswanath Venkatesh, Weibo (Chinese version of Twitter), WeChat[TM] (Chinese version of WhatsApp[TM]), Statista, Ministry of Education of the People's Republic of China, China Education and Research Network, and Organization for Economic Co-operation and Development. The range of dates for the studies was between 2010 and 2017 to ensure that relatively current research was included in the literature review.

The keywords used in the literature review included: social media, social media impact, social media use, social media perception, social media acceptance, China,

Chinese, Facebook[TM], Twitter[TM], WhatsApp[TM], Weibo[TM], WeChat[TM], Qzone[TM],

education, online education, distance education, learning, higher education, college

students, college teachers, constructivism, connectivism, UTAUT, UTAUT2, cultural

differences, gender differences, social media addiction. Most of the articles were

downloaded from Walden library, and the other articles were found through Google[TM]

and Baidu[TM] (a similar Chinese search engine with Google).

Theoretical Foundation

Constructivism

Constructivism has been developed based on the broad foundation of psychology

and philosophy, and there are multiple constructivist theories applied in instruction. One

of the important constructivist theoris is Vygotsky's social constructivism. One

characteristic of Vygotsky's social constructivism is his premise that individual

development should be put into social contexts and development is "the conversion of

social relations into mental functions" (Vygotsky, 1981, p.165). The core of Vygotsky's

social constructivism is that children develop higher mental functions when they interact

with more experienced members in their community. Their learning includes two

interactional parts: learn from more experienced members through social interaction and

practice under their guidance; construct knowledge based on existing and new

information and develop higher mental functions in the mind. The internal learning and

external learning should be integrated in a social environment (Vycotsky, 1978).

According to constructivism (Vycotsky, 1978), conditions for instruction are

complex and relevant learning environments and social interactions, and methods of

instruction include collaborative learning (students learn together in a group), problem

scaffolding (teachers and tutors help students participate in problem solving), public

domain software (software available for general population with Internet access), and

course management tools (Inernet-based software that manage students learning activities)

(Driscoll, 2005). Moore-Gumora (2014) summarized the principles in designing

constructivist learning as following:

- Learners are provided with the social contexts.

- Tasks are embed in real-world relevant context.

- Learners experience the knowledge construction process.

Constructivist approaches have been widely applied in traditional classroom

instruction as well as innovative instruction facilitated by new technology. Social

constructivism (Vygotsky, 1978) is one of the supporting theories for research in network

technology integrated instruction. Research topics include online courses, mobile

assisted in-class courses, and social media facilitated learning.

Constructivism in online courses and mobile assisted courses.

Studies of online courses explored the role of both students and teachers in

constructivist teaching and learning. Student moderators in constructivist online courses

could improve student interaction and critical thinking (Thormann, Gable, Fidalgo, &

Blakeslee, 2013). Students' satisfaction of learning and social interaction had positive

relationship with their attitudes toward group problem solving in online courses (Hazari

& Thompson, 2015). From the educator's perspective, helping students to interact with

each other was the most important task for the instructor (Moreillon, 2015). In addition to

interaction and feedback, individual accountability, social skills, and perceived ability also influenced team work in mobile assisted learning (Wang, 2014).

Thormann et al. (2013) explored the role of student moderator in improving interaction and critical thinking in online courses from a constructivist approach. They mentioned that critical thinking is generated from interaction among student groups. Constructivism is learner-centered, and constructivist approaches can increase interaction between students in online courses. The participants were K-12 educators in the United States who were students in an online course, and the instructor had taught online course since 1996. Finding results showed that use of student moderators support student interaction. The implication is that educators can apply student moderator in constructivist online courses for their K-12 students.

At the college level, constructivism also provides theoretical support for development of online courses. Hazari and Thompson (2015) investigated business college students' perceptions of group work in online classes from a constructivist perspective. They selected constructivism as the conceptual framework, and they integrated active learning, collaboration, interaction, social presence, and technology and communication systems in their study. The results showed that students who are satisfied with learning and social interaction have positive attitude toward group problem solving process.

Moreillon (2015) provided a detailed description of an educator's experience about using Web 2.0 tools and multimedia in collaborative learning and collective meaning-making. The literature foundation for the reflective exploration includes social

constructivist, activity, and situated cognition theories. The author applied learning

management system (LMS) for online teaching and learning in all his courses. He also

used wiki and ApprenNet tool in addition to LMS. Feedback from students in the online

classes is mainly positive. The author emphasized in the conclusion that according to

social constructivist learning theory, helping students to interact with each other should

be the most important task for the instructor.

Technology is applied in in-class courses as well as online courses in social

constructivist learning. One example was mobile assisted in-class course (Wang, 2014).

Social constructivism and collaborative learning theory formed the theoretical

background for the study. The study analyzed the application of an interactive mobile

assisted social e-learning (iMASE) module as an alternative approach in collaborative

learning, and it explored students' experience and perceptions of mobile applications as

educational and social interaction tool. Results revealed that individual accountability,

social skills, quality of feedback, and perceived ability predicted quality of team work

learning experience.

Constructivism in social media facilitated learning.

Social media plays an important role in online courses as a tool for learning and

communication (Hazari & Thompson, 2015; Thormann et al., 2013). Researchers focused

specifically on social media use in social constructivist knowledge building and

constructivist teaching, learning, and assessment. They emphasized that social

constructivism provides strong support for social media use in educational contexts

because social constructivism advocates interaction between students and instructors, and

social media provides a perfect platform for communication and collaboration (Churcher, Downs, & Tewksbury, 2014; Karahan & Roehrig, 2015; Kurtz, 2014; Liu & Rao, 2015; Megele, 2015; Noh, Siraj, Jamil, Husin, & Sapar, 2015; Tay & Allen, 2011). Kimmerle, Moskaliuk, Oeberst, and Cress (2015) summarized that constructivist is an appropriate theoretical perspective to examine the process of educational social media use based on literature review of educational applications of social media.

Incorporating social media in constructivist pedagogy in Web 2.0 course environment has both advantages and disadvantages. Based on literature review of links between social constructivist theory and the use of new media technologies, Churcher et al. (2014) summarized best constructivist pedagogical practices with characteristics conforming to constructivist principles as well as challenges accompanied by social media use. Advantages of social media were as follows:

- Social media improves students' involvement in course logistics, thus creates a sense of ownership.

- Students can attend a course at any time in any place rather than at a regular time.

- Students can learn at their own pace; Social media facilitate large group discussion.

The challenge was that students as well as instructors might encounter difficulties because social media is a relatively new tool in teaching and learning.

From a practical perspective, Tay and Allen (2011) stated how to appropriately use social media in university learning. They argued that social media effectively engages

students in constructivist learning. Social media promoted a new way of learning for students so that they could construct knowledge through collaboration and discussion rather than just remember and repeat the content. The value of social media focuses on collaboration, sharing, and participation, and this value is based on the characteristics of social constructivist approach to learning, which emphasizes interaction and collaboration. They recommended several structures and strategies that are effective in incorporating social media in collaborative learning. Two examples of assignment design showed how to encourage students to implement social media in their learning and how to collaborate with teammates and share information. The authors also summarized insights gained during the design process.

Facebook [TM] is a major social media platform in educational contexts, and there is a body of literature demonstrating the integration of Facebook in instruction. Social media platforms such as Facebook [TM] improve active participation and collaboration among learners and instructors; which is a key principle of social constructivism (Harasim, 2012). So the theoretical basis for many of the studies relied on social constructivist theory. Facebook [TM] can be used individually as a medium in teaching and learning or together with other virtual platforms such as learning management system (Kurtz, 2014; Noh et al., 2015). This popular social networking platform provides a virtual learning environment as well as a social and entertainment environment. Students perceived Facebook [TM] as a protected environment that fosters learner involvement, active contribution, and interaction between students and instructors (Kurtz, 2014).

Facebook [TM] is popular among students in some Asian countries such as Malaysia,

and educators there tried to take advantage of Facebook[TM] as an instructional tool because of its popularity. They used constructivism as the theoretical support when they designed guidelines and principles for Facebook[TM] based pedagogy. The learning psychology required in the pedagogy design was summarized from the opinion of 30 experts in Malaysia. Most students and experts have positive perception on applying Facebook[TM] in educational contexts although there are concerns about privacy (Hewitt & Forte, 2006; Kurtz, 2014; Noh et al., 2015). Experts' skills such as emphasizing brainstorming, focusing on real experiences, and providing effective materials could enable them to propose guidelines that make Facebook[TM] learning environment more effective and attractive.

Constructivism in social media facilitated knowledge construction.

Social media or social network can be a knowledge construction and knowledge management tool for adults in organizational environments as well as for students in educational environments (Liu & Rao, 2015). Social constructivist theories are relevant to research of social media in knowledge construction because of their emphasis on social interactions and technology as predictors to knowledge expanding (Meloche, Hasan, Willis, Pfaff, & Qi, 2009; Orlikowski & Barley, 2001). Although there were differences in social media use in organizations from different countries, the common trend was that organizations increasingly implemented social media in knowledge construction and knowledge management. They used social media in the process of producing new understanding and knowledge as well as the process of capturing, distributing, and effectively using knowledge. The top three methods of enhancing employee development

were collaborative learning, learning through professional networks, and meaningful discussion (Liu & Rao, 2015).

Some researchers used to combine constructivist theory with several other theories to build theoretical framework for social media studies. For example, Kivunja (2015) introduced six foundational theories in his study of the efficacy of social media technologies in academia: social constructivist theory, participatory learning theory, critical thinking and problem solving theory, cognitive processing theory, multiple intelligences theory, and connectivist theory. He stated that social media integration in pedagogy was a new approach to teaching, and each of the six theories provided support for applications of social media in teaching and learning. In his case study exploring social media use in two courses for pre-service teachers, he found evidences that social media improved knowledge and skills emphasized by the six theories. Greenhow and Lewin (2016) used two of the above mentioned theories, constructivism and connectivism, as theoretical foundation in their social media research. In these previous studies, connectivism was used together with constructivism as theoretical support for social media use in learning. Connectivism is a new theory developed to explain specifically networked learning facilitated by the Internet and computer technology.

Connectivism

Connectivism (Siemens, 2005) was developed according to the limitations of previous cognitive theories such as cognitivism and constructivism in network environments. Most learning theories hold that learning occurs inside a person. Even social constructivist gives primacy to the principality of the individual although it

emphasizes social interaction. These previous theories fail to address learning that occurs outside of people and within organizations, which makes them incapable to explain learning in a networked world. Even social constructivist, which emphasizes active meaning creation and social interaction, focuses on individuals in learning process (Siemens, 2005). One of the characteristics of learning in digital age is that collecting information from various sources and then creating one's own useful informational patterns is more important than just acquiring knowledge from the sources. Connectivism was developed to explain the new learning pattern in the digital age. Connectivism emphasizes the ability to synthesize and recognize connection and patterns in information networks (Davis, Edmunds, & Kelly-Bateman, 2008; Siemens, 2005). Connectivism is based on the combination of three components: chaos theory, networks, and complexity and self-organization (Siemens, 2005).

Downes (2005, 2007) stated connectivism in a little different way than Siemens (2005). He qualified connected knowledge as abstract knowledge or reasoning. He also mentioned the differences between groups and networks while Siemens (2005) is inclined to regard groups as a type of networks or a part of networks. Both Siemens and Downes emphasized knowledge construction, information flow, and pattern recognition and creation in a network environment. Their work shared a major contribution to the formation of connectivism as a new theory.
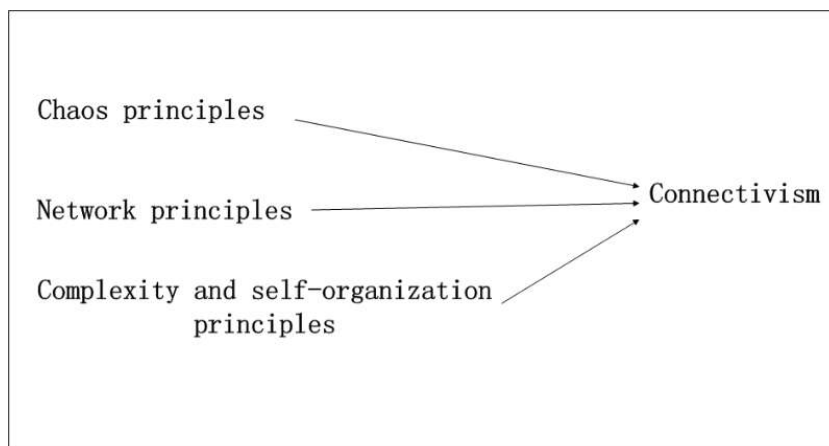
Figure 1. Integration of principles in connectivism. Adapted from "Connectivism: A Learning Theory for the Digital Age," by G. Siemens, 2005, *International Journal of Instructional Technology & Distance Learning, 2*(1), p. 7.

Most of the articles of connectivism including the work of Downes (2005, 2007) and Siemens (2005) were posted on blogs, and connectivism experienced huge growth as other researchers also post their opinions on blogs. But studies of practice of connectivism were insufficient then (Bell, 2011). Now there are more and more theoretical and practical studies of connectivism due to the rapid development of technology and network, and scholars are trying to clarify and improve connectivism to explain and guide learning in the digital age.

Different views on connectivism.

Advocation of connectivism.

Researchers have different opinions on connectivism when they compare it with previous learning theories. Some believe that connectivism is a new theory that can guide technology enabled learning and knowledge construction in the digital age (Foroughi, 2015; Kivunja, 2014; Moral, Cernea, & Villalustre, 2013). Another view is that

connectivism alone is not sufficient to guide learning, and it needs to be combined with other theories. Connectivism is relevant to technology enabled learning, but it lacks in rigor (Bell, 2011). There are still researchers who think that connectivism fits the level of pedagogy and curriculum rather than the level of theory. It could provide practical principles for pedagogical design and curriculum design, but it was not a system of ideas based on general principles that could explain higher order thinking as other learning theories (Kerr, 2007; Kop & Hill, 2008; Verhagen, 2006).

Kivunja (2014) summarized previous learning theories and pedagogical paradigms as Siemens did, but he added transformation and Tabula Rasa Paradigms. Table 1 demonstrates the evolution of the four major four theories before connectivism. He argued that a pedagogical shift from social constructivism to critical thinking, problem solving, and digital connectivism is necessary so that students can master 21st century skills and become competitive in job market. The computer mediated collaborative environments, which was emphasized in connectivist approach, gave opportunities for interconnection and communication. Learners could use computers and Internet to communicate and discuss with peers and instructors. Their technology proficiency can help them think critically and solve real-life problems because technology was a tool for them to explore the world, collect mass information, analyze the data, and solve meaningful problems together with other learners. So connectivist paradigm is appropriate for teaching and learning in the 21st century although social constructivist is still a great way to learn. Connectivist teaching and learning could foster 21st skills such as critical thinking, problem solving, and collaboration.

Table 1

Foundational Pedagogical Paradigms

	Perspectives of Learning		
Paradigm	Meaning of Learning	Learning Process	Learning Facilitation
Transmission and Tabula Rasa paradigms	A gift to the learner	Transmitted by teacher	Lecture and deliver
Behaviorist	Response to stimuli	Behavior change due to conditioning	Present stimuli
Cognitivist and individual constructivist	Active discovery and construction of knowledge	Assimilation, accommodation and adaption through personal discovery	Active current schema
Social constructivist	Active discovery and construction of knowledge	Cooperative learning in authentic social-cultural environments	Scaffold, collaboration, teamwork

Moral et al. (2013) mainly compared social constructivism and connectivism

rather than reviewing all the main learning theories in history. They focused on learning

objects, which are learning units formed by interactive and multiple format information

packages, and learning styles in web 2.0 environments. There were four learning styles

included in their research:

- Active (users who are fully involved in new experiences).

- Reflective (they like to consider and observe new experiences from different

  points of view).

- Pragmatically (their strongpoint is the application of ideas and acquired

  knowledge).

- Theoretical (users who adapt and integer their own observations into logical
  and complex theories).

The authors drew similar conclusion with Kivunja (2014) based on the comparison that learning object design has evolved from social constructivist perspective to connectivist perspective because of the benefit of network environment, especially social media. The article demonstrated several design guidelines for Connectivist Learning Objects (CLOs) to make them adaptive to students' learning styles and knowledge construction pattern in technology facilitated learning contexts.

Foroughi (2015) analyzed learning theories from another perspective. He associated behaviorism and cognitivism with Web 1.0 and Web 2.0 technologies, and he argued that connectivism is more useful and appropriate for learning in the digital age when Web 3.0 technologies are available for education. He summarized basic principles of connectivism and the relevant Web 3.0 technologies used in E-learning as in Table 2.

Table 2

Principles of Connectivism and Web 3.0 Technologies

Web 3.0 Technologies	Principles of Connectivism
Social semantic networks, openness, and interoperability	Learning and knowledge rests in diversity of opinion
Big data or global data, linked data, cloud computing, extended smart mobile technology	Learning is a process of connecting specialized nodes or information sources
Machine learning, artificial intelligence, personal avatars, 3D visualization and interaction	Learning may reside in non-human appliances
Semantic web, control of information	The capacity to know is more critical than what is currently known
Semantic web, collaborative intelligent filtering	The ability to see connections between fields, ideas, and concepts is a core skill
Semantic web, collaborative intelligent filtering	Nurturing and maintaining connections is needed to facilitate continuing learning
Semantic web, intelligent filtering	Decision making is itself a learning process.

Adverse opinions.

Unlike the strong advocation of connectivism by some researchers, others are more reserved about connectivism as a new learning theory. Bell (2011) argued that connectivism alone is not sufficient to guide learning, and it needs to be combined with other theories. He introduced five scenarios in higher education, and recommended relevant theories for each scenario. For example, connectivism is appropriate for adopting

Web 2.0 in the classroom, but social learning and Vygotsky's Zone of Proximal Development (ZPD) are more suitable for study of young people's use of the Internet and social media for informal learning. The conclusion was that in the current dynamic educational context, "we cannot yet expect a single, all-encompassing theory in this context for learning" (Bell, 2011, p.112).

A more skeptical view on connectivism is that connectivism is a pedagogical or curricular approach rather than a theory (Verhagen, 2006). It lacks in rigor as a learning theory (Bell, 2011). Connectivism cannot explain higher order thinking such as critical thinking and problem solving just as conventional learning theories (Kerr, 2007). Another problem is the radical discontinuity in the application of connectivism in the new technology oriented learning environments. First, young people develop new and creative forms of communication and knowledge construction, while some adult educators feel uncomfortable with the change. Second, school systems are not ready for a connectivist pedagogical model. Third, school systems tend to value conventional education at institutional level as well as individual level (Kop & Hill, 2014). Other researchers echoed by arguing that teachers from underdeveloped areas do not have access to a computer (Starkey, 2010), self-regulation is critical for students in connectivism based courses (Cook, 2012), and interactions among connected people does not necessarily mean learning (Williams, Karousou, & Mackness, 2011).

Implications and applications of connectivism.

There is a body of literature about the application of connectivism despite the controversy on this new theory. Siemens (2005) asserted that connectivism has

implications in all aspects of life in addition to learning. These areas include management and leadership, media, news, information, personal knowledge management, and design of learning environments. In educational contexts, connectivism is used as the epistemological basis for massive open courses (MOOCs), which makes it more influential in informal learning environments (Barnett, McPherson, & Sandieson, 2013; Yeager, Hurley-Dasgupta, & Bliss, 2013). Instructors in traditional university settings are also trying to use connectivism in online courses for graduate students (Barnett et al., 2013; Tu, Sujo-Montes, Yen, Chan, & Blocher, 2012). And connectivism constitutes the theoretical frame work for social media research alone or together with other theories such as social constructivism (Akella, 2014; Greenhow & Lewin, 2016; Kivunja, 2015; Tinmaz, 2012).

Yeager and Hurey-Dasgupta (2013) focused on a type of massive online courses (MOOCs) called cMOOC, which means it is based on connectivism. MOOC was first developed in 2008 according to open online course designed by Siemens and Downes. CMOOCs are directly based on the concept of connectivism (Downes, 2011), and the four key activities to cMOOC are aggregation, remixing, repurposing, and feeling forward. The cMOOC provides an environment for information distribution, storage, archiving, and retrieval, which enables shared knowledge and distributed cognition (Kop, Fournier, & Mak, 2011).

Online learning is another application area of connectivism. Online learning has been evolving since it first emerged as electronic mail and computer conference system. Technology plays an important role in online course development, and technology

facilitates online learning transform to a new level that needs new theory to support. Connectivism is considered to be the new background theory for online learning. There is no center source of knowledge in a connectivist learning environment, and teachers do not necessarily know more and better than their students. Online courses can be truly connectivst although there is still room for improvement in course design and execution (Barnett et al., 2013).

Connectivism in social media.

Connectivism provides theoretical support alone or together with other theories for several studies about social media application in educational contexts. Researchers argued that connectivism is appropriate for social media and social network studies because connectivism emphasizes communication and collaboration in a network environment, and pattern recognition and creation is critical when there is abundant information. Social media is a network environment where people form a community to share mass information and co-create knowledge. Principles of connectivism can guide learning and knowledge construction on social media platforms (Akella, 2014; Greenhow & Lewin, 2016).

Kivunja (2015) investigated the efficacy of using Google Circles Learning Community (GCLC) social media technologies to help students develop the Super 4Cs skills (Critical thinking, Collaboration, Creativity, and Communication) of the 21st century. He used social constructivism, participatory learning theory, critical thinking and problem solving theory, cognitive processing theory, multiple intelligence theory, and connectivist learning theory as the theoretical framework for the study. Finding results

showed that students were willing to use social media technology although some of them were a little anxious about it. Social media could facilitate teaching, learning, assessment, and curriculum development in higher education.

Another example of mixed theoretical support for social media application in education is formal and informal learning (Greenhow & Lewin, 2015). Social constructivism and connectivism were the theoretical lenses through which the authors proposed a model theorizing social media as a learning space. They stated that boundaries of formal and informal learning are blurred because social media enhances participation and collaboration among learners inside and outside educational institutions. The conclusion summarized from two previous studies (one in Europe and one in the U.S.) is that exploring the complexity of educational environment is necessary to implement social media in connectivist teaching and learning.

Twitter^{TM} is a social media platform that allows real-time communication, interaction, discussion, collaboration, and sharing of experience (Skiba, 2008). Akella (2014) discussed the usage of Twitter in the classroom through the lens of connectivism alone rather than together with other theories. The article explained students' experience of using Twitter in a graduate humanities class to demonstrate Twitter^{TM} usage in higher education. The author argued that instructors need to become guide and coach in Twitter^{TM} facilitated learning, and future research questions include how to view Twitter^{TM} within connectivism theoretical framework, what is the experience of instructors, and how to engage students in Twitter^{TM} enabled learning.

Tinmaz (2012) discussed social networking websites as a whole rather than focused on one of the social media platforms such as Facebook[TM] or Twitter[TM]. He pointed out that social networking websites provide a context for the implementation of connectivism, and he explained the relationship between educational activities on social networking websites and the connectivist learning theory. He emphasized that "connectivism offers premise for better education via social networking websites" (p.238). Examples of using social networking websites in education include connectivist-based course discussion (Tu, 2012), new contact establishment (Thomas, 2010), and connectivist knowledge management (Wan, Mohd, Zinatul, Wan, & Noor, 2012). Tinmaz (2012) also summarized some problematic issues of connectivism within social networking websites, and he suggested further research on the implications of connectivism.

Connectivism can provide theoretical support for social media use in educational environments alone or together with other theories such as social constructivism. Social constructivism emphasizes social and cultural influence on learning, and connectivism focuses on networked social learning in the digital era. Social constructivism provides general theoretical support for my research, and connectivism provides specific theoretical support for social media and social learning research in the network environment.

UTAUT2

UTAUT model and UTAUT2 model.

UTAUT2 model is an improved edition of UTAUT model, which is used to explain technology acceptance and adoption. Venkatesh et al. (2003) first developed UTAUT model based on eight prominent theories and models of acceptance of information technology. The eight models are: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). They argued that integrating these eight models to formulate a unified model is necessary, and they empirically validate this unified model, the UTAUT model.

