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Abstract: Along with the development of information communication technology, there are more and more location sharing services on social networking platforms. Although China has the largest number of Internet users in the world, only recently users have started using location sharing services in China. In this paper, we aimed to investigate user adoption of location sharing services on social networking platforms in China. Based on UTAUT, a research model with five research hypotheses was proposed. We tested the model by analyzingcollected survey data from 200 location sharing usersin terms of structural equation modeling method. Three hypotheses were positively significant supported, while the other two hypotheses were rejected in this research. The result indicated that the behavior intention of location sharing on social networks was positively and significantly impacted by effort expectancy, social influence and usages of the location sharing services.

Keywords: location sharing services, social networking platforms, check-in, privacy concern

1. INTRODUCTION

Along with the development of information communication technology, users are enabled to post photos and update status on social networks platforms regardless of time and location. In recent years, location sharing service are getting more and more popular in China [1]. Unlike the service of automated tracking [2], users can choose whether to attach their location information with the messages or photos on social networking platforms. Weibo (Twitter-alike services in China) andWeChat (one of the most popular instant messaging services in China) are the two of most popular social networking services in China. According to the annual report from China Internet Network Information Center 2013[3], the users of Weibo reached a penetration rate of 43.6% and the number of WeChat users reached 65% of the netizens at the end of 2013 in China. The usage of location sharing services has been studied in developed countries in the last few years [4] [5] [6]. For example, the potential factors which affect peoples' intention to use the location sharing application Foursquarehas been identified[7][8]. Privacy concern seemed to be anobstacle in sharing real-time location information[9]. Zhu et al. have investigated location sharing behavior in the perspective of the social benefits counteract privacy concerns [10]. A comparative studyon the location sharing privacy performances between US and China has been conductedbyLin et al. [11]. The goal of this research is to study what factors would influence users`adoption of location sharing services on social networking platforms (e.g., Weibo and WeChat) in China. In addition to factors in the UTAUT model, the usages of location share services and the privacy concern has been suggested as the factors that would influence users' adoption of location sharing services.

The remainder of this paper is organized as follows:the theoretical background is provided in Section 2. Section 3 proposes the research model and hypothesis. This is followed by the illustration of the research method and result in section 4. The discussion of the findings is made in section5. In section 6, we conclude this research.

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2. THEORETICAL BACKGROUND

2.1 USAGES OF LOCATION SHARING SERVICES ON SOCIAL NETWORKINGPLATFORMS

There were many researches have investigated why users share their location information on the application foursquare in developed countries [7] [8] [12]. Scellatoet al. suggested that coordination and social purpose wereamong the reasons for people to share their locationinformation [12]. Lindqvist et al. has quantitatively probed the usages of the location sharing application foursquare[7].The questions in the survey were organized into five factorsusing the principal components method with Varimax rotation. The five usages of the location sharing application foursquare[7]were largely confirmed by Crameret al. [8]through interviews.The five usages are listed as follows: badges and fun, social connections,place discovery, keeping track of places and game with yourself. However, several questions are not suitable in China, such as the first factor "badges and fun" and "game with yourself", which has been removedin the research because location sharers in China`s social network cannot earn badges. Finally, 4items, which measuredtheusages of social connection, place discovery, and keeping track of places, were extracted to measure the variable of usage of the location sharing in our research.

2.2 PRIVACY CONCERN

Many people did not share their location information on social networks because they thought it was not safe or location information was too private to be exposed. Findings of Lindqvist et al. showed that some people worried about receiving the spam after sharing location [7]. Additionally, privacy issue can also be surveillance and control of impression management andinterpersonal privacy[13].

To measure the online privacy concern, the scale of Internet user`s information privacy concerns (IUIPC) has been widely used[14] [15]. There were three factors included in IUIPC, listing as: collection, control, and awareness[16]. The firstfactorcollection measuredthe willingness to provide personal informationwhen online companies were asking for personal information, there was usually a balance of benefits and risks. The second factor,calledcontrol, indicated that consumers wanted to have the right to exercise control over the personal information to preventthemfrom unwanted privacy invasion. Awareness means the degree to which a person concerns about the awareness of how an organization will use his personal information. In this paper, we focus on users' intention to sharing location information on the social network. The mainly privacy issues involved in location sharing services were not only from online companies, the privacy concern were various, such as being stalked by strangers[7], Therefore, the factor "collection" was removed in this research. The other two factors had also been adjusted to fit our research on the context of measuring privacy concern in location sharing services.

2.3 UTAUT

Among the theoretical models to investigate the acceptance of information, the TAM (Technology Acceptance Model) [17]was the most influential one. However, the UTAUT (Unified Theory of Acceptance and Use of Technology)model [18], which was developed from the TAM model, wasbetter designed to account for 70% of variancein usage intention. Inorderto simplify the research model of this study, we only focus on the factors to affect behavior intention. In UTAUT, the three core determinants that influence behavior intention were performance expectancy (PE), effort expectancy (EE), and social influence (SI). Performance expectancy referred to the degree to which an individual believes that using thesystem will help him or her to attain gains in job[18].Effort expectancy was identified as the degree of ease in the use of the technology [18]. Social influence was defined as the influence of important others on theadoption of technology system [18].In this research, the determinant social influence was adjusted according to the social connecting factor of the usages of the location sharing services identified byLindqvist et al[7]. And there were four regulated variables as gender, age, experience and voluntariness of use.

3. RESEARCH MODEL AND HYPOTHESES

3.1 The research model

In this research, in addition to some factors from UTAUT model, we proposed another two factors, which are usages of location sharing services and the privacy concern, to measure users' behavioral intention to use location sharing services in China. The model is illustrated in Fig.1.