The empirical comparison of the eight models was conducted through longitudinal field studies at four organizations. Seven constructs appeared to be significant direct determinants of intention or usage of information technology. Venkatesh et al. (2003) selected four constructs that significantly determine behavior intention and use behavior out of the seven to formulate the UTAUT model: performance expectancy, effort expectancy, social influence, and facilitating conditions. They also explored four moderators in the UTAUT model: gender, age, experience, and voluntariness of use. The structure of UTAUT model is showed in figure 2 (Venkatesh et al., 2003, p.447). A questionnaire was provided for the measurement of the four constructs and behavior intention.
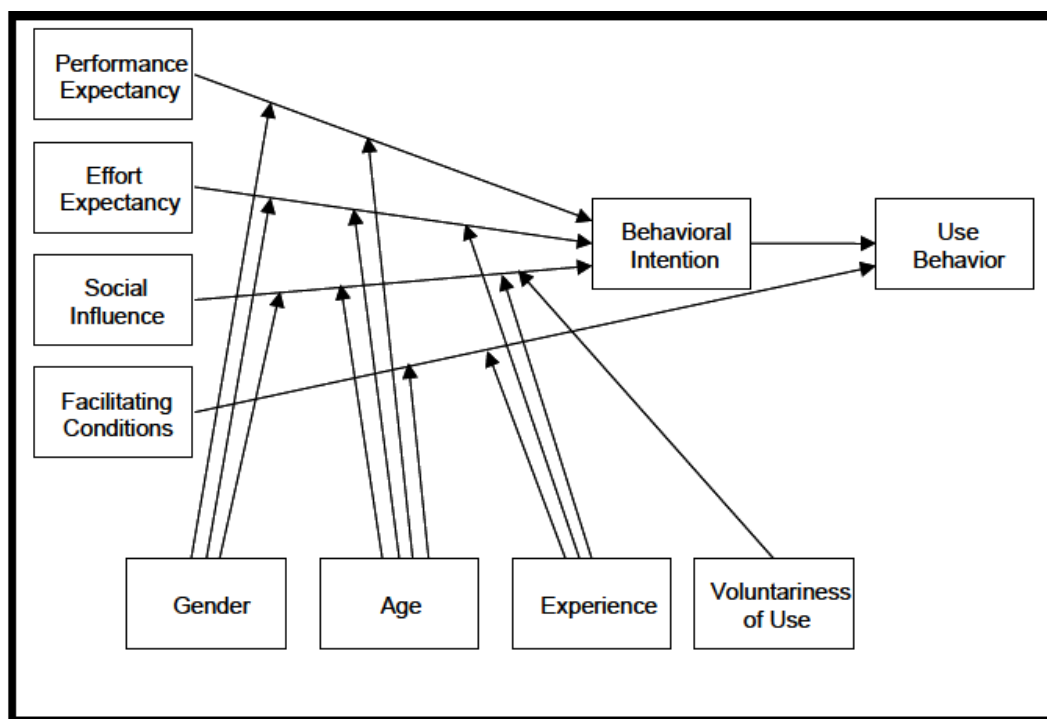
Figure 2. UTAUT model. From "User Acceptance of Information Technology: Toward a Unified View," by V. Venkatesh, M. Morris, G. Davis, & F. Davis, 2003, *MIS Quarterly*, *27*, p. 447.

Venkatesh et al. (2012) further extended the UTAUT model into UTAUT2 model to explore acceptance and use of technology in consumer contexts. They added three more constructs into UTAUT model: hedonic motivation, price value, and habit. So the total number of constructs is seven in UTAUT2 model. The number of moderators was decreased to three: gender, age, and experience. The UTAUT2 model is demonstrated in figure 3 (Venkatesh et al., 2012, p.160). A questionnaire adapted from prior research was provided for the measurement of the seven constructs.
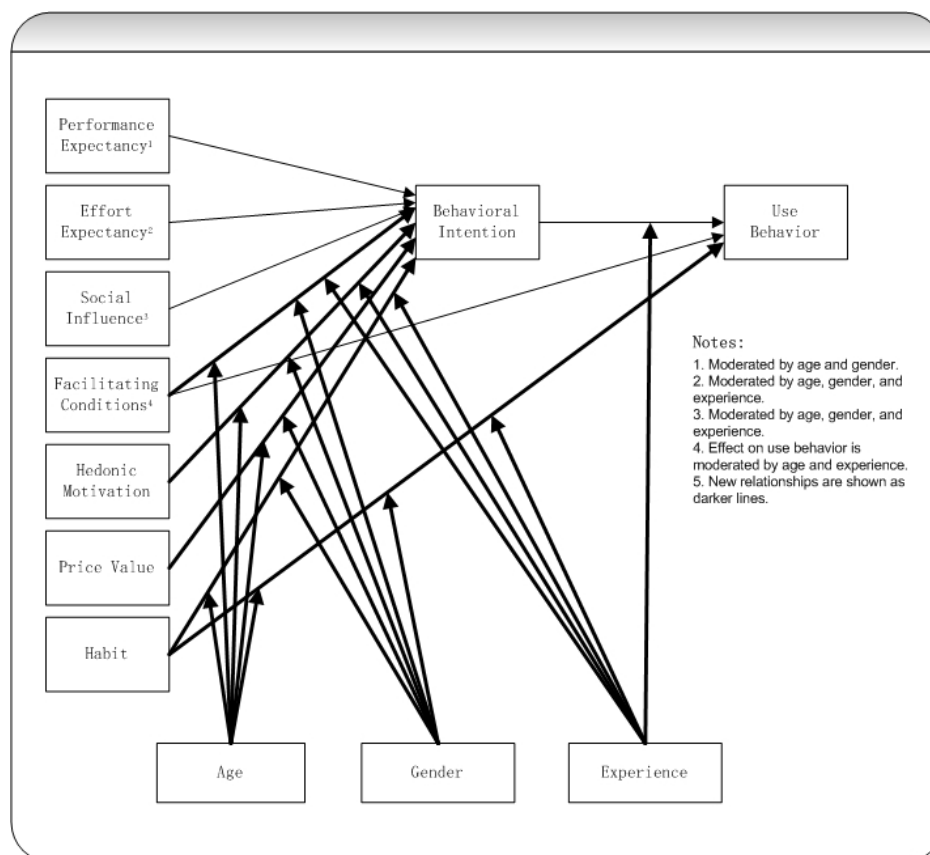
Figure 3. UTAUT2 model. From " Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology," by V. Venkatesh, J. Y. Thong, & X. Xu, 2012, *MIS Quarterly*, *36*(1), p. 160.

Application of UTAUT model and UTAUT2 model.

UTAUT model and UTAUT2 model have been applied in various studies to test technology acceptance and usage in different contexts. Since the development of UTAUT model, there have been three types of UTAUT extension and integration in its applications: Applying UTAUT in new contexts in addition to organizational settings, adding new constructs into the UTAUT model, and including exogenous predictors (Venkatesh et al., 2012). One of the application areas is educational context.

Tan (2013) applied the UTAUT model to explore factors affecting the use of English E-learning websites in Taiwan. According to UTAUT, four factors (performance expectancy, effort expectancy, social influence, and facilitating conditions) that may influence English E-learning websites usage were included, but the four moderators in UTAUT were not considered in this study. The result is students would be more willing to use English E-learning websites if they believe the websites are easy to use and can help them improve their learning.

Similarly, Attuquayefio and Addo (2014) also included the four predictors of UTAUT model in their research of students' acceptance of information and communication technology (ICT) while excluded the four moderators. Their conclusion is that effort expectancy and facilitating conditions significantly influenced students' ICT adoption, but social influence and performance expectancy did not.

Researchers tried to test if the UTAUT model is robust as the model was widely used in studies of technology acceptance. Kang, Im and Hong (2011) tested the invariance of the model along three dimensions: country (Korea and the U.S.), technology (Internet banking and MP3 players), and gender. The result was that the UTAUT is robust across different conditions. Venkatesh et al. (2012) summarized the applications of UTAUT in different contexts, and they found that most of the studies used a subset of the UTAUT constructs and some added new constructs. So they developed the modified UTAUT2 model with more constructs and fewer moderators.

The UTAUT2 was designed to focus on consumer use context, so most of the applications were in this research area. Research topics include continued use of Internet

banking (Albugami & Bellaaj, 2014), consumers' intentions to use mobile payments (Morosan & DeFranco, 2016; Slade, Williams, & Dwivedi, 2013), consumer adoption of mobile technology (Baabdullah et al., 2014), technology acceptance of Phablets (Huang &Kao, 2015), continued use of online games (Xu, 2014), and social recommender systems (Oechslein, Fleischmann, & Hess, 2014).

The UTAUT2 model has also been used in educational research although it was designed for the specific context of consumer use of technology. Raman and Don (2013) applied UTAUT2 to examine preservice teachers' acceptance of learning management software. Data were collected in University Utara Malaysia (UUM). Participants were preservice teachers who use the learning management system Moodle. The authors checked six of the seven factors in UTAUT2 (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit) without consideration of price value. Finding result was that facilitating conditions and hedonic expectancy are significant predictors of behavior intention. Further research in educational context was recommended to verify the results.

Venkatesh, Thong, and Xu (2016) summarized the literature of UTAUT applications and extensions from 2003 to 2014. They classified the relevant papers into three categories: UTAUT application, UTAUT integration, and UTAUT extension. Researchers use UTAUT for "different user types, different organization types, different types of technologies, different tasks, different times, and different locations" (p.331). Most of the studies were not in its original research context, organizational settings. Recommendations for future research include using UTAUT in new context and for new

phenomena. These summarization and recommendations support my research of using UTAUT to explore social media acceptance by Mainland Chinese college students and teachers.

Social Media

Social media and social networking sites and applications have become an indispensable part of people's lives in the world. Social media platforms are evolving rapidly and constantly affecting more and more people around the world (Eroglu, 2016; Thalluri & Penman, 2015). The number of monthly active users of Facebook[TM] in the third quarter of 2012 surpassed one billion, and Facebook[TM] had 1.71 billion monthly active users worldwide in the second quarter of 2016 (Statista[1], 2016). In the U.S., 73% of adults use social networking sites (Pew Research Center, 2014). The monthly active users of Twitter[TM] will reach 60.9 million in 2017 in the United States alone (Statista[2], 2016). Researchers have studied various aspects of social media usage in different groups all around the world, and new studies continuously spring up as researchers and scholars are trying to better understand this rapidly developing new technology in our society.
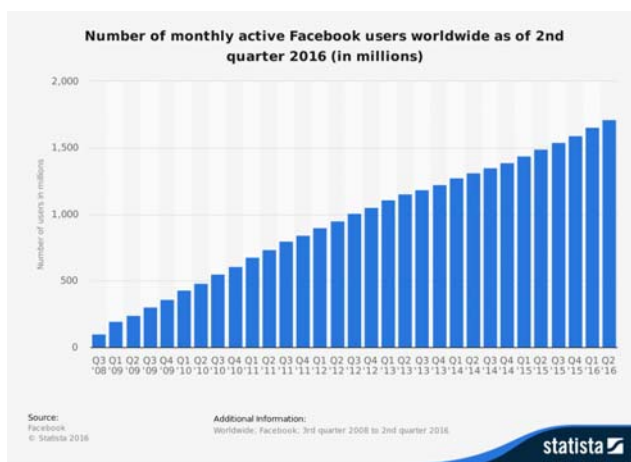
Figure 4. Number of monthly active Facebook[TM] users worldwide from 2008 to 2016. From "Number of monthly active Facebook[TM] users worldwide as of 2nd quarter 2016 (in millions)," by Statista[1], 2016.

Research of Social Media

      Social media in government and public areas.

The research of social media covers various aspects of social life and various areas in the world. One of the areas is public affairs and government policies. Skoric, Zhu, Goh, and Pang (2016) did a meta-analytic review about the relationship between social media use and citizen engagement. They analyzed 22 studies including self-reported measures and summarized that social media use has a positive relationship with citizen engagement and the three sub-categories: social capital, civic engagement, and political participation. Nugroho, Pawito, and Kartono (2016) discussed social media presence in electronic government based on a systematic review from a perspective of structuration theory. They tried to create a research framework of the social media facilitated public

policy making, policy implementing, and policy evaluating. They also suggested further research on social media implementation in government policy making.

Researchers analyzed data through social media and find feasible measures for public events. One example is that Syria would have five options for the transition of the old government to a new democratic government after the war. Analysis of social media postings suggested that "rely on its national legal structures to prosecute individuals for the commission of their war crimes" (Zwier, 2015, p.170) was the best option. Pender, Currie, Delbosc, and Shiwakoti (2014) discussed social media as an information delivery tool during unplanned transit network disruptions in a review of literature. They suggested crowd sourcing when using social media to disseminate reliable, up-to-date information during transit network disruptions. Rainey, Kenney, Wilburn, Putman, Zheteyeva, & O'Sullivan (2016) analyzed social media postings to identify the consequences of an unplanned school closure. They collected 4,546 social media posts about the school closure due to the teachers' strike in Chicago Illinois. Finding results showed that 930 (20%) were relevant posts, and 619 (67%) of the relevant posts expressed a negative sentiment, 51 (5%) expressed a positive sentiment, and 260 (28%) were neutral.

Public health and disease control is another research area of social media. Charles-Smith, Reynolds, Cameron, Conway, Lau, Olsen, and Corley (2015) conducted a systematic primary literature review of social media usage in disease surveillance and outbreak management, and they concluded that social media is effective in supporting and improving public health. One recommendation was that professionals need more

opportunities to integrate social media in disease outbreak management practice. Social media use by patients has effects on them such as patient empowerment, and it also influences their relationship with health care professionals (Smailhodzic, Hooijsma, Boonstra, & Langley, 2016). Social media interventions may be effective for promoting health equity by helping certain populations such as youth, older adults, people in rural areas and people with low socioeconomic status (Welch, Petkovic, Pardo Pardo, Rader, & Tugwell, 2016). Analysis of pharmacovigilance data in social media showed that mild and symptom-related adverse events are over-represented, and serious adverse events and laboratory test abnormalities are under-represented (Golder, Norman, & Loke, 2015). Social media provides opportunities for the development of pharmacovigilance, but several technical and ethical challenges need to be resolved to realize the potential of social media (Sloane, Osanlou, Lewis, Bollegala, Maskell, & Pirmohamed, 2015).

Social media in organization and consumer sector. Another research area about social media is organization and consumer sector. New television systems include social media features, and television consumption experience is extended. Social media has changed the way consumers interact with television. New studies are needed to explore television viewers' habits on various social platforms (Segado, Grandío, & Fernández-Gómez, 2015). Sports management is influenced by social media in several aspects such as sport marketing, finance, and finance. The three social media platforms that received most attention in sport management research are Twitter[TM], Facebook[TM], and blog (Abeza, O'Reilly, Séguin, & Nzindukiyimana, 2015). The use of social media technologies by employees was researched in five areas: legal aspects and polices, human

resources management, knowledge management and sharing, learning, and communication. More quantitative and experimental studies as well as theory-based research are needed to further explore employees' use of social media technologies (El Ouirdi, El Ouirdi, Segers, & Henderickx, 2015, p.454).

Social media in educational areas. Social media plays an important role in educational areas around the world. Social media use has educational benefits as well as professional benefits in social work education. Program directors are suggested to develop social media policies considering several domains such as social media understanding, ethical and legal obligations, online presence, and institution obligations in supervising social media use (Karpman & Drisko, 2016). Medical students in Saudi Arabia use social networking sites such as Facebook[TM] and LinkedIn[TM] for educational purposes (Guraya, 2016). Several universities in south Australia integrate social media in learning and teaching undergraduate sciences, and they found some good practice guidelines from intervention (Thalluri & Penman, 2015). Social media use by Generation Y Students in Romania significantly affects individuals' learning as well as the management of universities and faculties (Popescul, & Georgescu, 2015). Social media use and impact in educational areas will be further explained in detail in the next section: Social Media in Educational Contexts.

Social media research for subgroups. Some subgroups with unique cultural background or special needs use social media as a new way of communication and information search. Indigenous young people in Australia use social media for identity, power and control, cultural compatibility and community and family connections.

Enhanced cultural identity and community and family connections improve educational and health outcomes (Rice, Haynes, Royce, & Thompson, 2016). Young people in UK who use augmentative and alternative communication because of physical disabilities and complex communication needs consider social media use as happy and excited (Hynan, Murray, & Goldbart, 2014). Youth with complex communication needs in Australia also benefit from social media in connecting with others and participating in online communication (Grace, Raghavendra, & Newman, 2014). A case study explored how Facebook[TM] supported the social interaction of a 28-year old with High Functioning Autism (HFA), and the results showed enhanced social ties he had with others (Schultz & Jacobs, 2013).

Advantages and disadvantages of social media. Researchers discussed the disadvantages as well as benefits of social media. Belangee, Bluvshtein, and Haugen (2015) conducted a survey about the benefits and disadvantages of social media use in several aspects such as social connection, professional activities, online education, democracy, and equality. They got mixed results with some respondents agreed with the positive statements and some disagreed. Liddiard (2014) focused on the commodification of disability on Facebook[TM]. He argued that sympathetic and compassionate expressions of disability will not be considered as problematic or violent in the overt hatred and violent context of Facebook[TM]. Addition is another topic of the disadvantage of social media use. The relationship between attachment styles and the Facebook[TM] addiction was examined for 322 university students, and finding results showed that Facebook addiction

was negatively related with the secure and dismissing attachment styles while positively related with the preoccupied attachment style (Eroglu, 2016).

Social media use in areas other than the western world. Social media is rapidly developing and evolving, and users use social media in different areas for a variety of purposes. Researchers have studied social usage and impact for public policy making, public event handling, public health, organizational management, consuming, education, communication, and subgroups with special needs. The territorial scope of research is not limited to the western world but also in other areas around the world. One of the areas is Asian. Social media use and impact have similarities as well as differences among Asian countries including China. Close kinship and friendship, hierarchies, strong work ethics, frequent travel, and digital media are consistently showed in the social networking in East and Southeast countries. Social meida, social networks, and social participation in these countries also have differences according to the characteristics of each country. In China, Sina Weibo^{TM} is a more chaotic space than Twitter^{TM} used in Japan, and fraudulent accounts are a problem in Sina Weibo^{TM} postings (Chua & Wellman, 2015).

A comparison of social media facilitated knowledge management between India and China, two most populated BRIC countries, showed that India and China have some practical guidelines in implementing social media respectively. In India, top managerial support is critical because of its power-distance culture, and employers are more likely to offer extrinsic rewards for social media based knowledge management initiatives. In China, confucianism principles and government control have significant influence on social media based knowledge management initiatives, and emplyers are more likely to

offer intrinsic rewards (Liu & Rao, 2015). Social media use in China has its unique

characteristics compared with western countries and other countries in Asia, and

researchers have studied these characteristics on Chinese social media platforms in

various research fields.

Research of Social Media in China

      Social media platforms in China. There were 10.7 billion Internet users in China

as of the end of June, 2016. Social media is one of the tools Chinese people use to

facilitate their life, express their opinions, and communicate with others on line (China

Internet Network Information Center CNNIC), 2016). China has a relatively isolated

network because of the government control, and some of the social media websites and

applications such as Facebook^{TM}, Twitter^{TM}, and YouTube^{TM} are prohibited in China.

Chinese people use Weibo^{TM} (Chinese version of Twitter^{TM}), WeChat^{TM} (Chinese

version of WhatsApp^{TM}), Qzone^{TM} and some other small websites instead. Data

collection and analysis of social media research is mainly conducted on these platforms

in China.

      Social media in public domain. Public domain is one of the research areas that

Chinese social media researchers focus on. Hassid (2012) studied blogs in Chinese

political life using large-scale content analysis and specific case studies. He found that

when mainstream media set the discussion agenda on political or social issues with tacit

government approval, blogs serve as a "safety valve" to reduce bloggers' anger over

these problems. But when bloggers get ahead of mainstream media on some issues, blogs

can increase tensions by discussion on these topics. One of the most concerned topics in recent years is food safety (Mou & Lin, 2014; Song, Dai, & Wang, 2016).

Food safety is a widely concerned topic on Chinese social media platforms because of a series of food safety crises in recent years (Mou & Lin, 2014; Song, Dai, & Wang, 2016). Most of the people using Weibo[TM] (Chinese version of Twitter[TM]) are young and have at least one college degree, and they are aware of 9 out of twelve food safety incidents in recent years. The awareness of food safety issues is positively correlated with negative emotions about food safety as well as risk perception and prevention action (Mou & Lin, 2014). The use of social media in online political discussion such as food safety issues has two dimensions: instrumental function as an effective forum for people with similar ideas and opinions; communicative function as an expressive form for people to communicate with each other and influence each other (Song et al., 2016).

Chinese people also discuss other public events that are not as serious as food safety on social media platforms. One of the hot spots was the 2014 World Cup. Although Chinese team was not qualified for the World Cup, social media platforms such as Weibo increased the inclusion of Chinese people as out-groups. They expressed their opinions and discussed the international event from an outsider perspective, and there was significant difference between fans and no-fans in their emotions toward the event and the topics they discussed on social media platforms (Yang, Wang, & Billing, 2016).

Social media in Chinese governments. As social media develops rapidly as a discussion and communication arena for public issues, the Chinese government is trying

to make better use of social media. Government micro blogging is one example of social media use in government. From citizens' point of view, government micro blogging improves citizens' perceptions toward government as social media use has grown rapidly. But the interaction between government and citizens through social media is insufficient and ineffective (Lu, Zhang, & Fan, 2015). This is in accordance with the finding results that Chinese government departments consider visibility and interactivity of social media as both beneficial and challenging when they manage social media use. Government departments pay more attention to account presentation and content examination than content accessibility and citizen commenting (Chen, Xu, Cao, & Zhang, 2016).

Social media in Chinese companies and organizations. In addition to the government, companies and organizations also use social media to understand public engagement on social networking sites to better serve their customers and expand the market. Men and Tsai (2013) found that Chinese social media users are engaged in companies' social networking sites at a medium level with a main purpose to search for product information and sales promotion. People who regard social media as an indispensable part of life are more likely to engage in companies' social networking. Wei, Xu, and Zhao (2015) found that the updates, active days, and followings of micro blogging sites of the China Fortune 500 firms can influence public engagement. Zhao, Chen, and Wang (2016) studied customers' loyalty and engagement from the perspective of psychological ownership. They found that individual's perceived control, perceived familiarity, self-investment, and social influence positively affect psychological

ownership, and psychological ownership positively influence continuous use of social media and willingness to pay.

Social media plays an important role in crisis communication for corporations and stakeholders as well as for the general public. After the crash of Asian Airlines Flight 214, Ngai and Jin (2016) examined 8,530 responses to this corporate crisis on the Chinese micro blogging website Weibo[TM]. They found that using accommodative and defensive communication strategies on social media can prevent the crisis from escalation when the crisis is unpredictable and uncontrollable. The corporations should take care of the stakeholders' emotions expressed in their posts when they try to take responsibility for the crisis.

For brand promotion and marketing, a survey of smart phone community members on Sina Weibo[TM] showed that good relationship between customers and the brand can significantly enhance customers' confidence, reduce their anxiety, and raise awareness among other customers who have not used the brand yet (Zhang & Luo, 2016). A case study about an online video marketing project at Tsinghua University library showed that four factors contribute to the success of the project: content of the video, style of the video, venue, and partnership with students. Social media sites can be used effectively and efficiently as a marketing platform when libraries deeply understand technology as well as the cultural background and people's communication mode and purposes on social media (Luo, Wang, & Han, 2013). Another study indicated that one third of the top 39 academic libraries in China use WeChat[TM] as a marketing tool to service their customers and collect books. But most of them only use basic functions of

the social networking application rather than advanced functions (Xu, Kang, Song, & Clarke, 2015).

In addition to academic libraries in China, Western institutions also use social media as a marketing tool to recruit Chinese students. Recruiters and marketing experts are trying to get familiar with the local networks such as WeChat^{TM}, Weibo^{TM}, and video site Youku^{TM} to reach Chinese students because some foreign websites have been blocked by Chinese government. Some universities have already established communication channels on the local social networking sites to provide information and answer questions for Chinese students (West, 2016).

Social media in Chinese educational areas. There are much fewer studies about social media implementation in teaching and learning in Chinese education system than western education system. One case study explored the effect of Mobile Inverted Constructivism system (MICs) on social media platforms of WeChat^{TM} and Baidu^{TM} Post Bar. Results showed that students are more motivated and creative when learning in the MICs with technology integration than in traditional classroom. The MICs is more acceptable to the digital natives who grow up with the rapid development of technologies including social media (Chai & Fan, 2016). Chinese adolescents receive gratifications when they use social networking site Qzone^{TM}. Finding results showed that using social network Qzone^{TM} to socialize, seek information, and have entertainment could bring satisfaction, and the satisfaction have a significantly positive influence on adolescents' positive mood. But the impact of the gratification on adolescents' learning was not

discussed (Apaolaza, He, & Hartmann, 2014). Empirical research of social media in educational contexts is insufficient in Mainland China (Gao, 2013; Zhang & Yan, 2015).

There are some studies about Mainland college students in Hong Kong and Taiwan, two areas that share similar cultural tradition but have differences in political system, values, and academic environment with Mainland China. Migrant Mainland Chinese students in Hong Kong use media to communicate their family members and friends in Mainland frequently for emotional attachment and support. Their communication with locals is less frequent, functional, and study-oriented, and there are contradictions and conflicts between Mainland Chinese students and local people (Peng, 2016). Social support is critical for Mainland college students to adapt to their campus life in Taiwan. Their affective and cognitive identification were positively related to perceived emotional, tangible, and informational support according to a survey of online social networks for 366 Mainland Chinese students in five Taiwan universities. Self-efficacy was a moderator of the relationship between social identity and social support (Liu & Hung, 2016). Outside the Greater China region, research showed that international Chinese students in the U.S. use social media differently with domestic American students because of their unique cultural background (Xu & Mocarski, 2014).

Chinese people use social media in their work and life as people in other countries although they cannot use some foreign social networks because of government censorship. Researchers have studied some aspects of social media use in China such as public issues, organizations and companies, and entertainment. But there are few studies about social media use and impact in Mainland Chinese educational contexts. Studies

outside of Mainland China indicated that Mainland Chinese students may use social media in a different way with local people because of their cultural background. Future research is needed to explore social media use by students in Mainland China, an area with unique network environment and cultural background.

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Social Media in Educational Contexts

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Use of social media

Social media has been widely used by young people and adolescents for several purposes such as communication, entertainment, and learning (Allison, 2013, Chukwudi, Maduike, & Constance, 2015). Most of students visit social media websites more than 30 minutes per day (Leafman, Mathieson, & Ewing, 2013; Owusu-Acheaw & Larson, 2015; Raju, Valsaraj, & Noronha, 2015). Educators use social media for teaching and learning in K-12 education as well as higher education, and social media has significant impact on students' academic performance, skill development, and the process of growing up. There is a body of literature focusing on social media use in education. For example, educational applications of social media was the third most concerned topic after political issues/social movements and marketing/business performance in dissertation research topics (Piotrowski, 2015).

   Social media in secondary school. Although most of the studies of social media focus on higher education, researchers also paid attention to secondary education in this area. Bartow (2014) summarized a variety of roles of teachers in his multiple case study of five secondary school teachers using social media in their teaching. Teachers are instructors, caregivers, assessors, managers, learners and change agents in social media

facilitated teaching and learning. Social media enable more progressive and participatory pedagogical practices, but it also bring challenges for teachers. Teachers need to overcome their fear of new technologies, improve their technological competence, and spend more time to design and implement new curriculums.

Secondary school teachers in Malaysia face similar challenges when using Facebook[TM] as a medium in teaching and learning. Noh, Siraj, Jamil, Husin, and Sapar (2015) developed guidelines to make teaching and learning on Facebook[TM] more attractive and effective. These guidelines include: drive students actively participated in learning, allow students to learn cooperatively, emphasize brainstorming, focus on real-life experiences, and encourage students to construct their own knowledge based on learning materials.

Social media in higher education. Higher education has received the most attention in educational application of social media. Researchers conduct studies in different countries, different schools, and in different grades. Participants include students as well as teachers. Online learning and distance education are of special concern because they are perfect platforms for social media application. Boundary between formal and informal learning is another discussion topic arising with the development of new technologies such as social media.

Traditional higher education. Social media has been used in traditional classroom teaching in higher education as a supplement to other pedagogical methods and means. Churcher, Downs, and Tewksbury (2014) analyzed knowledge building through classroom social media use and summarized the advantages and disadvantages of

incorporating social media in course curricula. Kurtz (2014) focused on Facebook[TM] group as a virtual learning platform, and he found that Facebook[TM] group is a protected environment that can improve social learning. White and Hungerford-Kresser (2014) argued that social networks can provide a culturally relevant, collaborative, and multi-genre forum for students in their character journaling.

Researchers also explore higher educational application of social media in Europe. In UK, social media is incorporated in academic curriculum both as a learning strategy and an evaluation tool (Megele, 2015). And social media is considered as a learning space that can bridge formal and informal learning (Greenhow & Lewin, 2016). Similar to the results of Facebook[TM] group research in the U.S. (Kurtz, 2014), Facebook[TM] group can be used as a learning management system and a learning tool to enhance 21st century skills in Romania (Malita, 2011). In his study of prospective English language teachers' experiences in Facebook[TM] in Turkey, Balcikanli (2015) found a significant positive relationship between Facebook[TM] adoption and educational use of Facebook[TM].

Researchers in Africa stated the impact of social media on academic performance of college students (Chukwudi et al, 2015; Owusu & Larson, 2015; Wanjohi et al., 2015). They found mixed results. Most students used social media while just a few of them use it for academic purposes. Social media affected students' academic performance negatively. But there was a significant relationship between the level of self-regulation when using social media and academic performance. In other words, social media can have positive impact on students' academic performance if they regulate their use of social media. Social media platforms such as Facebook[TM], Twitter, and blogger had

negative impact on students' research skills although they used these tools to get information, collaborate with colleagues, and develop creative writing skills (Nwangwa et al., 2014). But Rambe (2012) found in his study that Facebook™ could provide a safe space for students to express their ideas, form academic networking, and co-construct knowledge.

Australian researchers found that students were willing to use social media for academic work, and they had an opportunity to develop the Super 4Cs of the 21st century (Critical thinking, Collaboration, Creativity, and Communication) through social media use (Kivunja, 2015). The potential of social media to scaffold students' learning depends on the extent of its integration into pedagogical design, students' academic maturity, and their information technology competence (Rambe, 2012). Researchers proposed several suggestions based on the advantages and disadvantages of social media to use social media more effectively in higher education. Thalluri and Penman (2015) offered six principles for Facebook™ use to provide an innovative way to learning. Tay and Allen (2011) argued that affordances of social media are critical, and they demonstrated effective assessment structures and strategies that can create pedagogical affordances and facilitate collaborative learning.

In other Asian-Pacific regions, Gamble and Wilkins (2014) examined Japanese students' perceptions and attitudes toward Facebook™ integration in language learning. Their quantitative study showed that Japanese students had positive attitudes toward language learning. But they had mixed attitudes toward Facebook™ use in educational environments. Al-Rahmi et al. (2015) explored the role of social media in collaborative

learning for Malaysian college students and researchers. They found that collaborative learning, engagement, and intention to use social media had significantly positive relationship with interactivity of peers among research group members and interaction with supervisors by research students. Indian college students spent more than 30 minutes on social networking websites, and many students were dependent on these sites (Raju et al., 2015). But in China, as mentioned before, there is few studies of educational application of social media.

   Online learning and distance education. Social media application in online learning and distance education has received more and more attention because of the rapid development of computer technology as well as the emergence of new learning styles. Gupta et al. (2013) assessed the purpose of social media use in distance education. They found that students used social media for informational sharing and personal interactions, and social media had no influence on students' academic performance. Salmon et al. (2015) found mixed results on this issue. Some students benefited from social media use in online learning, but others considered social media as a waste of their time, and they refused to engage with social media.

   Other researchers also found mixed results when they examined students' perceptions of social media. Doctoral students in online leaning communities used at least one social media tool, but they mainly used traditional modes to communicate with their peers and instructors. They spent more than 30 minutes on social media every day, so adding an appropriate social media tool for them would benefit their communication and learning (Leafman et al., 2013). Poellhuber and Anderson (2011) stated that distance

students had diverse views and experiences for social media use. Age and gender had significant influence on students' perceptions of social media and attitudes toward social media. Males and younger students preferred social media than female and older students.

Social media for adult learning. Adult learners used social media for knowledge construction and democratic participation (Feldman, 2015; Liu & Rao, 2015). When adult learners used social media for online discussion, collaboration, and knowledge construction, one big challenge they encountered was their low social media information literacy (Feldman, 2015). In organizational settings, social media was adopted as a knowledge management tool. Individuals communicated with one another, managed profiles, exchanged ideas, and shared industry knowledge on social media platforms. Cultural differences were found with Indian and Chinese organizations emphasizing different aspects of social media application in organizational learning (Liu & Rao, 2015).

Knowledge mobilization is another aspect in adult learning and practice when researchers try to connect research, policy, and practice. Research dissemination is critical in this process. It helps knowledge sharing and co-construction. But investigation in research brokering organizations showed that these organizations did not use social media for research dissemination actively and effectively. Mechanisms were needed to encourage active participation on social media platforms for knowledge mobilization and research dissemination (Cooper, 2014).

Impact of social media on learning

Advantages. Social media provides a protected and convenient learning environment for students. This environment can foster social learning and innovative

learning through active involvement and contribution as well as frequent interaction with peers and instructors (Kurtz, 2014; Thalluri & Penman, 2015). Collaborative learning and knowledge co-construction could improve students' academic performance (Al-Rahmi et al., 2015; White & Hungerford-Kresser, 2014). The cultural relevant and multi-genre platform social media provides can benefit students in a way that traditional classroom learning can hardly achieve (White & Hungerford-Kresser, 2014).

Educational systems all around the world increasingly emphasize on the 21st century skills in addition to academic performance. Social media could be used as a learning management system that helps develop and enhance the 21st century skills of students (Malita, 2011). Social media technologies gave students an opportunity to engage with and develop their critical thinking, collaboration, creativity, and communication. These four skills are Super 4Cs skills of the 21st century, and they are critical for students' development and future career and life (Kivunja, 2015).

Disadvantages. On the contrary, some researchers found negative impact of social media on students' learning and academic performance. Chukwudi (2015) argued that social media use had negative impact on academic performance of business education students in South-east Nigeria. The reason might be that 95% students used social media but only 28% used for academic purposes. Owusu-Acheaw and Larson (2015) got similar results in their study of social media for tertiary institutions students in Ghana. Social media use had direct and negative impact on students' academic performance. Gupta et al. (2013) stated that social media did not help students' improve academic performance even the social media tool was used for academic purposes. In

addition to academic performance, social media use also negatively influenced undergraduate students' research sills although the original intention was to help them share ideas and collaborate (Nwangwa et al., 2014).

Mixed opinions on social media. Greenhow and Lewin (2016) summarized that integrating social media into education "may yield new forms of inquiry, communication, collaboration, identity work, or have positive cognitive, social, and emotional impact" (p.7). The disadvantages included negatively affected college grades, extracurricular activities other than course-related communication, and inappropriate forms of social media facilitated learning. They argued that theorizing social media as a space for learning was necessary and useful for better application of social media in educational contexts.

Some researchers found that social media use in education was mainly positive with some concerns when they explored the pros and cons. Social media is a collaborative and student-driven platform for learning with time and space advantages. But social media is new for both students and instructors, so their uncertainty of new technologies might bring challenges (Churcher et al., 2014). Rambe (2012) stated the potential of Facebook™ in students' academic engagement and development, but he also mentioned Facebook™ induced peer-based academic hierarchies and tensions between gifted students and cognitively challenged students. Piotrowski (2015) summarized that most of the dissertations of social media use in educational contexts reported positive results, and only a few reported negative views. The main concerns included instructors' lack of efficacy in new technologies, privacy issues, and data overload.

Perception and adoption of social media

Social media has become an important part of students' life no matter one likes it or not. As social media has both advantages and disadvantages when applied in educational contexts, deeper understanding is needed to better implement it for educational purposes. Perception of social media by students and teachers is one of the most critical issues in curriculum design involving social media. The principles should build on what students and teachers think of social media and how they use social media in their daily life and for learning purposes.

Students. Students in general had positive perception of social media despite the mixed influences social media had on learning. Most undergraduate students were willing to use social media as a virtual platform in an online environment, and they thought social media as a protected environment that can foster learning (Kurtz, 2014; Leafman et al., 2013). Some other students reported that social media can benefit them by providing an innovative way to learning (Thalluri & Penman, 2015). Students were eager to develop their 21st century skills, and they thought social media could help them although some were a little anxious about using this new technology for academic purposes.

Some studies reported mixed attitudes of students toward social media use in educational contexts. Japanese college students overall responded favorably to Facebook[TM] use in language learning, and they regarded Facebook[TM] as a convenient tool for both social and educational use. But students had contrasting perceptions toward the learning potential of Facebook[TM] in interaction among students and between students and teachers. They also had neutral attitudes toward the instructional use of Facebook[TM] in

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language learning (Gamble & Wilkins, 2014). Students in an online educational setting also had contrasting opinions on social media. Some credited it with networking and knowledge sharing opportunities while others refused to use it perceiving it as a waste of time (Salmon et al., 2015).

Teachers. There are much fewer studies of teachers' perception of social media than students. Balcikanli (2015) found that prospective English language teachers felt that they should implement social networking in learning contexts because it offers interesting learning experiences. Significantly positive relationship was found between Facebook[TM] adoption and educational use of Facebook[TM] and between purposes of Facebook[TM] users and educational use of Facebook[TM]. When it comes to using social media in teaching, secondary school teachers both gained and lost control of students' performance when they used social media for teaching. But they all suggested that social media obviously benefit teaching and learning. Technological inequalities are one of the challenges teachers face when they use social media, and new responsibilities and demands for teachers are their concerns that they need more time to address (Bartow, 2014).

Factors influencing social media perception and adoption. Some factors can significantly influence students' perception and adoption of social media. For example, cultural background can impact social media perceptions and use patterns. International Chinese students and domestic American students had different needs in social media use, so interventions were needed to understand the unique needs of each population and help them make better use of social media (Xu & Mocarski, 2014).

Gender is another factor that could influence students' perception of social media. Students showed strong and significant age and gender differences in social media perception, attitudes toward social media, and experiences with social media (Poellhuber & Anderson, 2011). Gender and problem-solving style both have significant effects on students' use of social media. Male students preferred wikis and Internet forums while female students preferred social networking sites and microblogs. Ineffective problem-solvers used Internet forums, and effective problem-solvers used most of the evaluation strategies when using social media (Kim & Sin, 2015).

Students used social media websites every day, and many were dependent on these sites (Raju et al., 2015). Therefore social media addiction became a matter of concern in educational settings. Eroglu (2016) explored the interrelationship between attachment styles and Facebook[TM] addiction. He found that Facebook[TM] addiction was positively related with the preoccupied attachment style and negatively related with the secure and dismissing attachment style. There was no relationship between Facebook[TM] addiction and the fearful attachment style.

Discussion and Implications

Social media has been widely used in several areas including educational settings all around the world. But as mentioned above, although there is a body of literature of social media use in China, there are few studies about social media use in Chinese educational system. In addition, studies on factors that can impact social media perception are insufficient with only a few studies mentioned these factors such as gender and age. So this study could fill gaps in literature in two aspects: social media use in the

special network environment in China, and factors that could influence social media perception and adoption.

The UTAUT model has been used to explore technology acceptance in many contexts including educational context although it was designed for technology use in organizational settings. Researchers also applied UTAUT model and UTAUT2 model to explore acceptance of several technologies such as mobile technology, Internet banking, and online management system (Venkatesh et al., 2016). But there are few studies about social media acceptance in educational settings using UTAUT model. This study could enrich UTAUT-based research and bring insights into social media acceptance and use by Mainland Chinese college students and teachers.

Methodology

Both qualitative research methods and quantitative methods were implemented in the social media studies based on theoretical foundation of constructivism and connectivism. Qualitative research can provides deep understanding in social media use while quantitative research provides information of a group of people. For studies of technology acceptance based on UTAUT model, they were all quantitative research using all the items or part of the items in the questionnaire designed by Venkatesh et al. (2003, 2012). I conducted a quantitative survey study and used the UTAUT2 based questionnaire to ensure validity and reliability and to compare my finding results with previous studies based on UTAUT and UTAUT2 model.

Chapter 3: Research Method

Introduction

As mentioned in chapter 1, the purpose of this quantitative cross-sectional survey study was to examine use of social media by Mainland Chinese students and teachers in their learning and instruction settings. Factors that could influence usage of social media were measured for college students and teachers using questionnaires based on the Unified Theory of Acceptance and Use of Technology (UTAUT2) model (Venkatesh et al., 2003; Venkatesh et al., 2012). The independent variables were six UTAUT2 factors: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The dependent variables were behavioral intention and use behavior. The moderators were age, gender, and experience.

According to the purpose of the study, there were two research questions with six hypotheses in the first research question and one hypothesis in the second research question.

1. RQ1- Do UTAUT2 factors influence behavioral intention of Mainland Chinese college students and teachers to use social media? The six alternative hypotheses for research question 1 are as follows:

- Hypothesis 1: Performance expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 2: Effort expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 3: Social influence has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 4: Facilitating conditions has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 5: Hedonic motivation has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 6: Habit has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

The corresponding six null hypotheses for research question 1 are as follows:

- Null hypothesis 1: Performance expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 2: Effort expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 3: Social influence does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 4: Facilitating conditions does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 5: Hedonic motivation does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 6: Habit positively does not influence intention of Mainland Chinese college students and teachers to use social media.

2. RQ2- Does intention of Mainland Chinese college students and teachers to use social media influence their social media use behavior? Alternative hypothesis for research question 2 is as the following:

- Hypothesis 1: Intention of Mainland college students and teachers to use social media has a significant positive effect on their social media use behavior.

Null hypothesis for research question 2 is as the following:

- Null hypothesis 1: Intention of Mainland college students and teachers to use social media does not influence their social media use behavior.

This chapter elaborates the quantitative quasi-experimental research design (Campbell & Stanley, 1963) used in this study. There are five sections in this chapter as follows:

- The research design and the rationale for the research methods selection.

- Research methodology including the population, sampling and sampling procedures, procedures for recruitment, participation procedure, data collection, and instrumentation.

- Threats to validity including threats to internal validity and threats to external validity.

- Ethical concerns in data collection, data storage, and data processing.

- Summarization of the design and methodology of the method of inquiry.

Research Design and Rationale

This study employed a quantitative survey design to collect data. "Survey research is a quantitative method, requiring standardized information form, and or, about the subjects being studied. The subjects studied might be individuals, groups, organizations or communities; they also might be projects, applications, or systems" (Pinsonneault & Kraemer, 1993, p.75). This research design included a cross-sectional online survey aimed at collecting data about factors that could influence intention to use social media and social media use behavior. The population of the study was Mainland Chinese college students and teachers, and the participants were college students and teachers in two universities in Guangzhou, Guangdong, southeast China. No intervention was included in the research design.

Rationale for Selecting Quantitative Research Design

The purpose of the study was to identify the influence of factors of UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) on social media use and acceptance rather than develop a new theory to explain social media use. An understanding of the general situation of social media perception and use in educational settings was necessary and could be helpful for further detailed research exploring specific characteristics of social media use by the population or some special sub-groups in the population. So I used quantitative research method to collect data from several hundred respondents and compared the finding results with previous studies in other areas in the world. By generalizing the results to the target population, I could provide a

preliminary understanding of perception of social media by Mainland college students and teachers in general.

The research questions in this study were to verify the relationship between UTAUT2 factors and social media use intention as well as the relationship between social media use intention and social media use behavior. The six UTAUT2 factors (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit) could be conveniently measured using Likert terms. Each term was a statement about social media, and participants selected the most appropriate one according to their own experiences and perceptions. Social media use behavior could be investigated by measuring utilization frequency of the five most popular social media platforms in China. Then data collected was analyzed using frequency statistics, regression analysis, and moderation analysis. Quantitative research method was appropriate for data collection and data analysis in this study.

Rationale for Selecting Cross-Sectional Survey Design

Among the major quantitative research designs, experimental designs, cross-sectional and quasi-experimental designs, and pre-experimental designs (Campbell & Stanley, 1963), I selected a cross-sectional survey design for this study. In a cross-sectional survey design, "researchers ask a random sample of individuals a set of questions about their backgrounds, past experiences, attitudes, and so on" (Frankfort-Nachmias et al., 2015, p.105). The two advantages of cross-sectional and quasi-experimental designs are following:

- They allow studies in natural, real-life settings, thus increase the external validity.

- No need to randomly assign individuals to comparison groups.

Social media is a tool used in everyday life for various purposes such as working, learning, and entertainment. It is a complicated social phenomenon that is difficult to be simplified into an experimental model. It's challenging to completely control the variables that might influence social media use in order to identify the relationship between the independent variables and dependent variables. And the finding results in the experiment might not be applicable in real-life situation because of the excessive simplification. Cross-sectional survey design was appropriate in this study because social media is developing rapidly, and studying changes in social media use by students and teachers during the time intervals is difficult. If more than one sample is included in an experiment, the differences between the samples are also hard to control.

Cross sectional design was the best way to answer the research questions in this study. The relationship between the six UTAUT2 factors and social media use intention and the relationship between social media use intention and social media use behavior have been verified in previous studies for various groups in different areas. Finding results were not significantly influenced by survey time or survey site. Participants' attitude toward social media was relatively stable during a period of time, so testing them twice was unnecessary in this study. The best way to answer my research questions was to Measure participants' attitude toward social media and their social media use behavior at one point of time in a natural context.

The disadvantages of the cross-sectional and quasi-experimental designs are limited internal validity as well as ambiguous inferences without determination of the causal relationship (Campbell & Stanley, 1963; Frankfort-Nachmias et al., 2015). The direction of the causation could be logically or theoretically inferred. In this study, I inferred the causation according to the previous finding results using UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). I used an existing instrument based on UTAUT2 model for my research, which could provide a strong support for validity and reliability.

Rationale for Selecting Online Survey Design

An online survey was used to collect data in this study. Designing and distributing online surveys is generally more flexible than designing paper surveys because there are several templates to choose on polling company's websites and the survey items could be verified many times before the final draft was decided. Dynamic error checking and random order of the questions are available in online surveys. Explanation of the questionnaire could be attached conveniently with the contact information of the researcher. Fewer resources are required for each survey and more surveys could be sent out by clicking the mouse. The total cost of an online survey is usually lower than other survey methods (Frankfort-Nachmias et al., 2015; Gunn, 2002).

An online survey design was the best delivery method in this study. First, I could use an exist template on the survey platform (SoJump in this case) to create the questionnaire and modify it as many times as I need. And I could send it to my friends and colleagues conveniently for their suggestions before deciding the final draft. Second,

My two liaisons in the two universities could put the link on school forum and chat groups by just clicking the mouse, which saved their time and increased efficiency. Third, the two universities are science and technology institutions, and most of the students and teachers in these two institutions are familiar with computers and the Internet. Participants could answer the survey questions and submit their answers online rather than return the questionnaire at a designated location at certain time. Fourth, organizing and downloading data were easy on the survey platform. Besides data collection, electronic data had advantages in data storage and data backup. According to the requirements of Walden university, data should be stored for at least five years after the dissertation submission. A hard disk or USB flash disk could easily fulfil this task with least storage space and cost.

I took some measures to make the most of online survey design according to limitations of this method. One of the issues was that online survey had limited sampling frame. "Online surveys require access to technology, which differs both across and within population" (Frankfort-Nachmias et al., 2015, p.206). The participants in this study were college students and teachers in one of the most developed areas in China. Generally they had more opportunities to access to the Internet and computers. But there were some older teachers who might not be so familiar to new technologies. To include these older teachers in the survey, my liaisons in the two universities gave them technological support when necessary. Paper notice posted on campus also attracted more participants to submit their answers especially those who did not surf the Internet frequently. If

properly handled, "the validity and reliability of data obtained online are comparable to those obtained by classical methods (Eysenbach & Wyatt, 2002, p.7).

Rationale for applying modified UTAUT2 model

I adopted the survey items of UTAUT2 model developed by Venkatesh et al. (2003, 2012) to collect data in the online survey. UTAUT2 model has been used to examine technology acceptance and utilization in various areas. The validity and reliability of this model have been verified in previous studies conducted all around the world. Social media is one of the new technologies implemented by people in their work and life, and UTAUT2 model was appropriate to explore social media acceptance and usage by Chinese undergraduate students and teachers.

Some previous studies adopted the UTAUT2 survey items with a few changes according to the context. For example, some of the factors and moderators in UTAUT2 model were not included in the study because they were not appropriate for the circumstances (Tan, 2013). And some researchers extended the UTAUT2 model by combining other models into it (Baabdullah et al., 2014). I included six of the seven factors in UTAUT2 model as the independent variables in my research: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. I did not include price value because it was not applicable in my research context. One previous study using UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) in educational settings did not include price value for the same reason, and the validity and reliability were acceptable (Raman & Don, 2013). The

dependent variables in my study were behavior intention and use behavior. Moderators were age, gender, and experience.

Other factors such as access to a computer or smartphone might also influence the dependent variable. But in this study the students and teachers were in one of the most developed areas in China, and most of them used computers or smartphones in their work and life (GDSTATS, 2016). In addition, the participants will answer the survey questions online, so students and teachers who did not use computers or smartphones at all were excluded. For income and social status, college teachers had similar income and social status, and students depended on their parents for living expenses as a tradition in China. Both college teachers and students were sharing the same work and living environment on campus. These above mentioned variables were controlled in this study, so only age, gender, and experience were included as the moderators as previous studies. This was also convenient for comparison of the finding results because previous studies based on UTAUT used these three moderators. Figure 5 provides a visual representation of the research design for this study.
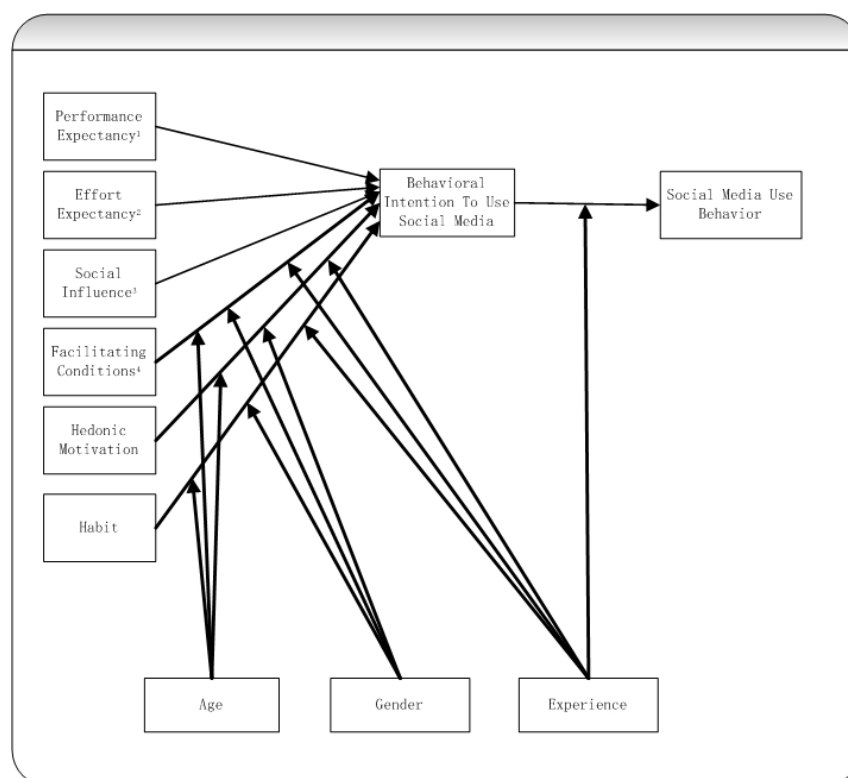
Figure 5. Conceptual model of factors and their effect on social media use intention and social media use behavior. Adapted from " Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology," by V. Venkatesh, J. Y. Thong, & X. Xu, 2012, *MIS Quarterly*, *36*(1), p. 160.

Methodology

Population

The population of this study was all undergraduate college students and college teachers in Mainland China. Undergraduate college students were defined as students studying at a college on a full-time basis during the 2017-2018 academic year. College teachers were defined as adults teaching in an instructional role at the institution on a

full-time basis during the 2017-2018 academic year. The number of undergraduate college students in Mainland China was 26,252,968 in 2016 according to the statistics of the Ministry of Education of the People's Republic of China. (2016[d]). The number of college teachers in Mainland China was 1,572,565 in 2016 (Ministry of Education of the People's Republic of China, 2016[b]).

The sampling location was Guangzhou, Guangdong province, one of the most developed areas in Mainland China. The Gross Domestic Product (GDP) of Guangdong in 2016 was 7,951.205 billion Yuan (GDSTATS, 2016), which ranked first among all the provinces in Mainland China. The number of undergraduate college students in Guangdong province was 726,866 in 2016, and the number of college teachers in Guangdong province was 46,951 in 2016 (Ministry of Education of the People's Republic of China, 2016[c]). Table 3 summarizes the number of undergraduate students and college teachers.

Table 3

Number of Undergraduate College Students and College Teachers in 2016

	Mainland China	Guangdong Province
Number of undergraduate college students	26,252,968	726,866
Number of college teachers	1,572,565	46,951

Sampling and sampling procedures

Sampling frame.

● The sampling frame of this study included Mainland Chinese undergraduate students and college teachers. Undergraduate college students were defined as students studying at a college on a full-time basis during the 2017-2018 academic year. Graduate students were not included. College teachers were defined as adults teaching in an instructional role at the institution on a full-time basis during the 2017-2018 academic year. Part-time teachers and retired teachers were not included. The sampling frame was based on the statistics of the Ministry of Education of the People's Republic of China (http://www.moe.edu.cn/). Relative information included number of educational institutes in Mainland China, number of undergraduate students, and number of college teachers. But a list of Mainland Chinese undergraduate college students and college teachers was unavailable. One of the provinces in Mainland China, Guangdong province, was selected for sampling. But the list of undergraduate college students and college teachers in Guangdong was also unavailable. Hong Kong and Macau were excluded from the sampling frame although the two places are part of China now and are very close to Guangdong province. The reason was that the two places still had many differences with Mainland China in social system and educational system. Social media platforms used in these two areas were also different with

Mainland China because people there could use social media platforms that were blocked by Chinese government.

Sample design.

A nonprobability sample design was used in this study. "In a nonprobability sample, there is no way of specifying the probability of each unit's inclusion in the sample, and there is no assurance that every unit has some chance of being included" (Frankfort-Nachmias et al., 2015, p.148).The four major nonprobability sample designs are convenience samples, snowball samples, purposive samples, and quota samples. Convenience samples and snowball samples were used in this study. The reason of selecting these two sampling strategy was that a list of all the undergraduate college students and college teachers was unavailable due to the huge number of the students and teachers in Mainland China. And the convenience and economy outweighed the advantages of using probability sampling such as better estimation of "the population's parameters on the basis of the calculated sample statistics" (Frankfort-Nachmias et al., 2015, p.148).

A convenient sample was obtained in two science and technology universities in Guangzhou, the capital of Guangdong province. University A and university B are used to represent the two universities hereinafter. University A is a full-time science and technology university, and university B is a full-time polytechnic university. I had one teacher in each university as the liaison during the sampling procedures to help me distribute online survey questionnaire. They put the survey link on chat groups and school forums in one of the colleges in each institute. Snowball sample design was used

to increase the number of sampling units by asking the participants to send the link of the online survey to their classmates (for student participants) and their colleagues (for teacher participants).

One disadvantage of using a convenient sample was the limitation of generalizability. I did not get the list of all the students and teachers in the two colleges where I collected data, and I did not use a random selector to select students and teachers and then to send the survey link to them one by one. So the finding results might not be able to represent the whole situation of social media use in Mainland Chinese universities. But most of the students and teachers in the two colleges log in the chat groups and school forums occasionally or even frequently. So the sample included participants of different age, gender, and experience, and moderator analysis was available due to the variety. Detailed information of the limitation is in the threat in validity section.

Sample size.

Trochim (2006) explained the relationship of confidence interval, power, effect size, and sample size. He mentioned that a 99% confidence interval meant that the researcher was very careful about the type I error. Decreasing confidence interval will increase chances of making type I error and increase power because the null will be rejected more often. I selected 95% confidence interval in this study because it is appropriate in most research scenario (Field, 2013), and I did not have special requirement for confidence interval. I selected $1-\beta$ as 0.85 because this value of power was frequently adopted by previous social studies (Field, 2013).

Effect size was more difficult to decide. I reviewed several articles using UTAUT and UTAUT2 model for data collection and analysis. Generally, the effect size was from medium to large (Albugami & Bellaaj, 2014, Baabdullah et al., 2014; Huang &Kao, 2015; Morosan & DeFranco, 2016; Oechslein et al., 2014; Raman & Don, 2013; Slade et al., 2013; Xu, 2014). So I selected a medium value 0.20 as the effect size. There were six independent variables included in the model. Based on these four components, the final sample size for regression calculated by G*Power was about 115. This also accorded with the recommendation that the sample size was at least 104+number of predictors (Walden, 2017). I planed to collect data from about 200 college students and teachers (with about 150 students and 50 teachers) to ensure that I could get enough data to analyze. After data collection, I actually got data from 197 students and 54 teachers, which was a little more than I expected.

Procedures for recruitment, participation, and data collection

An online survey was created based on the UTAUT2 model and its survey items (Venkatesh et al., 2003; Venkatesh et al., 2012). The survey items are in English, so I translated the items into Chinese and asked a English teacher to review the translation. Then I asked another English teacher to translate the Chinese items back into English and compare with the original English items. I discussed with the two teachers and revised the items so that we all agreed with the best expression of each item and there was minimum ambiguity and misunderstanding.

The survey questionnaire was then created on the platform of Sojump[TM] (an online survey company in China. The website is https://www.sojump.com). There were

several survey templates on the website, and one could also create a totally new one if necessary. I used one of the template on the website. The following questions was used to check the questionnaire according to the suggestions of Litwin (1995):

- Are there any typographical errors or misspelled words?

- Do the item numbers make sense?

- Is the type size big enough to be easily read?

- Is the vocabulary appropriate for the respondents?

- Does the survey format flow well?

Two teachers in the two above-mentioned partner universities helped me put the link of the questionnaire on the university online forum and two chat groups used by college students and teachers. An inviting paragraph was put together with the survey link. The two chat groups included QQ^{TM} chat groups and WeChat^{TM} chat groups, which were the two most popular communication software in Mainland China (Penguin Intelligence, 2017). Students and teachers used the chat groups to share information and discuss questions, so they logged in frequently and could probably see the survey link. Detailed information about the survey was included in the informed consent, and the informed consent was put together with the survey questions in the survey link. The significance of the study and benefits of answering the questions were emphasized in the informed consent to attract participants. In addition, students were willing to respond if the survey link was sent by teachers even though the teachers were not their course teachers. So they would pay more attention to the survey link and then submit their responses. Participants could submit their answers online, and they could find contact

information and ask the researcher if they had any questions. The Sojump^{TM} platform

organized the data, and the researcher downloaded the data file from the website

conveniently.

In addition to the UTAUT2 (Venkatesh et al., 2003; Venkatesh et al., 2012)

survey items, Demographic information was also collected from the participants. The

demographic information included the university they were from, age, gender, experience

of social media use (defined as the passage of time from the initial use of social media).

In the instruction of the questionnaire, I emphasized that they did not need to submit any

private information, and safekeeping of the data was the priority of the whole process.

The detailed information of the purpose of the research, the data collection

procedure, and the use of the data were put together with the survey questionnaire.

Participants could choose to answer or not answer the questionnaire after they read the

information. They could quit at any time and choose not to submit their answer even

when they started to answer the questions at first. If the participants only completed a

portion of the questions but still submitted it, they were excluded in the analysis. They

were encouraged to send the link to their classmates or colleagues, but this was a favor of

them rather than a step included in the survey.

There were two reasons that people would help send the link. First, the

significance of this study was included in the informed consent, so people might be

willing to contribute to the development of education. Second, Chinese people pay great

attention to social relationship, or "Guanxi" (Upton, 2013), and people are willing to do

something if required by their friends or colleagues. There was no follow-up procedure

after the participants submit the survey results because the study was cross-sectional without any intervention.

Detailed information of the questionnaire is listed in Appendix B (survey questionnaire in English), Appendix C (survey questionnaire in Chinese), Appendix D (inviting message put together with the survey link in English), Appendix E (inviting message put together with the survey link in Chinese), Appendix F (consent form in English), and Appendix G (consent form in Chinese).

Instrumentation and operationalization of constructs

I used a published instrument, the UTAUT2 survey items, in this study. Using existing instruments to develop an instrument in a study is common in survey research because existing instruments have been assessed for validity and reliability (Kitchenham & Pfleeger, 2002). UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) is a modified version of UTAUT model. The UTAUT model was developed by Venkatesh, Morris, Davis, and Davis in 2003. Then Venkatesh, Thong, and Xu developed the UTAUT2 model on the basis of UTAUT model by adding some new factors in 2012. The UTAUT model and UTAUT2 model have been used to explore technology acceptance in several research fields in various areas in the world (Baabdullah et al., 2014; Kang et al., 2011). Venkatesh, Thong, and Xu summarized the applications of UTAUT model and UTAUT2 model and proposed some suggestions for further research in 2016.

There were six independent variables in the instrument that I used in this study: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. For each independent variable, there were three to four

questions. Each question was a statement, and the participants needed to select one

choice out of five choices: strongly agree, agree, not sure, disagree, strongly disagree.

For the two dependent variables, behavior intention was measured similar as the six

independent variables. But social media use was measured using several questions asking

the frequency of social media use. There were five popular social media platforms in

China included in the social media use measure: Wechat[TM], Weibo[TM], QQ[TM], school

forum, and online forums other than school forum. For each of the popular social media

platforms, there was a question asking the frequency of use. The answers of the

frequency were: every day, every two days, two times a week, once a week, and less

frequently than once a week.

Reliability and validity values.

Venkatesh et al. (2003) first developed the UTAUT model on the basis of eight

previous models and theories of technology acceptance. They did a preliminary test to

measure reliability and validity values. Data were collected from two additional

organizations after the preliminary test for cross-validation of the UTAUT model. For the

preliminary test, all internal consistency reliabilities (ICRs) were greater than.70,

suggesting that the scales were reliable. "The square roots of the shared variance between

the constructs and their measures were higher than the correlations across constructs,

supporting convergent and discriminant validity" (Venkatesh et al., 2003, p.457). The

intra-construct item correlations were very high while inter-construct item correlations

were low. The cross-validation of UTAUT got similar results with the preliminary test.

Venkatesh et al. (2012) then developed the UTAUT2 model based on UTAUT

model. The measurement model results showed that the internal consistency reliabilities

(ICRs) of multi-item scales modeled with reflective indicators was greater or equal to .75,

which indicated that the scales were reliable. The average variance extracted (AVE) was

greater than .70 and greater than the square of the correlations, which indicated

discriminant validity. Internal consistency and discriminant validity were supported by

the patterns of loadings and cross-loadings.

Previous studies using the instrument.

Table 4 summarizes applications of UTAUT2 model (Venkatesh et al., 2012), and

Table 5 summarizes applications of UTAUT model (Venkatesh et al., 2003).

Table 4

Applications of UTAUT2 Model

Study	Data Source	Technological Context	Analysis Type
Albugami and Bellaaj, (2014)	Saudi Arabia	Internet banking	Composite reliability and AVE
Baabdullah et al. (2014)	Saudi Arabia	Mobile technology	N/A (conceptual)
Huang and Kao (2015)	Taiwan	Phablets	N/A (conceptual)
Morosan and DeFranco (2016)	U.S.	Mobile payments	Composite reliability and convergent validity
Oechslein et al. (2014)	Germany	Social recommender systems	Partial least squares (PLS)
Raman and Don (2013)	Malaysia	Learning management software	Partial least squares (PLS)
Slade et al. (2013)	UK	Mobile payments	N/A (conceptual)
Xu (2014)	China	Online games	Convergent validity and discriminant validity

For all the studies included in Table 4 and Table 5, the reliability and validity values were acceptable according to the requirements of the measuring methods used in the studies respectively. For studies that did not include validity and reliability values, the finding results were not used to compare with the finding results in this study because of the lack of validity and reliability check.

Table 5

Applications of UTAUT Model

Study	Data Source	Technological Context	Analysis Type
Alwahaishi and Snášel (2013[a])	International	M-Internet diffusion	N/A
Alwahaishi and Snášel (2013[b])	Saudi Arabia	Information and communication technology	Cronbach's α for reliability and confirmatory factor analysis for validity
Alwahaishi and Snášel (2013[c])	Saudi Arabia	M-Internet adoption	Cronbach's α for reliability and confirmatory factor analysis for validity
Attuquayefio and Addo (2014)	Ghana	Information and communication technology	Reliability and construct validity
Kang et al. (2011)	Korea, U.S.	Cross-technology comparison	Reliability and invariance
Tan (2013)	Taiwan	E-learning website	Reliability and correlation
Wiratmadja, Govindaraju, and Athari (2012)	Indonesia	M-Internet	Construct reliability and t test of load factor
Yfantis, Vassilopoulou, Pateli, and Usoro (2013)	International	M-Government	N/A

Use of UTAUT2 model in this study.

The UTAUT model and UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) has been applied in studies of various technologies in areas all around the world as mentioned above. Social media was one of the technologies that was widely used by people, and UTAUT2 model (Venkatesh et al., 2012) was suitable for the study of social media. In addition, UTAUT model has been used in educational contexts (Raman & Don, 2013; Tan 2013), and it has also been used to explore online game use by Chinese people (Xu, 2014). So the UTAUT2 model (Venkatesh et al., 2012) was appropriate for the study of social media use by Chinese college students and teachers, which was an innovation of the application of UTAUT2 model (Venkatesh et al., 2012). The developer has permitted the use of UTAUT2 model (Venkatesh et al., 2012) in this study through email, and the permission letter is included in appendix A.

Threats to Validity

One of the greatest threats to validity in this study was that the sample was not randomly selected using the lists of students and teachers in the two colleges in university A and university B in Guangdong province. The finding results might not be able to be generalized to all the undergraduate students and college teachers in Mainland China. But the finding results might be able to represent social media use intention and social media use behavior of students and teachers in similar areas in Mainland China or students and teachers with similar engineering backgrounds. Although the sample was not strictly random, the survey link was put on chat groups and school forums where many students

and teachers share information, so the sample included participants with different age, gender, and experiences.

Threats to external validity

The sample of this study was college students and teachers in two science and technology institutes in Guangzhou, Guangdong province, Mainland China. Guangdong was one of the most developed areas in Mainland China (GDSTATS, 2016), and Guangzhou was the provincial capital of Guangdong. So college students and teachers in Guangzhou might use computers and the Internet more frequently than students and teachers in other areas in China. The finding results could not represent average college students and teachers in Mainland China. When students and teachers in underdeveloped areas are studied, the differences in finding results might be even greater because they did not use computers and Internet frequently.

The second threat to external validity was caused by the type of institutes in this study. Both the two universities were science and technology institutes, and the participants were college students major in science and technology and college teachers teaching science and technology. They might use computers more frequently than students and teachers in other types of institutes because computers were an integral part of their work and learning. And they might have an advantage in computer competence over students and teachers in other types of institutes.

The third threat to external validity came from the teacher participants. Teachers' experiences were more complicated than students because students are growing with the development of the new technologies as the "digital natives". But for teachers, they had

different backgrounds and various experiences of technology use. Only gender, age, and previous experience of social media used were included in this study as moderators, which meant that other factors that could influence social media use in teaching and learning were not included. So the finding results in this study might not be applicable for teachers with various educational backgrounds, working environments, and learning experiences of new technologies in other areas in China.

These threats to external validity were caused by the nature of the study and the sampling methods. It was difficult to address the problems in one study because China is a big country with disparate development in various areas. The gap between developed areas and underdeveloped areas was even wider than the gap between some countries (GDSTATS, 2016). So the finding results in this study could be generalized to some areas in China but not all the areas. Further studies were needed to explore social media use in learning and teaching to get an overview of social media use in educational system all around China.

Threats to internal validity

The first threat to internal validity came from the online survey in this study. Although data were collected through an online survey in natural contexts without any treatment interference, the survey itself could bring some influences on the opinions and thoughts about social media. Their responses could be influenced by recent events, current contexts, and their mood at that time. And they might change their ideas because they wanted to give the answers that they believed to be right.

The second threat to internal validity was statistical regression caused by selection. "Regression toward the mean is a ubiquitous phenomenon, not confined to pretesting and posttesting with the same test or comparable forms of a test" (Campbell & Stanley, 1963, p.11). In this study, students and teachers who used social media frequently in their teaching and learning or had positive opinions on social media use in educational contexts might prefer to answer the survey questions. Students or teachers who did not use social media frequently might ignore the survey link.

The third threat to internal validity was caused by instrumentation. This study used the existing survey items developed by Venkatesh et al. (2012), which ensured validity and reliability. But one of the seven factors (price value) in the existing model was not included in this study. Although the seven factors could be explored separately, and the interrelation of the factors were not significant (Venkatesh et al., 2003; Venkatesh et al., 2012), the modification could still possibly affect the validity of the study. In addition, the translation of the survey items from English to Chinese might cause ambiguity or misunderstanding, and therefore affect the validity of the research.

As a cross-sectional study collecting data at one point of time, the history, maturation, and mortality would not become sources of invalidity (Campbell & Stanley, 1963). No experiment was included in this study, so the effect of testing and interference did not need to be considered. Data was collected and analyzed by one researcher, so the differences between researchers or observers could be ignored. Existing model and survey items were used in this study to ensure validity and reliability. The internal

validity of the study was ensured because of these characteristics although the above-mentioned threats to internal validity were difficult to be addressed.

Data Analysis

Data from this study was analyzed using the SPSS (Statistic Package for Social Science). A customized toolkit PROCESS (by Andrew F. Hayes http://www.afhayes.com) integrated in SPSS was also used for part of the data analysis (the moderator analysis). Data analysis process was designed according to the research questions. The procedure included descriptive statistics for the independent variables and dependent variables, regression analysis, and moderator analysis.

Regression analysis includes simple and multiple regression, and it is a statistical method for predicting the connection between the independent variables and dependent variables. In this study, the research questions were to identity two kinds of relationship: the relationship between six UTAUT2 factors and social media use intention, and the relationship between social media use intention and social media use behavior. Both the independent variables and dependent variables were continuous variables, so simple regression and multiple regression was the best choice in this study. The regression analysis was conducted using SPSS tools, and finding results interpretation was based on SPSS output files and figures.

There were three moderators included in the modified UTAUT2 model in this study: age, gender, and experience. The impact of these moderators on the relationship between three of the six UTAUT2 factors (facilitating conditions, hedonic motivation, and habit) and social media use intention was examined. The moderation of experience

on the relationship between social media use intention and social media use behavior was be explored. The PROCESS toolkit was used for this part of data analysis. Table 6 provides a summarization of data analysis methods used in this study.

As mentioned above, there were variables other than the three moderators that could influence the relationship between independent variables and independent variables such as access to computers or smart phones, income, and social status. For this study, participants were undergraduate students and college teachers in engineering colleges, so most of them had access to computers and smart phones, and they had similar income and social status. These variables were controlled by exclusion of improper participants during sampling process.

There were some concerns when analyzing the data. First, Simple regression and multiple regression analysis was used in this study. One of the assumptions for multiple regression is that the sample is normally distributed (Field, 2013). But in this study, this assumption could be violated as the sample was not normally distributed. This violation might make the tests likely to make type I or type II errors. In this study, I selected 95% confidence interval for probability of type I errors because it was appropriate in most research scenario (Field, 2013), and I did not need to specifically concern type I error and select very high confidence interval such as 99% . I selected $1-\beta$ as 0.85 for probability of type II errors because this value of power was adopted by previous social studies (Field, 2013).

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Table 6

Hypotheses and Data Analysis Methods

Null hypotheses	Variables	Data analysis methods
No relationship between performance expectancy and use intention	Performance expectancy, use intention	Simple regression Multiple regression
No relationship between effort expectancy and use intention	Effort expectancy, use intention	Simple regression Multiple regression
No relationship between social influence and use intention	Social influence, use intention	Simple regression Multiple regression
No relationship between facilitating conditions and use intention	Facilitating conditions, use intention, moderators (gender, age, experience)	Simple regression Multiple regression Moderation
No relationship between hedonic motivation and use intention	Hedonic motivation, use intention, moderators (gender, age, experience)	Simple regression Multiple regression Moderation
No relationship between habit and use intention	Habit, use intention, moderators (gender, age, experience)	Simple regression Multiple regression Moderation
No relationship between use intention and use behavior	Use intention, use behavior, moderator (experience)	Simple regression Moderation

The second concern was the low statistical power because of the small sample size. This might cause type II errors. The power used in this study was .85, and the effect size was small to medium. The sample size was about 120 according to the calculation based on the power and effect size selected. I collected data from more than 120 participants to address this threat because larger sample size could improve statistical

conclusion validity. The final sample size was 251 with 197 students and 54 teachers. In addition, using directional hypotheses could also help get greater power if the predicted direction was correct (Carl, 2003).

Another issue was the impact of heterogeneity of individuals participating in this study on statistical conclusion validity. Greater heterogeneity of individuals could impact interpretations of results by increasing the variance of results or obscuring true relationships. Using homogeneous group of subjects to get small population variance could address the problem. In this study, the participants were undergraduate students and teachers. Students could be regarded as a homogeneous group. But for teachers, controlling extraneous variables to achieve small variance was much more challenging.

Ethical Procedures

I gave priority to ethical concerns during the whole process of data collection, data analysis, and data storage. An online survey was used to collect data about social media acceptance and social media use by undergraduate students and college teachers in two universities in Guangzhou, Guangdong province, China. The first step was to get agreement to gain access to participants in these two universities. I explained the purpose of the study and the detailed procedures of data collection to the community partner universities and discussed with them for their concerns. All the relevant documents such as the letter of cooperation, survey items, and consent form for the participants were submitted to the two universities. They signed the letter of cooperation with agreement to help me in data collection. The two universities supervise the procedures of survey link dissemination, but they did not get the raw data got from the online survey. Treatment of

participants and treatment of data were supervised by the Institutional Review Board

(IRB) of Walden University, and all the relevant documents were submitted to the

Walden IRB. Data collection started after Walden IRB approved my applications and

noticed that I could collect data.

Treatment of participants

IRB application was submitted after the proposal was approved and proposal oral

defense was passed. All the relevant documents such as the letter of cooperation and

consent form for the participants were prepared and submitted for inspection if necessary.

Walden IRB asked for some revisions in the feedback, and I updated the relevant

documents according to the feedback and submitted again. Then Walden IRB approved

my application and noticed that I could collect data.

After IRB approval, survey items were created on the Sojump^{TM} website

(www.sojump.com) and the link was sent to the participants through chat group and

online forum. Sojump^{TM} was a platform for online survey, and it had regulations for

privacy protection and data storage and download. Participants were encouraged to send

the link to their classmates and colleagues after they submit their own answers, and they

could also do so even if they chose not to answer themselves. A detailed consent form

was sent to the participants together with the survey items. The consent form included the

purpose of the study, the procedures of data collection, use of the data, privacy issues,

participants' right to refuse participation or withdraw from answering the questions, and

the contact information of the researcher. An anonymous implied consent provided

participants with better protection and is ideal as long as the researcher did not need

identities of the participants. As online survey was used in this study, the participants did not need to sign on the consent form, and the submission of the answers to the survey questions was regarded as the agreement of participation.

One ethical concern related to recruitment materials was that the consent form provided by Walden University was in English. The participants were undergraduate students and college teachers in China, and their first language was Chinese. I translated the consent form into Chinese and asked help from two English teachers to review the translation. Both the English consent form and the Chinese consent form were sent to the participants. If they could read English, then they would read both and understand the form without ambiguity. If they still had problems in understanding, they could contact the researcher for further explanation.

No experiment was used in this study, so there was no ethical concern related to intervention activities. The participants could easily refuse to participate by ignoring the link. They could withdraw at any time before they submit the final answers. No predicable adverse events were included because no intervention activities were exerted on the participants. But if the participants found problems or issues in the survey items that cause their uncomfortable feelings, they could complain to the researcher through email or phone call. During the data collection process, no complain was received by the researcher.

Treatment of data

The data collected were anonymous without any information about the participants' name or identities. The data was collected through the Sojump^{TM} platform,

and the platform had responsibilities to keep the data confidential and protect the privacy of the participants. The platform provided services such as creating survey links, finding potential participants, and process data for the researchers. But I completed the whole process by myself so as to control each step for better protection of the participants.

I first created the survey items on the Sojump^{TM} platform and then disseminated the survey link to the participants. Participants submitted their answers to the Sojump^{TM} platform and data was stored on the website database. Only the researcher who created the survey had access to the data. The researcher could select to delete the data after download them. I deleted the data after I downloaded the data with backup storage. Sojump^{TM} could not use the data without the permission of the researcher, and data could be used by a third party without the permission of the researcher.

The survey was conducted in two community partner universities, and I was not working in these two universities. So there was no conflict of interest in the study or power differentials between the researcher and the participants. There was one liaison in each university to help the researcher disseminate the survey link, but they just put the link online, and they did not meet the participants in person. The university administrators supervised the survey dissemination without any direct intervention if no unexpected events happened. Participants could answer the survey questions and submit their answers according to their own decisions. No incentives were included in the study, and the participants submitted answers because they wanted to support the research and contribute to improve Chinese educational system.

Summary

Chapter 3 provides an overview of the research design and methodology used in this study. The purpose of the study was to explore social media acceptance and use by undergraduate students and college teachers in Mainland China. Two research questions were proposed based on the UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012) according to the research purpose. The first question included six hypotheses and the second question included one hypothesis. An online survey was used to collect data for this quantitative study, and multiple regression was used to analyze the data.

The population of this study was all undergraduate college students and college teachers in Mainland China. Two universities in Guangzhou, Guangdong province were selected for the sampling. Convenience samples and snowball samples were used in this study. I selected 95% as confidence interval and 0.85 as 1-β in this study. The effect size was a medium as 0.20. The sample size were about 115 according to the calculation using G*Power software. I planned to collect data from 200 participants to improve validity, and I actually collected data from 251 participants with 197 students and 54 teachers.

An online survey was created on the Sojump[TM] platform, and the link was sent to the participants together with consent form and detailed explanation of the study. Demographic information such as gender and age was also collected. Participants could submit their answers if they were willing to do so, and they were encouraged to send the link to their classmates and colleagues. Data was stored on the Sojump[TM] database, and only the researcher who created the survey had access to the data. Data was downloaded from the website and analyzed by the researcher.

An existing instrument was used in this study to ensure validity and reliability. Research questions were based on UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012), and the UTAUT2 model items were used in the online survey. The validity and reliability of the UTAUT model and UTAUT2 model were tested by Venkatesh et al. (2003, 2012) and the results were satisfactory. These two models have been used to examine acceptance of various technologies in areas around the world. Some of the applications are summarized in Table 4 and Table 5.

Threats to validity in this study are listed in this chapter. They include threats to external validity, threats to internal validity, threats to construct validity, and threats to statistical conclusion validity. Measures that could address the threats are introduced, and explanations are provided if the threats could not be addressed according to the nature of the study. Threats to validity will also be explained in chapter 4, which introduces data analysis process and finding results.

The last section in chapter 3 is ethical concerns in this study. Ethical procedures strictly followed the rules of the Walden IRB as well as the two universities where the survey was conducted. All the necessary documents such as letter of cooperation and consent form were prepared for the IRB application and approved by IRB. Participants' privacy was protected during the whole procedures of data collection and data analysis, and they had the rights to refuse participation or withdraw at any time before submitting their answers. Data was stored appropriately and used carefully by the researcher. Detailed information of data collection, data analysis, and finding results is introduced in chapter 4.

Chapter 4: Results

Introduction

The overall purpose of this quantitative cross-sectional survey study was to examine use of social media by Mainland Chinese students and teachers in their learning and instruction settings. Factors that could influence usage of social media were measured for college students and teachers using questionnaires based on the UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). The independent variables were six UTAUT2 factors: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The dependent variables were behavioral intention and use behavior. The moderators were age, gender, and experience.

According to the purpose of the study, there were two research questions with six hypotheses in the first research question and one hypothesis in the second research question.

1. RQ1- Do UTAUT2 factors influence behavioral intention of Mainland Chinese college students and teachers to use social media? The six alternative hypotheses for research question 1 are as follows:

   - Hypothesis 1: Performance expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

   - Hypothesis 2: Effort expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 3: Social influence has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 4: Facilitating conditions has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 5: Hedonic motivation has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 6: Habit has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

The corresponding six null hypotheses for research question 1 are as follows:

- Null hypothesis 1: Performance expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 2: Effort expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 3: Social influence does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 4: Facilitating conditions does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 5: Hedonic motivation does not influence intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 6: Habit positively does not influence intention of Mainland Chinese college students and teachers to use social media.

2. RQ2- Does intention of Mainland Chinese college students and teachers to use social media influence their social media use behavior? Alternative hypothesis for research question 2 is as the following:

- Hypothesis 1: Intention of Mainland college students and teachers to use social media has a significant positive effect on their social media use behavior.

Null hypothesis for research question 2 is as the following:

- Null hypothesis 1: Intention of Mainland college students and teachers to use social media does not influence their social media use behavior.

This chapter introduces the data collection process, descriptive statistics of the sample, and statistical analysis findings in this study. There are three sections in this chapter as follows:

- Recruitment and data collection process and sample description.

- Data analysis findings including descriptive statistics, statistical assumptions, statistical analysis organized by research questions and hypothesis.

- Summary of answers to research questions and transition from statistical findings to discussion, conclusions, and recommendations.

Data Collection

Data Collection Time Frame and Recruitment

The survey questionnaire was created on Sojump^{TM} platform on November 19, 2017 after the IRB approval, and the survey link was sent to the two liaisons in the two universities. The two liaisons put the survey link together with inviting message on school forum and chat groups on the same day. The first response was submitted on November 20, 2017. The two liaisons put the survey link and the same inviting message on school forum and chat groups again on November 24, 2017 to attract more participants. The survey was ended on November 28, 2017, and 251 valid responses were collected with 197 responses from undergraduate students and 54 responses from college teachers. No participants contacted the researcher to ask questions or complain, and neither of the liaisons reported any unexpected incidents during the data collection process.

I planned to collect data from about 200 participants (150 undergraduate students and 50 college teachers). The actual number of participants was 251, a little more than I expected. One reason was that college teachers might not be as active as undergraduate students in response. The number of responses from undergraduate students reached 150 on November 26 when the number of responses from college teachers was only 38. So I waited for two more days to collect enough data from college teachers. When the survey was finally ended on November 28, the number of responses from undergraduate students reached 197. As mentioned in chapter 3, the sample should be at least 115 as I selected

95% confidence interval, 0.85 power, and medium effect size. The greater sample size was appropriate in this study, so I include all the 251 responses in data analysis.

I selected *stop data collection* on the Sojump^{TM} platform after 251 responses had been collected, and then I downloaded the data from the platform. The survey link was deleted from school forum and chat groups by the two liaisons. After data analysis, the data was deleted from the Sojump^{TM} platform. The survey was cross-sectional, and there was no follow-up survey or intervene. The participants answered all the survey questions and submitted their responses online, then the survey was finished. The survey was totally anonymous, so the researcher did not contact any participants during or after the data collection process. The two universities did not get any personal information of the participants, and they would not do any follow-up survey either.

Descriptive and Demographic Characteristics of the Sample

Source of participants.

All the participants were ethnic Chinese, and they were living in China during the data collection process. There were two kinds of participants: undergraduate students and college teachers. They came from two universities in Guangzhou, Guangdong province, China. University A is a full-time science and technology university, and university B is a full-time polytechnic university. There were 124 participants from university A and 127 participants from university B. Student participants were 197, and teacher participants were 54. Table 7 summarizes the source of participants.

Table 7

Source of Participants

	University A	University B	Total
Undergraduate Students	96 (48.73%)	101 (51.27%)	197 (100%)
College Teachers	28 (51.85%)	26 (48.15%)	54 (100%)
Total	124 (49.40%)	127 (50.60%)	251 (100%)

Gender of participants.

The gender ratio of the participants was quite unbalanced with much fewer female participants than male participants. Female participants were 69 in total while male participants were 182 in total. There were much fewer female students than male students with the number standing at 37 and 160 separately. But for teachers, there were more female teachers than male teachers with the number standing at 32 and 22 separately. Table 8 summarizes the gender of participants.

Table 8

Gender of Participants

	Female	Male	Total
Undergraduate Students	37 (18.78%)	160 (81.22%)	197 (100%)
College Teachers	32 (59.26%)	22 (40.74%)	54 (100%)
Total	69 (27.50%)	182 (72.50%)	251 (100%)

One reason for the unbalanced gender ratio of student participants might be the gender difference in major selection. Chinese male students prefer science, technology, engineering, and mathematics (STEM) in major selection, while Chinese female students tend to select art, literature, history, education, and foreign language. (Ma, You, & Xiong,

2016). University A is a science and technology university, and it focuses on cultivating scientific researchers and engineers. University B is a polytechnic university, and it focuses on cultivating technicians and engineers. More male students than female students study in this kind of universities, and the ratio of male to female can even be 10 to 1 for some majors such as mechanics and mining (Ma et al., 2016). The unbalanced gender ratio of the student participants was a natural result of the unbalanced gender ratio of undergraduate students in the two universities. This unbalanced gender ratio brought limitations in this study, which will be elaborated in chapter 5.

The gender ratio of teacher participants was totally different with the gender ratio of students with more female teachers than male teachers. This may be due to gender differences in career selection. In traditional Chinese culture, the major responsibility of women in a family is to raise children, do house work, and take care of family members. Although few female students study STEM at university in China, most of them are willing to become college teachers after they graduate especially for teaching and management positions. This kind of job is stable and not so stressful although the salary is not that high, so they have enough time to take care of their families. In addition, female graduates not majored in STEM are also eager for teaching arts, language, literature, and history in science and technology universities although the competition is fierce (Huang & Zhu, 2016; Zhaopin, 2016).

For male students who major in STEM, they tend to select jobs in enterprises after graduation because the salary is much higher (Sun, 2017). According to the salary survey report from Xinchou (2017), most of the 20 highest earning majors were STEM. In most

developed areas in China such as Shenzhen, a computer science engineer with ten years experience could earn as much as one million RMB (about 150,000 U.S. Dollars) each year. Traditional Chinese culture emphasizes that males need to earn money to support the whole family, so most of the male students major in STEM prefer stressful and high-income jobs than becoming a college teacher. Therefore the gender ratio of college teachers was more balanced than the gender ratio of students in the two universities, and female teacher participants were more than male teacher participants.

Age of participants.

As Table 9 shows, the majority of students were between 18 and 23 with the ages ranging from 18 to 50. The result is reasonable because most of the undergraduate students enter university after they graduate from high school. I general their ages range from 18 to 24, and undergraduate students in their thirties or forties are rare in China (Ministry of Education of the People's Republic of China, 2016[d]). There were two student participants in the 41 to 50 age group, and there was a possibility that some teacher participants made a mistake by selecting "student" rather than "teacher". But I could not confirm it as the survey was totally anonymous, so the age distribution of student participants was accepted.

As Table 9 shows, the majority of teachers were between 24 and 40 with the ages ranging from 18 to above 50. Most of the teacher participants were young or middle aged with only one teacher participant above 50. As mentioned above, teachers who seldom log in online forums or chat groups might not see the survey link and response. Elder teachers might not surf the Internet as frequently as younger teachers (Liang, Luo, &

Zhao, 2013), so the sample did not include enough elder teacher participants. This was

another source of limitation in this study, and it will be elaborated in chapter 5. Table 9

summarizes the age distribution of student participants and teacher participants.

Table 9

Age Distribution of Participants

	18 to 23	24 to 30	31 to 40	41 to 50	Above 50	Total
Undergraduate Students	172 (87.31%)	17 (8.63%)	6 (3.05%)	2 (1.02%)	0 (0.00%)	197 (100%)
College Teachers	1 (1.85%)	8 (14.81%)	32 (59.26%)	12 (22.22%)	1 (1.85%)	54 (100%)
Total	173 (68.92%)	25 (9.96%)	38 (15.14%)	14 (5.58%)	1 (0.40%)	251 (100%)

How to start using social media.

Among all the participants, 100 (39.84%) first knew social media from family

members or friends, 75 (29.88%) first knew it from classmates or colleagues in learning

or working places, 58(29.11%) first knew it online, 2 (0.8%) first knew it from

advertisement, and 16 (6.37%) from other sources. Most participants started to use social

media from their social network rather than Internet surfing. This will be further

discussed in chapter 5. Table 10 summarizes the way participants started to use social

media.

Table 10

How Participants Started Using Social Media

	Family Members or Friends	Classmates or Colleagues	Online	Advertisement	Other Sources	Total
Number of Participants	100 (39.84%)	75 (29.88%)	58 (23.11%)	2 (0.80%)	16 (6.37%)	251 (100%)

Representativeness of the Sample

The population of this study was Mainland Chinese undergraduate students and college teachers. The sample was undergraduate students and college teachers from two universities in Guangzhou, Guangdong province, China. The sample might not be able to represent the whole population but could only represent part of the population. First, Guangdong province was one of the most developed areas in China, so the participants from this area might not represent undergraduate students and teachers from other areas especially remote regions. Second, the gender ratio of the sample was unbalanced with much more males than females, it could only represent population in similar universities such as science and technology institutes. Third, most of the teacher participants were young or middle aged, so the survey results lacked data from elder teachers, which was an important part of the population. Recommendations for further research to fill the gaps will be elaborated in chapter 5.

Results

Descriptive Statistics

The instrument used in this study was based on UTAUT2 model ((Venkatesh et al., 2003; Venkatesh et al., 2012). There were six independent variables: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The dependent variables were social media use behavioral intention and social media use behavior. The moderators were age, gender, and experience. The SPSS software was used to analyze the data.

Independent variables.

For each of the six independent variables, there were three to four Likert questions. The question included one statement and five choices: strongly agree, agree, not sure, disagree, and strongly disagree. Scales were calculated using one for strongly agree, two for agree, three for not sure, four for disagree, and five for strongly disagree. The weight was the same for all the questions included in one independent variable. So the scale of each independent variable was the average scale of all the questions included in that independent variable. The scale value was rounded to the nearest tenths unit. The range of the scale was from one to five after normalization. Table 11 summarizes the number of questions for each independent variable. The descriptive statistics for the six independent are showed in Table 12 to Table 17 as well as Figure 6 to Figure 11.

Table 11

Number of Questions for Each Independent Variable

	Performance expectancy	**Effort expectancy**	**Social influence**	**Facilitating conditions**	**Hedonic motivation**	**Habit**
Number of questions	3	4	3	4	3	3

Performance expectancy.

Table 12

Statistics for Scale of Performance Expectancy

Mean	**Median**	**Standard deviation**	**Maximum**	**Minimum**
1.8	2.0	0.6	1.0	3.3
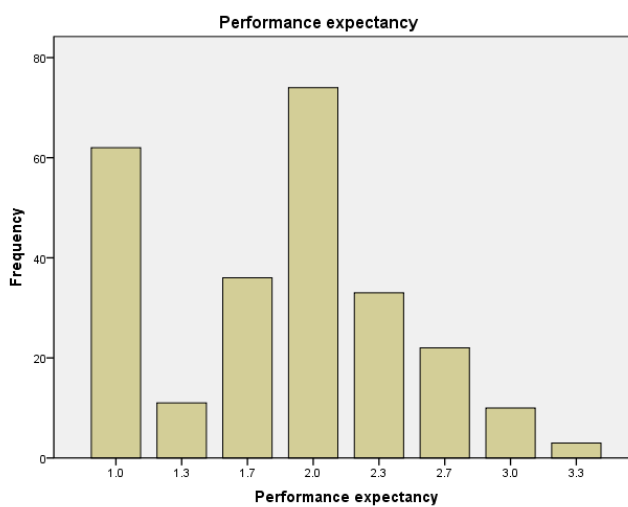
Figure 6. Frequency of scales of performance expectancy.

Effort expectancy.

Table 13

Statistics for Scale of Effort Expectancy

Mean	Median	Standard deviation	Maximum	Minimum
1.9	2.0	0.6	1.0	4.0
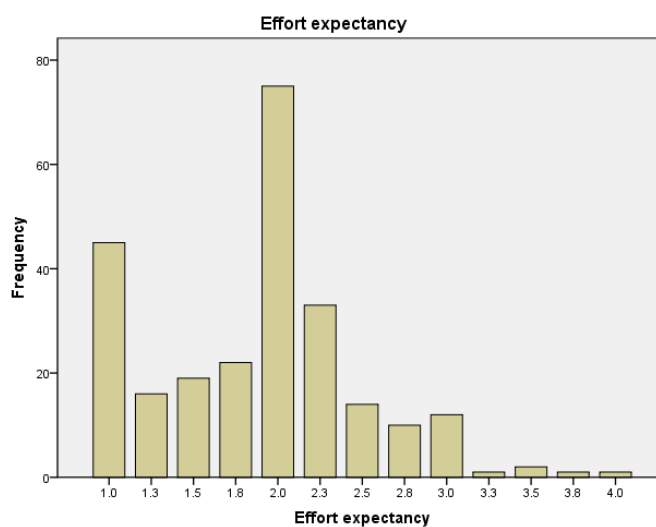
Figure 7. Frequency of scales of effort expectancy.

Social influence.

Table 14

Statistics for Scale of Social Influence

Mean	Median	Standard deviation	Maximum	Minimum
2.2	2.0	0.7	1.0	5.0
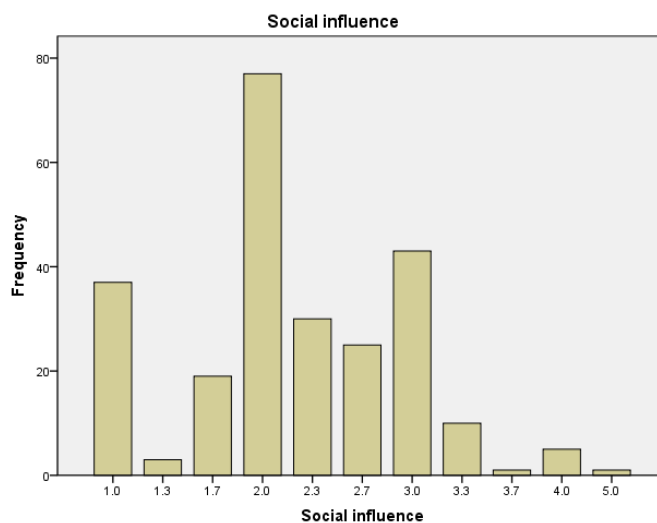
Figure 8. Frequency of scales of social influence.

Facilitating conditions.

Table 15

Statistics for Scale of Facilitating Conditions

Mean	Median	Standard deviation	Maximum	Minimum
2.0	2.0	0.6	1.0	4.3
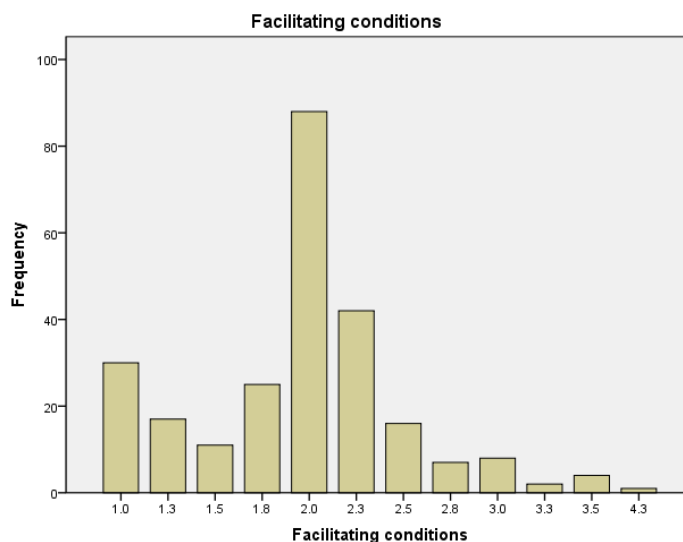
Figure 9. Frequency of scales of facilitating conditions.

Hedonic motivation.

Table 16

Statistics for Scale of Hedonic Motivation

Mean	Median	Standard deviation	Maximum	Minimum
2.1	2.0	0.7	1.0	4.3
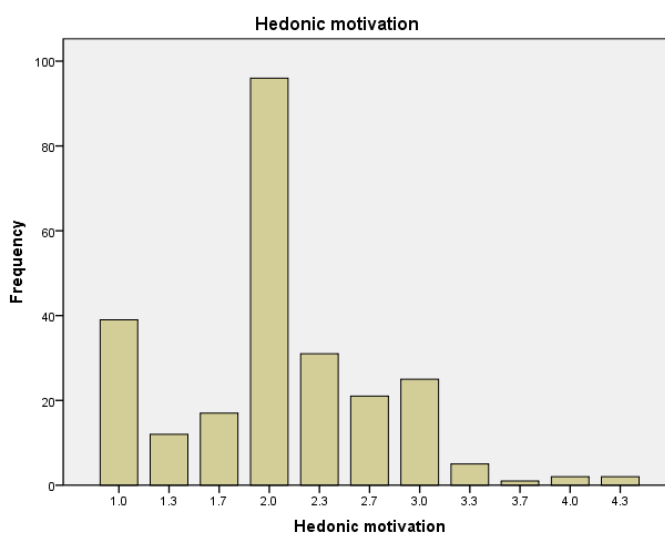
Figure 10. Frequency of scales of hedonic motivation.

Habit.

Table 17

Statistics for Scale of Habit

Mean	Median	Standard deviation	Maximum	Minimum
2.4	2.3	0.8	1.0	4.7
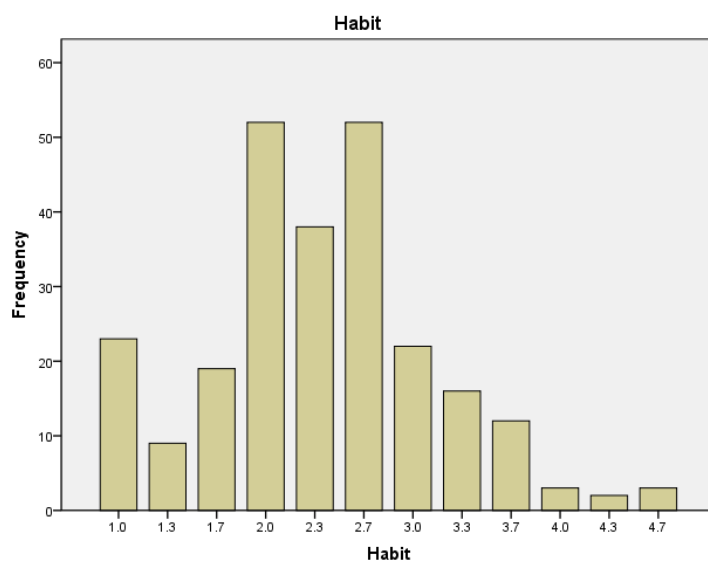
Figure 11. Frequency of scales of habit.

Dependent variables.

The two dependent variables were social media use behavior intention and social media use behavior. Three Likert questions measured social media use behavior intention. Scale was calculated using one for strongly agree, two for agree, three for not sure, four for disagree, and five for strongly disagree. The scale for this dependent variable was the average score of the three questions. For social media use behavior, there were five Likert questions asking the use frequency of five popular social media platforms. The scale was calculated using one for very frequently, two for frequently, three for medium, four for not frequently, and five for seldom. The scale for social media use behavior was also the average scale of the frequency for five social media platforms. Table 18 and Figure 12 show the descriptive statistics of social media use intention, while Table 19 and Figure 13 show the descriptive statistics of social media use behavior.

Table 18

Statistics for Scale of Social Media Use Intention

Mean	Median	Standard deviation	Maximum	Minimum
2.2	2.0	0.7	1.0	4.7
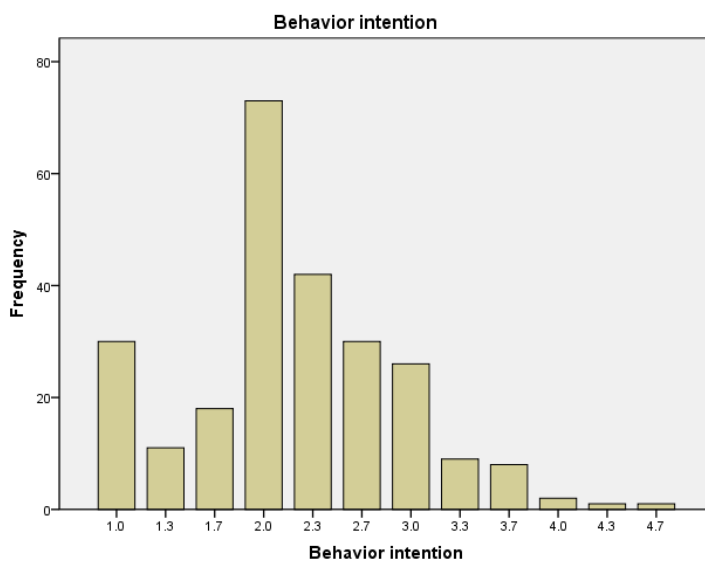
Figure 12. Frequency of scales of social media use behavior intention.

Table 19

Statistics for Scale of Social Media Use Behavior

Mean	Median	Standard deviation	Maximum	Minimum
3.1	3.2	0.8	1.0	4.6
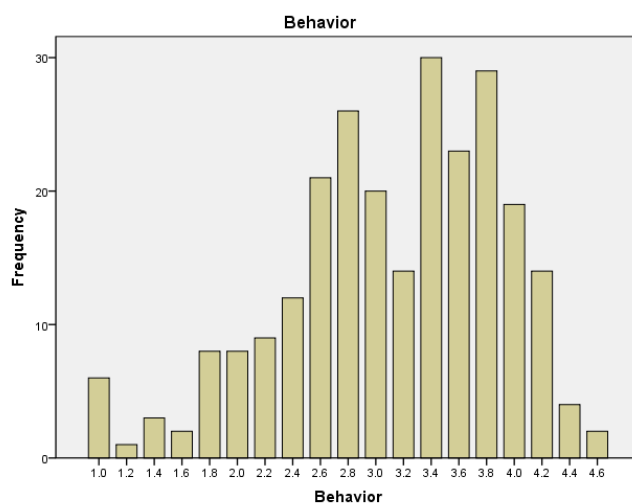
Figure 13. Frequency of scales of social media use behavior.

Use frequency of each social media platform was also summarized because participants might use one social media platform very frequently while seldom use any other social media platform. The average scale might not accurately represent social media use behavior for this kind of participants. Figure 14 to Figure 18 demonstrate use frequency of the five social media platforms. The most frequently used social media platforms were WeChat™ and QQ™. Detailed discussion of the five social media platforms is in chapter 5.
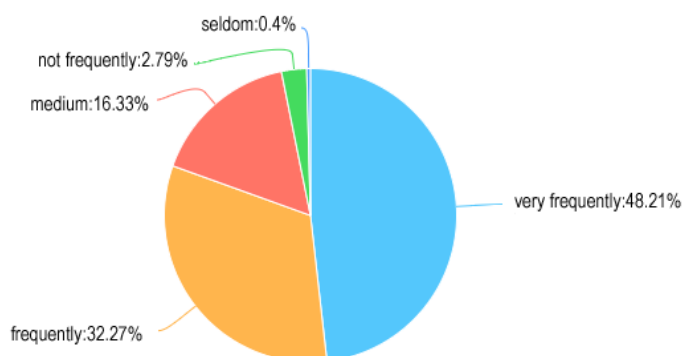
Figure 14. WeChat use frequency.
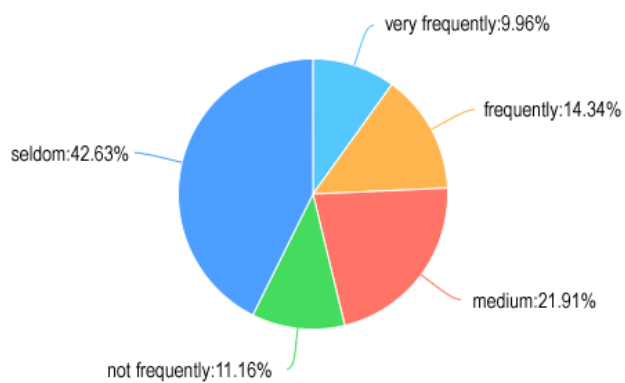
Figure 15. Weibo use frequency.
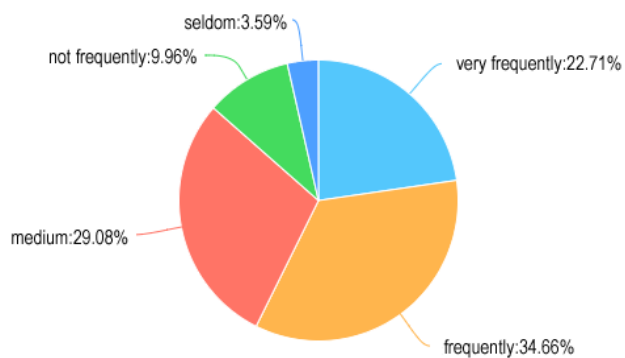
Figure 16. QQ use frequency.
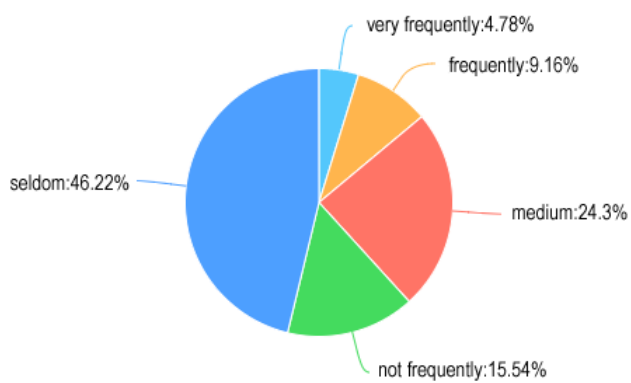
Figure 17. School forum use frequency.
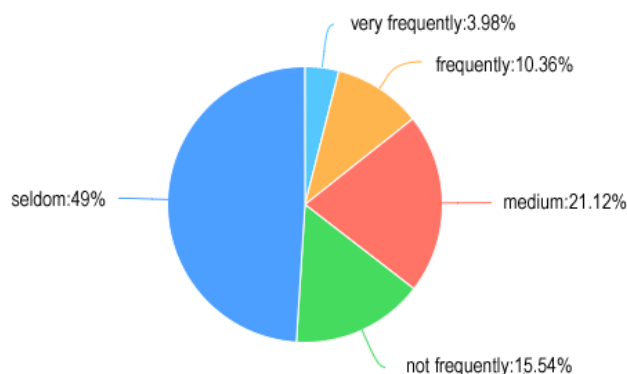
Figure 18. Other forums use frequency.

Moderators.

There were three moderators included in the instrument used in this study: gender, age, and experience. Experience was measured by asking the participants how long they had used social media. Scale was calculated using one for less than one year, two for one to three years, three for four to five years, four for six to eight years, and five for over eight years. For participants' gender, zero was used for female and one was used for male. Gender ratio of the participants was unbalanced with much less female participants than male participants as mentioned above. For scale of age, one was used for 18 to 23, two for 24 to 30, three for 31 to 40, four for 41 to 50, and five for above 50. Figure 19 shows gender of the participants, Table 20 and Figure 20 show age distribution of the participants, and table 21 and Figure 21 show social media use experience distribution of the participants.
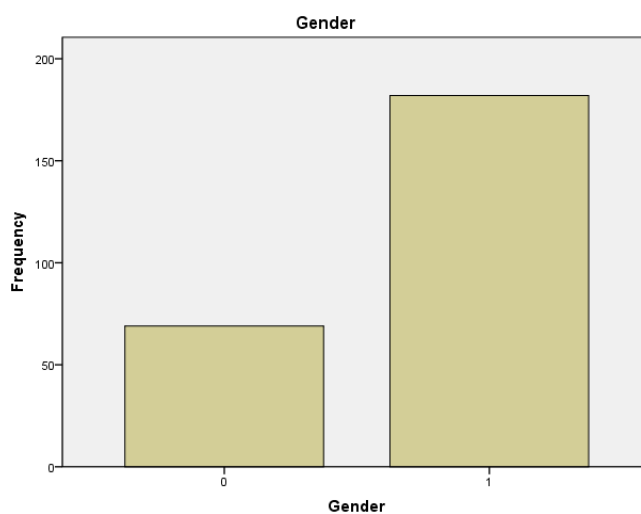
Figure 19. Gender of Participants.

Table 20

Statistics for Scale of Age

Age Group	Frequency	Percent	Cumulative Percent
1 (18-23)	173	68.9%	68.9%
2 (24-30)	25	10.0%	78.9%
3 (31-40)	38	15.1%	94.0%
4 (41-50)	14	5.6%	99.6%
5 (above 50)	1	0.4%	100%
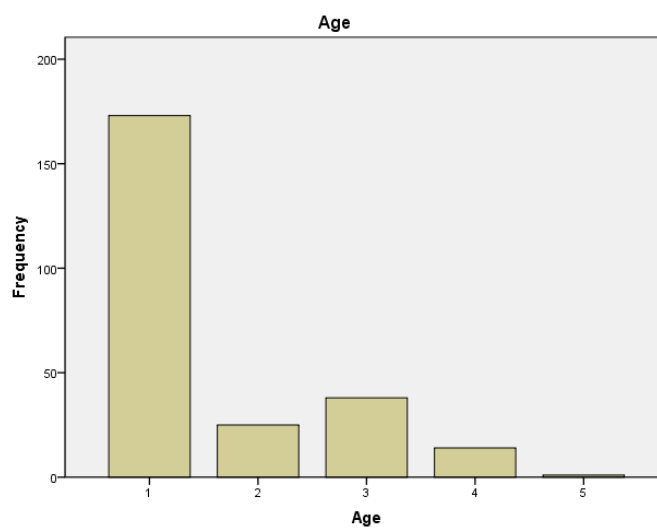
Figure 20. Frequency of scales of age.

Table 21

Statistics for Scale of Experience

Mean	Median	Standard deviation	Maximum	Minimum
3.6	4.0	1.2	1.0	5.0
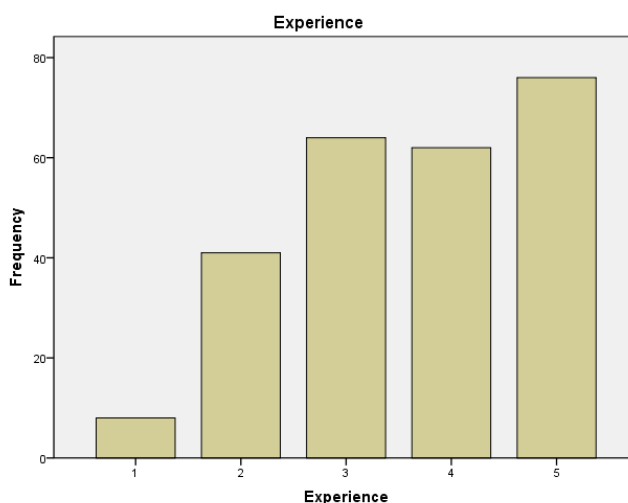
Figure 21. Frequency of scales of experience.

Statistical Analysis Findings

There were two research questions in this study. There were six hypotheses included in research question 1 and one hypothesis included in research question 2. Simple regression and multiple regression statistics were used to verify the hypothesis. There were three moderators included in the model used in this study, and their interaction effect was analyzed using the PROCESS tool in the SPSS software.

Research question 1.

Research question 1 is: Do UTAUT2 factors influence behavioral intention of Mainland Chinese college students and teachers to use social media? The six alternative hypotheses and relevant null hypotheses are as following:

- Hypothesis 1: Performance expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 1: Performance expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 2: Effort expectancy has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 2: Effort expectancy does not influence intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 3: Social influence has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 3: Social influence does not influence intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 4: Facilitating conditions has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 4: Facilitating conditions does not influence intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 5: Hedonic motivation has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 5: Hedonic motivation does not influence intention of Mainland Chinese college students and teachers to use social media.

- Hypothesis 6: Habit has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

- Null hypothesis 6: Habit positively does not influence intention of Mainland Chinese college students and teachers to use social media.

Hypothesis 1.

Regression analysis was used to investigate the influence of performance expectancy on social media use intention. The results showed that performance expectancy positively influenced social media use intention ($\beta=.461$, $p<.001$). Therefore, Null hypothesis 1 was rejected and Hypothesis 1 was supported. This means that when students and teachers expect social media to increase their performance, they increase their intention to use it. Table 22 shows the finding results.

Table 22

Regression of Performance Expectancy on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Performance Expectance	.461	.212	.544	.066	.461	8.194	<.001

Hypothesis 2.

Regression analysis was used to investigate the influence of effort expectancy on social media use intention. The results showed that effort expectancy positively influenced social media use intention ($\beta=.545$, $p<.001$). Therefore, Null hypothesis 2 was rejected and Hypothesis 2 was supported. This means that when students and teachers expect social media to be easy to use, they increase their intention to use it. Table 23 shows the finding results.

Table 23

Regression of Effort Expectancy on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Effort Expectance	.545	.297	.643	.063	.545	10.258	<.001

Hypothesis 3.

Regression analysis was used to investigate the influence of social influence on

social media use intention. The results showed that social influence positively influenced

social media use intention (β=.583, p<.001). Therefore, Null hypothesis 3 was rejected

and Hypothesis 3 was supported. This means that when students and teachers are

suggested to use social media by someone important to them, they increase their intention

to use it. Table 24 shows the finding results.

Table 24

Regression of Social Influence on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Social Influence	.583	.340	.567	.050	.583	11.326	<.001

Hypothesis 4.

Regression analysis was used to investigate the influence of facilitating conditions

on social media use intention. The results showed that facilitating conditions positively

influenced social media use intention (β=.619, p<.001). Therefore, Null hypothesis 4 was

rejected and Hypothesis 4 was supported. This means that when students and teachers

receive more facilitating conditions to use social media, they increase their intention to use it. Table 25 shows the finding results.

Table 25

Regression of Facilitating Conditions on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Facilitating Conditions	.619	.383	.792	.064	.619	12.444	<.001

Hypothesis 5.

Regression analysis was used to investigate the influence of hedonic motivation on social media use intention. The results showed that hedonic motivation positively influenced social media use intention (β=.605, p<.001). Therefore, Null hypothesis 5 was rejected and Hypothesis 5 was supported. This means that when students and teachers feel happy to use social media, they increase their intention to use it. Table 26 shows the finding results.

Table 26

Regression of Hedonic Motivation on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Hedonic Motivation	.605	.365	.644	.054	.605	11.975	<.001

Hypothesis 6.

Regression analysis was used to investigate the influence of habit on social media use intention. The results showed that habit positively influenced social media use intention (β=.735, p<.001). Therefore, Null hypothesis 6 was rejected and Hypothesis 6

was supported. This means that when students and teachers form a habit to use social

media, they increase their intention to use it. Table 27 shows the finding results.

Table 27

Regression of Habit on Social Media Use Intention

	R	R Square	B	S.E.	Beta	t	Sig.
Habit	.735	.540	.684	.040	.735	17.112	<.001

Multiple regression.

Multiple regression was used to further verify the six hypotheses. Step was used

as the input method. Finding results for four of the factors (social influence, facilitating

conditions, hedonic motivation, and habit) were the same as simple regression analysis.

But for performance expectancy and effort expectancy, finding results were different with

simple regression analysis. Table 28 summarizes the Pearson correlation analysis. Table

29 summarized the influences of social influence, facilitating conditions, hedonic

motivation, and habit on social media intention. Table 30 summarizes the finding results

of the two excluded variables, performance expectancy and effort expectancy.

Table 28

Pearson Correlation

	Intention	PE	EE	SI	FC	HM	HT
Intention	1.000	.461	.545	.583	.619	.605	.735
PE	.461	1.000	.499	.484	.499	.523	.365
EE	.545	.499	1.000	.609	.612	.494	.453
SI	.583	.484	.609	1.000	.562	.589	.498
FC	.619	.499	.612	.562	1.000	.665	.502
HM	.605	.523	.494	.589	.665	1.000	.493
HT	.735	.365	.453	.498	.502	.493	1.000

Note. PE=performance expectancy; EE=effort expectancy; SI=social influence;
FC=facilitating conditions; HM=hedonic motivation; HT=habit.

Table 29

Linear Model of Predictors of Social Media Use Intention

	B	S.E.	Beta	t	Sig.	95% Confidence Interval for B	
						Lower	Upper
Step 1							
Constant	.578	.100		5.793	<.001	.382	.775
Habit	.684	.040	.735	17.112	<.001	.606	.763
Step 2							
Constant	.115	.110		1.047	.296	-.101	.332
Habit	.528	.042	.567	12.593	<.001	.445	.611
Facilitating Conditions	.427	.058	.334	7.421	<.001	.314	.541
Step 3							
Constant	.030	.109		.272	.786	-.186	.245
Habit	.479	.043	.515	11.189	<.001	.395	.564
Facilitating Conditions	.331	.062	.258	5.355	<.001	.209	.452
Social Influence	.177	.047	.181	3.770	<.001	.084	.269
Step 4							
Constant	.000	.109		-.002	.998	-.214	.214
Habit	.461	.043	.495	10.760	<.001	.376	.545
Facilitating Conditions	.245	.068	.191	3.586	<.001	.110	.379
Social Influence	.137	.048	.140	2.825	.005	.041	.232
Hedonic Motivation	.161	.058	.151	2.787	.006	.047	.274

Table 28 shows that habit significantly influenced social media use intention, b=.461, 95% CI [.376 0.545], t=10.760, p<.001. Facilitating conditions significantly influenced social media use intention, b=.245, 95% CI [.110 0.379], t=3.586, p<.001. Social influence significantly influenced social media use intention, b=.137, 95% CI [.041 0.232], t=2.825, p=.005. Hedonic motivation significantly influenced social media use intention, b=.161, 95% CI [.047 0.274], t=2.787, p=.006.

Table 30

Excluded Variables

	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
Step 1							
Performance Expectancy	.222	5.044	<.001	.305	.867	1.154	.867
Effort Expectancy	.267	5.900	<.001	.351	.795	1.258	.795
Social Influence	.289	6.258	<.001	.369	.752	1.330	.752
Facilitating Conditions	.334	7.421	<.001	.426	.748	1.338	.748
Hedonic Motivation	.320	7.094	<.001	.411	.757	1.321	.757
Step 2							
Performance Expectancy	.119	2.638	.009	.166	.733	1.364	.632
Effort Expectancy	.140	2.816	.005	.176	.597	1.674	.562
Social Influence	.181	3.770	<.001	.233	.622	1.608	.618
Hedonic Motivation	.196	3.741	<.001	.232	.524	1.908	.517
Step 3							
Performance Expectancy	.082	1.790	.075	.113	.687	1.457	.569
Effort Expectancy	.083	1.583	.115	.100	.517	1.934	.517
Hedonic Motivation	.151	2.787	.006	.175	.478	2.091	.478
Step 4							
Performance Expectancy	.058	1.251	.212	.080	.656	1.524	.457
Effort Expectancy	.085	1.630	.104	.104	.517	1.935	.436

As showed in Table 30, Performance expectancy did not significantly influence

social media use intention (β=.058, p=.212). Effort expectancy did not significantly

influence social media use intention (β=.085, p=.104). It might be caused by multicollinearity although there was no violation of collinearity according to common criteria. Field (2013) mentioned that tolerance values less than 0.1 and VIF values greater than 10 indicate a problem. Therefore there was no multicollinearity for performance expectancy (Tolerance=.656, VIF=1.524) and effort performance (Tolerance=.517, VIF=1.935).

Research question 2.

Research question 2 is: Does intention of Mainland Chinese college students and teachers to use social media influence their social media use behavior? Alternative hypothesis and relevant null hypothesis for research question 2 are as the following:

- Hypothesis 1: Intention of Mainland college students and teachers to use social media has a significant positive effect on their social media use behavior.

- Null hypothesis 1: Intention of Mainland college students and teachers to use social media does not influence their social media use behavior.

Regression analysis was used to investigate the influence of social media use intention on social media use behavior. The results showed that social media use intention positively influenced social media use behavior (β=.506, p<.001). Therefore, Null hypothesis 1 was rejected and Hypothesis 1 was supported. This means that when students and teachers have more intent to use social media, they use social media more frequently. Table 31 shows the finding results.

Table 31

Regression of Social Media Use Intention on Social Media Use Behavior

	R	R Square	B	S.E.	Beta	t	Sig.
Intention	.506	.256	.464	.050	.506	9.261	<.001

Moderation.

Venkatesh et al. (2012) proposed that age, gender, and experience could moderate

the effect of UTAUT2 factors on intention and the effect of intention on behavior. Table

32 summarizes the moderators and the relevant effect. But only a few previous studies

verified the moderation effect in the UTAUT2 model. I included the three moderators in

this study and checked the moderation effect using PROCESS tool (Hayes, 2013) in

SPSS software.

Table 32

Moderators in UTAUT2 Model

Effect	Moderators
Facilitating Conditions on Intention	Age, Gender, Experience
Hedonic Motivation on Intention	Age, Gender, Experience
Habit on Intention	Age, Gender, Experience
Intention on Behavior	Experience

Facilitating conditions on intention.

Finding results showed a significant interaction effect of age and facilitating

conditions, b=.106, 95% CI [.001, .211], t=1.982, p=.048, indicating that the relationship

between facilitating conditions and social media use intention was moderated by age.

Table 33 demonstrates the moderation effect. When age was low, there was a significant

positive relationship between facilitating conditions and social media use intention,

b=.714, 95% CI [.557, .870], t=9.002, p<.001. When age was high, there was a

significant positive relationship between facilitating conditions and social media use

intention, b=.878, 95% CI [.738, 1.018], t=12.360, p<.001. The effect of facilitating

conditions on social media use intention will be stronger among elder students and

teachers.

Table 33

Effect of Facilitating Conditions on Intention Moderated by Age

	b	S.E.	t	Sig.
Constant	2.204	.035	62.369	<.001
Age	-.111	.032	-3.486	<.001
Facilitating Conditions	.776	.065	11.960	<.001
Age×Facilitating Conditions	.106	.053	1.982	.048

For the other two moderators, gender did not moderate the effect of facilitating

conditions on social media use intention, b=-.228, 95% CI [-.544, .088], t=-1.422, p=.156.

Experience did not moderate the effect of facilitating conditions on social media use

intention, b=.022, 95% CI [-.076, .120], t=.444, p=.658. When students and teachers

receive more facilitating conditions, they increase social media use intention regardless of

their gender or experience.

Hedonic motivation on intention.

No moderation was showed in the effect of hedonic motivation on social media

use intention. Age did not moderate the effect of hedonic motivation on intention, b=-

.156, 95% CI [-.353, .040], t=1.461, p=.145. Gender did not moderate the effect of

hedonic motivation on intention, b=.083, 95% CI [-.029, .194], t=-1.567, p=.119.

Experience did not moderate the effect of hedonic motivation on intention, b=.059, 95% CI [-.028, .146], t=1.338, p=.182. When students and teachers feel happy to use social media, they increase their intention to use it regardless of their age, gender, and experience.

Habit on intention.

Finding results showed a significant interaction effect of gender and habit, b=-.231, 95% CI [-.415, .047], t=-2.474, p=.014, indicating that the relationship between habit and social media use intention was moderated by gender. Table 34 demonstrates the moderation effect. For female, there was a significant positive relationship between habit and social media use intention, b=.865, 95% CI [.713, 1.017], t=11.222, p<.001. For male, there was a significant positive relationship between habit and social media use intention, b=.634, 95% CI [.531, .738], t=12.082, p<.001. The effect of habit on social media use intention will be stronger among female students and teachers.

Table 34

Effect of Habit on Intention Moderated by Gender

	b	S.E.	t	Sig.
Constant	2.212	.031	70.871	<.001
Gender	.027	.066	.404	.687
Habit	.698	.044	16.015	<.001
Gender×Habit	-.231	.093	-2.474	.014

For the other two moderators, age did not moderate the effect of habit on social media use intention, b=.105, 95% CI [-.005, .214], t=1.881, p=.061. Experience did not moderate the effect of habit on social media use intention, b=.068, 95% CI [-.005, .140],

t=1.827, p=.069. When students and teachers form a habit of use social media, they increase social media use intention regardless of their age or experience.

Intention on behavior.

Experience did not moderate the effect of social media use intention on social media use behavior, b=-.114, 95% CI [-.230, .002], t=-.194, p=.054. When students and teachers have more intent to use social media, they use social media more frequently no matter how experienced they are. But for the effect of social media use intention on use frequency of each social media platform, finding results were mixed.

The relationship between social media use intention and Weibo use frequency was moderated by experience, b=-.092, 95% CI [-.163, .-.020], t=-2.535, p=.012. When students and teachers were less experienced, there was a significant positive relationship between social media use intention and Weibo use, b=.488, 95% CI [.337, .639], t=6.375, p<.001. When students and teachers were more experienced, there was a significant positive relationship between social media use intention and Weibo use, b=.233, 95% CI [.102, .363], t=3.512, p<.001. The effect of social media use intention on Weibo use will be stronger among less experienced students and teachers.

The relationship between social media use intention and QQ use frequency was moderated by experience, b=-.120, 95% CI [-.229, .-.012], t=-2.190, p=.029. When students and teachers were less experienced, there was a significant positive relationship between social media use intention and QQ use, b=.538, 95% CI [.353, .723], t=5.722, p<.001. When students and teachers were more experienced, there was a significant positive relationship between social media use intention and QQ use, b=.285, 95% CI

[.150, .420], t=4.154, p<.001. The effect of social media use intention on QQ use will be stronger among less experienced students and teachers.

The relationship between social media use intention and school forum use frequency was moderated by experience, b=-.074, 95% CI [-.138, .-.010], t=-2.272, p=.024. When students and teachers were less experienced, there was a significant positive relationship between social media use intention and school forum use, b=.383, 95% CI [.255, .511], t=5.886, p<.001. When students and teachers were more experienced, there was a significant positive relationship between social media use intention and school forum use, b=.210, 95% CI [.108, .313], t=4.039, p<.001. The effect of social media use intention on school forum use will be stronger among less experienced students and teachers.

The relationship between social media use intention and other online forums use frequency was moderated by experience, b=-.077, 95% CI [-.132, .-.022], t=-2.752, p=.006. When students and teachers were less experienced, there is a significant positive relationship between social media use intention and other online forums use, b=.429, 95% CI [.325, .534], t=8.079, p<.001. When students and teachers were more experienced, there was a significant positive relationship between social media use intention and other online forums use, b=.255, 95% CI [.153, .356], t=4.928, p<.001. The effect of social media use intention on other online forums use will be stronger among less experienced students and teachers.

The relationship between social media use intention and WeChat use frequency was not moderated by experience, b=-.091, 95% CI [-.210, .029], t=-1.497, p=.136. The

effect of social media use intention on use frequency of five social media platforms is

summarized in Table 35.

Table 35

Effect of Intention on Use Frequency of Five Social Media Platforms

Social Media Platform	Interaction	b	S.E.	t	Sig.
Weibo	Intention×Experience	-.092	.036	-2.535	.012
QQ	Intention×Experience	-.120	.055	-2.190	.029
School forum	Intention×Experience	-.074	.033	-2.272	.024
Other forums	Intention×Experience	-.077	.028	-2.752	.006
WeChat	Intention×Experience	-.091	.061	-1.497	.136

Summary

Finding results of regression analysis rejected the six null hypotheses in research

question 1 and support the six alternative hypotheses. The answers to research question 1

are summarized as following:

- Performance expectancy has a significant positive effect on intention of

  Mainland Chinese college students and teachers to use social media.

- Effort expectancy has a significant positive effect on intention of Mainland

  Chinese college students and teachers to use social media.

- Social influence has a significant positive effect on intention of Mainland

  Chinese college students and teachers to use social media.

- Facilitating conditions has a significant positive effect on intention of

  Mainland Chinese college students and teachers to use social media.

- Hedonic motivation has a significant positive effect on intention of Mainland

  Chinese college students and teachers to use social media.

- Habit has a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

One issue is that results of multiple regression showed that performance expectancy and effort expectancy did not influence social media use intention, which is different with results of simple regression. This might be caused by multicollinearity although there is no violation according to the common criteria. For the other four independent variables, results of multiple regression and results of simple regression were the same. This issue will be further discussed in chapter 5.

For research question 2, the null hypothesis was rejected, and the alternative hypothesis was supported:

- Intention of Mainland college students and teachers to use social media has a significant positive effect on their social media use behavior.

Results of moderation analysis were mixed with some moderation effects verified while others not verified. The relationship between facilitating conditions and social media use intention was moderated by age with stronger effect among elder students and teachers. The relationship between facilitating conditions on social media use intention was not moderated by gender or experience. The relationship between hedonic motivation and social media use intention was not moderated by age, gender, or experience. The relationship between habit and social media use intention was moderated by gender with stronger effect among female students and teachers. But age and experience did not moderate this relationship.

Finding results of relationship between social media use intention and social media use behavior were also mixed. Experience did not moderate the relationship between social media use intention and social media use behavior in general. But for the five social media platforms which constitute the social media use behavior factor, experience moderated the relationship between social media use intention and use frequency of four of the platforms: Weibo, QQ, school forum, and other online forums. Experience did not moderate the relationship between social media use intention and use frequency of WeChat, the most popular social media platform. The finding results will be elaborated and explained in chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative survey study was to examine social media use intention and social media use behavior of Mainland Chinese students and teachers in their learning and instruction settings. The survey was cross-sectional with the data collected at one point of time. The general population of this study was undergraduate college students and teachers in Mainland China. The participants of the study were college students and teachers selected randomly in two colleges in Guangzhou, Guangdong province, China.

I used existing questionnaires based on UTAUT2 model in the survey design. There were six UTAUT2 factors as the independent variables: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The dependent variables were behavioral intention and use behavior. The moderators were age, gender, and experience. Regression analysis and moderation analysis were used to provide information about the relationship and strengths among the variables. I analyzed the relationship between the six UTAUT2 factors and intention to use social media and the relationship between intention to use social media and social media use behavior as well as the impact of the three moderators on these relationships.

Finding results supported the six alternative hypotheses in research question 1 and one hypothesis in research question 2. Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit had a significant positive effect on intention of Mainland Chinese college students and teachers to use social media.

Intention of Mainland college students and teachers to use social media had a significant positive effect on their social media use behavior.

For moderation analysis results, the relationship between facilitating conditions and social media use intention was moderated by age with stronger effect among elder students and teachers. The relationship between habit and social media use intention was moderated by gender with stronger effect among female students and teachers. Experience moderated the relationship between social media use intention and use frequency of four of the platforms: Weibo, QQ, school forum, and other online forums.

Interpretation of the Findings

Finding results generally verified the relationship of predictors and outcome in UTAUT2 model and partly verified the moderation effect (Venkatesh et al., 2003; Venkatesh et al., 2012) in this social media use study. UTAUT2 model could be used to predict social media use intention and social media use behavior of Mainland Chinese undergraduate students and college teachers. The finding results were compared with previous studies. Some of the finding results are in accordance with previous studies, while others are different.

Performance expectancy

Finding results verified that performance expectancy had positive significant influence on use intention, which was in accordance with UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). Most of the previous studies that used UTAUT and UTAUT2 model also got the same results for various populations using various technologies (Albugami & Bellaaj, 2014; Baabdullah et al., 2014; Hosizah, Kuntoro, &

Basuki, 2016; Huang & Kao, 2015; Khechine, Lakhal, Pascot, & Bytha, 2014; Morosan & DeFranco, 2016; Oechslein et al., 2014; Raja Yusof, Qazi, & Inayat, 2017; Raman & Don, 2013; Tan, 2013). Huang and Kao (2015) mentioned that performance expectancy was one of the most important predictors. Morosan and DeFranco (2016) even emphasized that performance expectancy was the highest predictor of intention in their study of consumers' intention to use mobile payment in hotels.

However, some researchers also found statistically insignificant relationship between performance expectancy and intention. Attuquayefio and Addo (2014) stated that performance expectancy did not insignificantly influence intention to use information and communication technology (ICT) when they surveyed 400 college students in Ghana. Nicholas-Omoregbe, Azeta, Chiazor, and Omoregbe (2017) found that performance expectancy did not significantly impact intention to adopt E-learning management system for undergraduate students in Nigeria.

Effort expectancy

As showed in the results, effort expectancy significantly and positively influence social media use intention, which verified UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). Several researchers found similar significant relationship between effort expectancy and use intention in their studies (Attuquayefio & Addo, 2014; Baabdullah et al., 2014; Khechine et al., 2014; Hosizah et al., 2016; Magsamen-Conrad, Upadhyaya, Joa, & Dowd, 2015; Oechslein et al., 2014; Raja Yusof et al., 2017; Raman & Don, 2013; Tan, 2013). No insignificant influence of effort expectancy on use intention was specifically mentioned in previous studies.

Social Influence

Social influence had a significant positive effect on social media use intention. This result corresponded to the emphasis of social interaction in social constructivism (Vygotsky, 1978) as well as the idea of social learning in digital era proposed in connectivism (Davis et al., 2008; Siemens, 2005). It also verified the UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). Researchers found similar results about the impact of social influence in their studies (Hosizah et al., 2016; Morosan & DeFranco, 2016; Nicholas-Omoregbe et al., 2017; Oechslein et al., 2014; Raman & Don, 2013; Tan, 2013; Xu, 2014). But Attuquayefio and Addo (2014) mentioned statistically insignificant effect of social influence on intention to use ICT for undergraduate students in Ghana.

Facilitating conditions

Facilitating conditions had significant positive influence on social media use intention as proposed in UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). This relationship was verified in previous studies (Khechine et al., 2014; Magsamen-Conrad et al., 2015; Oechslein et al., 2014; Raja Yusof et al., 2017; Raman & Don, 2013). Attuquayefio and Addo (2014) did not find significant impact of facilitating conditions on intention to use ICT, but they found that facilitating conditions significantly influenced ICT use behavior of college students in Ghana. Hosizah et al. (2016) also mentioned that facilitating conditions had a major impact on use of computer-based information system.

Hedonic motivation

Hedonic motivation had significant positive influence on intention to use social media, a relationship proposed in UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). This relationship was verified in previous studies (Huang & Kao, 2015; Morosan & DeFranco, 2016; Oechslein et al., 2014; Raman & Don, 2013; Xu, 2014). Huang and Kao (2015) emphasized that hedonic motivation was one of the most important predictors.

Habit

Finding results showed that habit had the greatest impact on intention to use social media among the six predictors. This significant positive impact was in accordance with UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). Previous researchers found the similar significant positive impact of habit (Albugami & Bellaaj, 2014; Huang & Kao, 2015; Morosan & DeFranco, 2016; Oechslein et al., 2014; Raman & Don, 2013; Xu, 2014), but none of them mentioned that habit had greatest impact on use intention. Huang and Kao (2015) did mention that habit had direct influence on other dimensions when they explored the technology acceptance of Phablets.

Use intention and use behavior

Results showed that social media use intention positively influenced social media use behavior, which was in accordance with UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). Fewer researchers explored this relationship compared with the relationship between the six above-mentioned predictors and use intention. Hosizah et al. (2016) stated that use of computer-based information system was significantly influenced

by users' intention. Tan (2013) found that intention had positive effects on use behavior of E-learning websites for Taiwanese students. But Attuquayefio and Addo (2014) argued that intention did not significantly influence use behavior of ICT for college students in Ghana.

Age, gender, and experience

Venkatesh et al. (2012) proposed that age, gender, and experience could moderate the effect of UTAUT2 factors on intention and the effect of intention on behavior as summarized in Table 32, but only a few of the arguments were verified in this study. First, age moderated the relationship between facilitating conditions and social media use intention with stronger effect among elder students and teachers. Khechine et al. (2014) similarly found that the effect of facilitating conditions on the intention to use Webinars was statistically significant when moderated by age, such that the effect was more salient for older students. Magsamen-Conrad et al. (2015) stated that age was a significant moderator for facilitating conditions as well as effort expectancy in UTAUT research.

Second, gender moderated the relationship between habit and social media use intention with stronger effect among female students and teachers. Raja Yusof et al. (2017) also found that gender was a significant moderator, but they found that the effect of effort expectancy and facilitating conditions on use intention was seen more in female compared to male participants. They did not find moderation of gender on effect of habit on use intention. However, Khechine et al. (2014) and Magsamen-Conrad et al. (2015) found that gender was not a significant moderator.

Third, experience did not moderate the relationship between social media use intention and social media use behavior in general but did moderate the relationship between use intention and use frequency of some individual social media platforms. Few researchers explored the moderation effect of experience, but McKeown and Anderson (2016) mentioned that students' acceptance and use of technology increased with their work experience.

Limitations of the Study

The first limitation of this study was that the sample was not randomly selected from the population but was from two science and technology universities in one of the best developed areas in China. There were much more male student participants than female student participants representing the gender ratio in science and technology universities. But this was not the case for all the undergraduate students in Mainland China, especially for liberal arts universities. In addition, most of the participants submitted their responses with their mobile phones and use mobile social media platforms, while students and teachers in under developed areas might not have enough facilities to do so.

Secondly, collecting data from teachers was more difficult than collecting data from students. The total number of teacher participants was 54, while number of student participants was 197. In addition, only one teacher over 50 submitted answers, so no information was available to analyze social media use by older teachers. Finding results only showed general situation of social media use by undergraduate students and teachers.

No data analysis was conducted to specifically explore teachers' use of social media because of the data insufficiency.

Thirdly, for two of the UTAUT2 predictors, performance expectancy and effort expectancy, the results of simple regression analysis were different with results of multiple regression analysis. Simple regression analysis showed that performance expectancy and effort expectancy significantly and positively influence social media use intention, while multiple regression analysis showed that performance expectancy and effort expectancy did not significantly influence social media intention. It might be caused by multicollinearity although there was no violation. Venkatesh et al. (2003, 2012) mentioned that the intercorrelation of the UTAUT2 predictors was low enough to be ignored, while finding results in this study were contradictory with their statement. Huang and Kao (2015) mentioned that habit had direct influence on other predictors, but no data analysis was conducted to further explore the correlation of predictors in this study.

Finally, Venkatesh et al. (2012) proposed and verified several moderation effects in the UTAUT2 model, but only two were verified in this study: age moderated the relationship between facilitating conditions and social media use intention with stronger effect among elder students and teachers; gender moderated the relationship between habit and social media use intention with stronger effect among female students and teachers. There were only few researchers mentioned the moderation effects of age, gender, and experience. The moderation effects were still unclear because detailed comparison was impossible due to the insufficient information.

Recommendations for Future Research

One specific phenomenon in this study was that 229 participants (91.24% of all the participants) submitted their responses on their phone, while only 22 participants (8.76% of all the participants) submitted their responses on their computer. According to the statistical report of Internet development in China issued by China Internet Network Information Center (CNNIC) (2017), there were 724 million mobile phone users that used their phone to surf the Internet by June, 2017, increased 28.3 million compared with December, 2016. Among all the Internet users, 96.3% used smart phone to surf the Internet. The way of submission by participants in this study was in line with the trend in people's Internet use habits. One reference is that more and more people will use smart phone to use social media, and researchers could do more research in this area.

In addition to research in mobile use, there are other recommendations for further research based on the nature of the study and finding results. The recommendations are summarized as following:

- The sample was not randomly selected from Mainland Chinese undergraduate students and teachers, and a future study with randomly selected sample would better represent social media use by undergraduate students and teachers.

- The participants were from two science and technology universities with much more male students than female students, future studies should be repeated in other kinds of universities such as liberal arts universities.

- The participants were from one of the most developed areas in Mainland China. Researchers could repeat the study in under developed areas in China.

- Graduate students were not included in this study, so future studies could explore their use of social media.

- There were insufficient elder participants included in this study. Future studies should explore social media use by elder teachers to better help them use social media and other new technologies in the digital era.

- Teachers were not specifically studied in this study. They might have some unique social media use behaviors although they did share many common characteristics with students in social media use. Future studies could focus on teachers' use of social media to get more detailed information.

- The correlation of the UTAUT2 predictors might not be negligible as proposed in UTAUT2 model. Future studies could focus on the correlation of predictors and improve the UTAUT2 model if possible.

- The moderation effects of age, gender, and experience on the relationship between UTAUT predictors and social media use intention were not clear because of insufficient information. Future research is needed to further explore the moderation effects of age, gender, and experience on social media use intention and social media use behavior.

- Most participants submitted their responses with their mobile phones. According to their answers, the most popular social media platforms were WeChat and QQ, two mobile social media platforms. Future research could

focus on mobile social media platforms and other mobile phone based new technologies used by students and teachers.

- Most participants first knew social media from their friends, family members, and colleagues rather than advertisements and Internet surfing. Finding results also showed that social influence had significant positive influence on social media use intention. Future research could explore this topic deeply to find the influence of social network in reality on social media use online.

- Finding results showed that school forum was not a popular social media platform for undergraduate students and college teachers. Most participants did not use school forum frequently. Future studies could explore the reasons and help universities improve their school forums and other learning management systems.

Implications

Theoretical Implications

Finding results in this study generally verified the hypotheses in UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012), that is, UTAUT2 model could be applied to research social media use intention and social media use behavior by Mainland Chinese undergraduate students and college teachers. Social media use could be added to the application areas of UTAUT2 model together with adoption of information and communication technology, E-learning websites, learning management system, real-time visualization system, phablets and tablets, mobile technologies, online games, internet banking, and so on.

Finding results also showed some discrepancies with the UTAUT2 model. The correlations among predictors caused some significant influence became insignificant in multiple regression analysis, while the correlations should be very low as proposed in the model. In addition, only a few moderation effects of age, gender, and experience on the relationship between predictors and social media use intention were verified. Further studies could check the discrepancies and improve the UTAUT2 model if possible.

Most participants used social media frequently to share information and knowledge as showed in the finding results, and they usually got to know social media from people around them. Their social media use intention was also significantly influenced by social influence. Both social network in reality and social network online had great impact on undergraduate students and college teachers. This phenomenon was an actual representation of social constructivism which emphasizes social contexts in learning as well as connectivism which emphasizes sharing and knowledge co-construction in a network environment. This study might provide new ideas for future research based on social constructivism and connectivism.

Implications for Social Change

Social media is one of the new technologies applied in education at all levels. Students and teachers around the world used social media to improve their teaching and learning. Social media is beneficial in fostering various abilities such as creativity, critical thinking, communication abilities, and language competence (Balakrishnan, Teoh, Pourshafie, & Liew, 2017; Boholano, 2017; Cedar & Singhara, 2017; Raspopovic, Cvetanovic, Medan, & Ljubojevic, 2017). Finding results in this study provided some

insights into social media use by Mainland undergraduate students and college teachers, and it showed that Mainland Chinese undergraduate students and teachers had many common characteristics in using new technologies, social media to be specific, with their counterparts in other areas in the world. Verified theories and models developed in other countries and regions could be used to further check social media use in Mainland Chinese higher educational system although Chinese people use different social media platforms because of the isolated network environment. Better understanding of social media use by students and teachers could promote innovation in education system and make social media a powerful tool to improve teaching and learning.

Finding results showed that undergraduate students and teachers had common characteristics in social media use. When universities develop programs of social media application in teaching and learning, they could regard students and teachers as a whole and design appropriate programs for both students and teachers. Teachers are as critical a part as students in education innovation, and social media as well as other new technologies facilitated their teaching, communication and academic research (Boholano, 2017; Cartner, & Hallas, 2017; Meishar-Tal & Pieterse, 2017). Teachers are also learners that need to develop their knowledge and skills continually. A social media based innovative system that integrates students and teachers efficiently could promote the performance of both groups and facilitate good interaction between them.

The finding results in this study could provide interested researchers with a knowledge base containing data, information, and answers to questions that would expand literature of social media use and UTAUT model applications. Future researchers

could use various models to check social media use by Mainland undergraduate students and college teachers, and they could use UTAUT2 model to check other new technologies use by Mainland undergraduate students and college teachers. These studies could provide deeper understanding for new technology applications, and therefore provide practical guidance to improve education innovation in Chinese educational system.

Practical Implications

Finding results showed that social media use intention and social media use behavior of Mainland Chinese undergraduate students and college teachers were influenced by several factors. Education administrators, education practitioners, and other stakeholders could take measures to promote social media use in educational contexts according to the finding results. The following are suggestions to improve social media adoption by Mainland Chinese undergraduate students and college teachers.

1. Performance expectancy had positive influence on social media use intention, that is, when students and teachers expect social media to increase their performance, they increase their intention to use it. Administrators and education experts could hold lectures to introduce the benefits of social media, demonstrate successful cases in various fields of social media application, and invite some social media experts to show features and functions of social media platforms.

2. Effort expectancy positively influenced social media use intention. If students and teachers feel that social media is easy to use, they intend to use it.

Detailed information and vivid demonstration are helpful to improve social media use skills, and providing enough opportunity to practice is also critical. When students and teachers have questions, they need to get timely responses from technical support team. This is of special importance for elder teachers because they might have more difficulties in using new technologies.

3. Social influence had a significant impact on social media use intention. People tend to increase social media use if people around them think it is important and beneficial. The finding results also showed that most people got to know social media from people around them. It is important for university administrators to schedule appropriate time and place for students and teachers to share their experiences in social media use and discuss problems and resolutions. This kind of communication could be in real-life as well as online.

4. Facilitating conditions significantly influence social media use intention, and the influence was stronger for older students and teachers. Universities and governments should provide hardware and software for students and teachers to use social media if necessary, and the resources allocation should be inclined to older people because they usually have fewer resources than younger people. If they can get enough facilitating conditions, they would be willing to use social media in their work and life.

5. Hedonic motivation significantly influenced social media use intention, and this effect was similar for all participants with different age, gender, and

experience. Students and teachers increase their intention to use social media if they feel that using social media makes them happy regardless of their age, gender, and experience. Social media platform designers could optimize the interface, develop new functions, and organize activities to enhance the user experience. Maintaining a favorable atmosphere on social platforms is also crucial to attract more users.

6. Habit significantly influence social media use intention, and the influence was stronger for female students and teachers than male students and teachers. Students and teachers tend to use social media if they form a habit. Universities could organize some routine activities on social media platforms to help them form a habit. Using social media to publish messages and information is another measure to make students and teachers log on social media platforms frequently. Building discussion groups on some specific topics such as course learning, academic research, or extracurricular activity could also help students and teachers form a habit to use social media.

7. Social media use intention significantly influenced social media use behavior. Students and teachers would use social media more frequently if they intend to use it. For four of the five popular social media platforms, QQ, Weibo, school forum, and other online forums, the relationship between social media intention and use frequency was moderated by experience with strong effect for experienced users. When students and teachers have strong intention to use social media, more experienced ones are more likely to go into action.

But for WeChat, the most popular social platform, experience had no moderation effect. That's probably because of the intuitive and user-friendly interface. People with little experience could easily use WeChat on their mobile phones. University administrators could research the characteristics of various social media platforms to find the most appropriate one for students and teachers.

8. Mobile social media applications such as WeChat and QQ were very popular among students and teachers as showed in the results. They were convenient to use and could facilitate instant communication, which was unavailable on blogs and online forums. Designers could focus on developing mobile social media applications to better serve students and teachers. In addition, mobile applications would be more affordable for students and teachers in rural areas because mobile phones are cheaper than computers on average. Government could initiate programs focusing on mobile social media platforms in rural areas.

9. School forum was not a popular social media platform, and most participants seldom use school forum as showed in the results. Universities and social media platforms designers should find the reason and improve school forum to attract students and teachers. School forum could be a powerful tool for knowledge co-construction as most of the users are students and teachers. Universities should make the best use of school forum together with learning management system.

Conclusion

The researcher used UTAUT2 model in this study to determine social media use intention and behavior of undergraduate students and college teachers in two science and technology universities in Mainland China. Finding results showed that expectancy performance, effort performance, social influence, facilitating conditions, hedonic motivation, and habit had significant positive influence on social media use intention, and social media intention significantly influenced social media use behavior. The findings provided additional evidence to the applicability of UTAUT model in technology adoption. Some of the moderation effects proposed in UTAUT2 model were also verified. Age moderated the relationship between facilitating conditions and social media use intention with stronger effect for elder students and teachers. Gender moderated the relationship between habit and social media use intention with stronger effect for female students and teachers. Other trends were also revealed such as the popularity of mobile social media applications. Findings in this study provided insights into social media use by Mainland Chinese undergraduate students and teachers. Universities, government, and education practitioners could use the finding results as references in social media application and education innovation.

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Appendix A: Permission Letter

2017-5-24   邮件 - xiangyun.huang@waldenu.edu

Your request to use content from UTAUT2

Ruba Aljafari <RAljafari@walton.uark.edu>

周二 2017/5/23 8:53

收件人:Xiangyun Huang <xiangyun.huang@waldenu.edu>;

抄送:Viswanath Venkatesh <VVenkatesh@walton.uark.edu>;

Dear Xiangyun,

My name is Ruba and I assist Prof. Venkatesh with his work.
I am contacting on behalf of Prof. Venkatesh regarding your request to use the UTAUT2 figure and instrument.

Thank you for your interest. Your permission to use content from the paper is granted. Please cite the work appropriate
Note that this permission does not exempt you from seeking the necessary permission from the copyright owner (typic.
the publisher of the journal) for any reproduction of any materials contained in the paper.

You may also find Prof. Venkatesh's book to be of use: https://www.amazon.com/Road-Success-Doctoral-Students-
Behavioral/dp/1457504057

Sincerely,
Viswanath Venkatesh
Distinguished Professor and George and Boyce Billingsley Chair in Information Systems
Email: vvenkatesh@vvenkatesh.us
Website: http://vvenkatesh.com "currently down"

Social Media Use Survey

1. Consent Form

You are invited to take part in a research study about social media use by undergraduate students and college teachers. The researcher is inviting undergraduate students and college teachers to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Xiangyun Huang, who is a doctoral student at Walden University.

Background Information:
The purpose of this study is to examine which factors might influence use of social media by undergraduate students and college teachers. Possible factors include performance expectancy (using social media is useful or not), effort expectancy (using social media is easy or difficult), social influence (opinions of people around you), facilitating conditions (resources needed to use social media), hedonic motivation (using social media is enjoyable or not), and social media use habit.

Procedures:
If you agree to be in this study, you will be asked to:
- answer survey questions online.
- submit the survey answer according to the survey link.

Time for participation:
It will take 5 to 10 minutes to complete the survey.

Here are some sample questions. For each question there is a statement, and you will be asked to select one choice out of five choices: strongly agree, agree, not sure, disagree, and strongly disagree.

- I have the resources necessary to use social media.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

- The use of social media has become a habit for me.

□strongly agree

☐agree

☐not sure

☐disagree

☐strongly disagree

Voluntary Nature of the Study:

This study is voluntary. You are free to accept or turn down the invitation. No one at South China University of Technology/Guangzhou Panyu Polytechnic will treat you differently if you decide not to be in the study. If you decide to be in the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as reminding you some unpleasant experiences in using social media if there is any. Being in this study would not pose risk to your safety or wellbeing.

Individual participants could reflect on their use of social media. And they could understand basic data collection steps used by researchers in the U.S., which might benefit them when they do their own studies in China. This study could help understand perception and use of social media by undergraduate students and teachers, and thus promote application of new technologies, social media in this case, in educational system and contribute to educational innovation.

Payment:

There is none.

Privacy:

Reports coming out of this study will not share the identities of individual participants. Details that might identify participants, such as the location of the study, also will not be shared. Even the researcher will not know who you are. The researcher will not use your personal information for any purpose outside of this research project. Data will be kept secure by password protection and data encryption. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:

If you have questions, you may contact the researcher via phone number: 8613611455024 or email: xiangyun.huang@waldenu.edu. If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at my university at 01-612-312-1210. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records.

Obtaining Your Consent

If you feel you understand the study well enough to make a decision about it, please indicate your consent by returning a completed survey. To protect your privacy, no consent signature is requested.

2. Demographics

1. Which university are you from?
   □University A
   □University B

2. Are you a student or a teacher?
   □Student
   □Teacher

3. When did you first start using social media?
   □less than 1 year
   □1-3 years
   □4-5 years
   □6-8 years
   □more than 8 years

4. How did you know about the first social media platform you used?
   □From friends or family members
   □From high school, university, or other working places
   □From Internet surfing
   □From advertisement
   □From other sources

5. Please indicate your gender.
   □Female
   □Male

6. Please indicate your age group.

□ 18-23

□24-30

□31-40

□40-50

□Over 50

3. Social Media Acceptance and Use

Note:
1. Social media here includes WeChat, Weibo, QQ, school forum, and online forums other than school forums such as Renren, Tianya, and etc.

2. For each Likert item, there are five options: strongly agree, agree, not sure, disagree, and strongly disagree. Please select the most appropriate one.

Performance Expectancy
1. I find social media useful in my daily life.

    □strongly agree

    □agree

    □not sure

    □disagree

    □strongly disagree

2. Using social media helps me accomplish things more quickly.

    □strongly agree

    □agree

    □not sure

    □disagree

    □strongly disagree

3. Using social media increases my productivity.

    □strongly agree

    □agree

    □not sure

    □disagree

    □strongly disagree

Effort Expectancy
1. Learning how to use social media is easy for me.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

2. My interaction with social media is clear and understandable.

   □strongly agree

   □agree

   □not sure

   □disagree

   □strongly disagree

3. I find social media easy to use.

   □strongly agree

   □agree

   □not sure

   □disagree

   □strongly disagree

4. It is easy for me to become skillful at using social media.

   □strongly agree

   □agree

   □not sure

   □disagree

   □strongly disagree

Social Influence

1. People who are important to me think that I should use social media.

   □strongly agree

   □agree

   □not sure

   □disagree

   □strongly disagree

2. People who influence my behavior think that I should use social media

   □strongly agree

   □agree

□not sure

□disagree

□strongly disagree

3. People whose opinions that I value prefer that I use social media.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

Facilitating Conditions

1. I have the resources necessary to use social media.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

2. I have the knowledge necessary to use social media.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

3. Social media is compatible with other technologies I use.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

4. I can get help from others when I have difficulties using social media.

□strongly agree

□agree

□not sure

□disagree

□strongly disagree

Hedonic Motivation

1. Using social media is fun.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

2. Using social media is enjoyable.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

3. Using social media is very entertaining.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

Habit

1. The use of social media has become a habit for me.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

2. I am addicted to using social media.
   □strongly agree
   □agree
   □not sure
   □disagree

□strongly disagree

3. I must use social media.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

Behavioral Intention
1. I intend to continue using social media in the future.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

2. I will always try to use social media in my daily life.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

3. I plan to continue to use social media frequently.
   □strongly agree
   □agree
   □not sure
   □disagree
   □strongly disagree

Use
Please choose your usage frequency for each of the following:
1. WeChat
   □Very frequently
   □Frequently
   □Medium

□Not frequently
□Seldom

2. Weibo
   □Very frequently
   □Frequently
   □Medium
   □Not frequently
   □Seldom

3. QQ
   □Very frequently
   □Frequently
   □Medium
   □Not frequently
   □Seldom

4. School forum
   □Very frequently
   □Frequently
   □Medium
   □Not frequently
   □Seldom

5. Online forums other than school forum such as Renren, Tianya, and etc.
   □Very frequently
   □Frequently
   □Medium
   □Not frequently
   □Seldom

Appendix C: Survey Questionnaire in Chinese

社交媒体使用问卷调查

4. 知情同意

现邀请您参与一个关于大学学生和教师使用社交媒体的调查研究。研究者邀请大学学生和老师完成一份网上问卷调查。该知情同意书是"知情同意"过程中的一个部分，目的是让您了解该调查研究，并决定是否参与。

该调查研究的研究者名叫黄湘云，是Walden大学的教育学博士生。

背景介绍：

该研究的目的是确认哪些因素可能会影响大学学生和教师对社交媒体的使用。可能的因素包括：效果期望（使用社交媒体是否有用），努力期望（使用社交媒体是否困难），社会影响（周围人对社交媒体的观点），便利条件（使用社交媒体的工具和条件），快乐动机（使用社交媒体是否令人愉快），以及使用社交媒体的习惯。

回答过程：

如您同意参与，您将要完成以下事项
● 回答网上调查问卷
● 完成回答后选择提交

回答时间：

完成该调查问卷大约需要五到十分钟。

以下是调查问卷中的样题。每道题目都是一句陈述，您需要从五个选项中选出最适合的那一个。五个选项分别是：非常同意，同意，不确定，不同意，非常不同意。
● 样题 1：我具有使用社交媒体所需的资源和条件。
□ 非常同意
□ 同意
□ 不确定
□ 不同意
□ 非常不同意

● 样题 2：使用社交媒体已成为我的一种习惯。
□ 非常同意
□ 同意
□ 不确定

☐ 不同意

☐ 非常不同意

自愿性原则：

该调查为自愿参与。您可自由决定参与或拒绝。如您拒绝参与该调查，您所在学校的任何人都不会对您区别对待。如您现在决定参与，也可在之后改变想法，并在任何时间退出。

该调查的好处与可能的风险：

参与该调查研究有可能会引起轻微不适，这些轻微不适在日常生活中也可能经历。比如说在回答问卷过程中您可能会想起使用社交媒体的不愉快经历（如果有的话）。但是该调查不会威胁您的安全和健康。

个人被调查者可在回答问卷过程中反思社交媒体的使用。另外，他们也可借此了解美国大学调查研究的基本流程，并在今后的学习和研究中借鉴参考。对整个社会来说，该调查研究可加深对大学学生和教师使用社交媒体的了解，从而促进科技（此研究中指社交媒体）在教育系统中的应用，以此带动教育创新。

酬劳：

该研究不设酬劳，敬请谅解。

隐私：

该调查的报告不会包含被调查者的身份信息。其他有可能泄露被调查者身份的细节，比如调查地点，也不会出现在报告中。由于是匿名问卷，即使是调查者本人也不会知悉您的身份。研究者不会在该研究项目之外使用您的个人信息。调查结果会使用密码及数据加密措施保护。根据Walden大学的要求，调查数据将至少保存五年。

联系方式：

如有任何问题，您可以联系研究者。电话：13611455024。Email: xiangyun.huang@waldenu.edu。如您想私下了解被调查者的权利，您可致电Walden大学的研究参与者办公室，电话01-612-312-1210。Walden大学对该研究的批准号为：，有效日期为：

请打印或保存该知情同意书以便您日后查阅。

知情同意：

如您认为您对该调查研究足够了解，并决定参与，请完成并点击上传问卷。为保护您的隐私，您不需要签名确认。

5. 基本信息

1. 您来自哪所大学?
   ☐大学A
   ☐大学B

2. 您是学生还是老师?
   ☐学生
   ☐老师

3. 从您最开始使用社交到现在有多久了?
   ☐不超过一年
   ☐1-3 年
   ☐4-5 年
   ☐6-8 年
   ☐超过8年

4. 您是怎样开始接触社交媒体的?
   ☐从家人朋友处得知
   ☐从学校或其它工作和学习地
   ☐从网上
   ☐从广告
   ☐从其它渠道

5. 您的性别.
   ☐女
   ☐男

6. 您的年龄.
   ☐ 18-23
   ☐24-30
   ☐31-40
   ☐40-50
   ☐50以上

6. 社交媒体的接受和使用

备注：

1. 该问卷调查的每个李克特项（Likert item）都有五个选项供被调查者选择：非常同意，同意，不确定，不同意，非常不同意。

2. 社交媒体包括微信，微博，QQ，校园论坛，以及校园论坛外的其他网上论坛和社区如人人, 天涯等。

效果期望

1. 我认为社交媒体在我的日常生活中有用处。

   ☐非常同意

   ☐同意

   ☐不确定

   ☐不同意

   ☐非常不同意

2. 使用社交媒体使我更快地完成任务。

   ☐非常同意

   ☐同意

   ☐不确定

   ☐不同意

   ☐非常不同意

3. 使用社交媒体使我做事效率更高。

   ☐非常同意

   ☐同意

   ☐不确定

   ☐不同意

   ☐非常不同意

努力期望

1. 学习如何使用社交媒体对我来说很容易。

   ☐非常同意

   ☐同意

   ☐不确定

☐不同意

☐非常不同意

2. 我与社交媒体的互动是清晰明了，容易理解的。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

3. 我认为使用社交媒体很简单。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

4. 从开始接触到熟练使用社交媒体对我来说是个轻松的过程。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

社会影响

1. 对我来说很重要的人都认为我应该使用社交媒体。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

2. 能够影响我行为的人都认为我应该使用社交媒体。

☐非常同意

□同意
□不确定
□不同意
□非常不同意

3. 我重视他们观点的那些人都希望我使用社交媒体。
□非常同意
□同意
□不确定
□不同意
□非常不同意

便利条件
1. 我具有使用社交媒体所需的资源和条件。
□非常同意
□同意
□不确定
□不同意
□非常不同意

2. 我具有使用社交媒体所需的知识。
□非常同意
□同意
□不确定
□不同意
□非常不同意

3. 社交媒体和我正在使用的其他技术和工具是兼容的。
□非常同意
□同意
□不确定
□不同意
□非常不同意

4. 当我使用社交媒体出现困难时，我能获得帮助。
   ☐非常同意
   ☐同意
   ☐不确定
   ☐不同意
   ☐非常不同意

快乐动机
1. 使用社交媒体很有趣。
   ☐非常同意
   ☐同意
   ☐不确定
   ☐不同意
   ☐非常不同意

2. 使用社交媒体令人感到快乐。
   ☐非常同意
   ☐同意
   ☐不确定
   ☐不同意
   ☐非常不同意

3. 使用社交媒体是非常愉快的享受。
   ☐非常同意
   ☐同意
   ☐不确定
   ☐不同意
   ☐非常不同意

习惯
1. 使用社交媒体已成为我的一种习惯。
   ☐非常同意
   ☐同意

☐不确定

☐不同意

☐非常不同意

2. 我对社交媒体上瘾了。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

3. 社交媒体对我来说是必须品。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

行为意向

1. 我将来也会继续使用社交媒体。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

2. 我总是会设法在日常生活中使用社交媒体。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

3. 我打算继续频繁使用社交媒体。

☐非常同意

☐同意

☐不确定

☐不同意

☐非常不同意

使用行为

请选择以下各项社交媒体的使用频率，选项为：非常频繁，频繁，一般，不频繁，很少使用

1. 微信

☐非常频繁

☐频繁

☐一般

☐不频繁

☐很少使用

2. 微博

☐非常频繁

☐频繁

☐一般

☐不频繁

☐很少使用

3. QQ

☐非常频繁

☐频繁

☐一般

☐不频繁

☐很少使用

4. 校园论坛

☐非常频繁

☐频繁

☐一般

□不频繁

□很少使用

5. 校园论坛以外的网上论坛和社区如人人, 天涯等

□非常频繁

□频繁

□一般

□不频繁

□很少使用

Appendix D: Inviting Message Put with Survey Link (English)

Dear students and teachers,

The following is a survey link. The survey is to collect data for a social media study conducted by a doctoral candidate at Walden University. You can open the link to find detailed information about the survey. Participants should be undergraduate students or full-time teachers in our university. It will take about 5 to 10 minutes to finish the survey. Your participation in the questionnaire would be appreciated by the researcher. Please feel free to send the survey link to your friends or colleagues in the university whether you choose to answer the questionnaire or not. Thank you!

Appendix E: Inviting Message Put with Survey Link (Chinese)

各位老师各位同学：

以下是一个调查问卷的链接，该调查是关于社交媒体的使用情况。搜集数据的是

Walden大学的一位博士研究生。详细说明请打开链接查看。请注意问卷的参与者

必须为我校本科生或全职教师。回答问卷大约需要五到十分钟。如您能回答问卷，

研究者将不胜感激。不管您回答与否，都恳请您将此链接发给您的朋友或同事。谢

谢大家！

Appendix F: Consent Form in English

CONSENT FORM

You are invited to take part in a research study about social media use by undergraduate students and college teachers. The researcher is inviting undergraduate students and college teachers to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Xiangyun Huang, who is a doctoral student at Walden University.

Background Information:
The purpose of this study is to examine which factors might influence use of social media by undergraduate students and college teachers. Possible factors include performance expectancy (using social media is useful or not), effort expectancy (using social media is easy or difficult), social influence (opinions of people around you), facilitating conditions (resources needed to use social media), hedonic motivation (using social media is enjoyable or not), and social media use habit.

Procedures:
If you agree to be in this study, you will be asked to:
- answer survey questions online.
- submit the survey answer according to the survey link.

Time for participation:
It will take 5 to 10 minutes to complete the survey.

Here are some sample questions. For each question there is a statement, and you will be asked to select one choice out of five choices: strongly agree, agree, not sure, disagree, strongly disagree.
- I have the resources necessary to use social media.

  □strongly agree

  □agree

  □neutral/uncertain

  □disagree

  □strongly disagree

- The use of social media has become a habit for me.

  □strongly agree

  □agree

  □neutral/uncertain

□disagree
□strongly disagree

Voluntary Nature of the Study:
This study is voluntary. You are free to accept or turn down the invitation. No one at South China University of Technology/Guangzhou Panyu Polytechnic will treat you differently if you decide not to be in the study. If you decide to be in the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as reminding you some unpleasant experiences in using social media if there is any. Being in this study would not pose risk to your safety or wellbeing.

Individual participants could reflect on their use of social media. And they could understand basic data collection steps used by researchers in the U.S., which might benefit them when they do their own studies in China. This study could help understand perception and use of social media by undergraduate students and teachers, and thus promote application of new technologies, social media in this case, in educational system and contribute to educational innovation.

Payment:
There is none.

Privacy:
Reports coming out of this study will not share the identities of individual participants. Details that might identify participants, such as the location of the study, also will not be shared. Even the researcher will not know who you are. The researcher will not use your personal information for any purpose outside of this research project. Data will be kept secure by password protection and data encryption. Data will be kept for a period of at least 5 years, as required by the university.

Contacts and Questions:
If you have questions, you may contact the researcher via phone number: 8613611455024 or email: xiangyun.huang@waldenu.edu. If you want to talk privately about your rights as a participant, you can call the Research Participant Advocate at my university at 01-612-312-1210. Walden University's approval number for this study is **IRB will enter approval number here** and it expires on **IRB will enter expiration date.**

Please print or save this consent form for your records.

Obtaining Your Consent

If you feel you understand the study well enough to make a decision about it, please indicate your consent by returning a completed survey. To protect your privacy, no consent signature is requested.

Appendix G: Consent Form in Chinese

知情同意书

现邀请您参与一个关于大学学生和教师使用社交媒体的调查研究。研究者邀请大学学生和老师完成一份网上问卷调查。该知情同意书是"知情同意"过程中的一个部分，目的是让您了解该调查研究，并决定是否参与。

该调查研究的研究者名叫黄湘云，是Walden大学的教育学博士生。

背景介绍：

该研究的目的是确认哪些因素可能会影响大学学生和教师对社交媒体的使用。可能的因素包括：效果期望（使用社交媒体是否有用），努力期望（使用社交媒体是否困难），社会影响（周围人对社交媒体的观点），便利条件（使用社交媒体的工具和条件），快乐动机（使用社交媒体是否令人愉快），以及使用社交媒体的习惯。

回答过程：

如您同意参与，您将要完成以下事项
- 回答网上调查问卷
- 完成回答后选择提交

回答时间：

完成该调查问卷大约需要五到十分钟。

以下是调查问卷中的样题。每道题目都是一句陈述，您需要从五个选项中选出最适合的那一个。五个选项分别是：非常同意，同意，不确定，不同意，非常不同意。
- 样题 1：我具有使用社交媒体所需的资源和条件。
  ☐ 非常同意
  ☐ 同意
  ☐ 不确定
  ☐ 不同意
  ☐ 非常不同意

- 样题 2：使用社交媒体已成为我的一种习惯。
  ☐ 非常同意
  ☐ 同意
  ☐ 不确定
  ☐ 不同意
  ☐ 非常不同意

自愿性原则：

　　　　该调查为自愿参与。您可自由决定参与或拒绝。如您拒绝参与该调查，您所在学校的任何人都不会对您区别对待。如您现在决定参与，也可在之后改变想法，并在任何时间退出。

该调查的好处与可能的风险：

　　　　参与该调查研究有可能会引起轻微不适，这些轻微不适在日常生活中也可能经历。比如说在回答问卷过程中您可能会想起使用社交媒体的不愉快经历（如果有的话）。但是该调查不会威胁您的安全和健康。

　　　　个人被调查者可在回答问卷过程中反思社交媒体的使用。另外，他们也可借此了解美国大学调查研究的基本流程，并在今后的学习和研究中借鉴参考。对整个社会来说，该调查研究可加深对大学学生和教师使用社交媒体的了解，从而促进科技（此研究中指社交媒体）在教育系统中的应用，以此带动教育创新。

酬劳：

　　　　该研究不设酬劳，敬请谅解。

隐私：

　　　该调查的报告不会包含被调查者的身份信息。其他有可能泄露被调查者身份的细节，比如调查地点，也不会出现在报告中。由于是匿名问卷，即使是调查者本人也不会知悉您的身份。研究者不会在该研究项目之外使用您的个人信息。调查结果会使用密码及数据加密措施保护。根据Walden大学的要求，调查数据将至少保存五年。

联系方式：

　　　　如有任何问题，您可以联系研究者。电话：13611455024。Email: xiangyun.huang@waldenu.edu。如您想私下了解被调查者的权利，您可致电Walden大学的研究参与者办公室，电话01-612-312-1210。Walden大学对该研究的批准号为：，有效日期为：

请打印或保存该知情同意书以便您日后查阅。

知情同意：

　　　　如您认为您对该调查研究足够了解，并决定参与，请完成并点击上传问卷。为保护您的隐私，您不需要签名确认。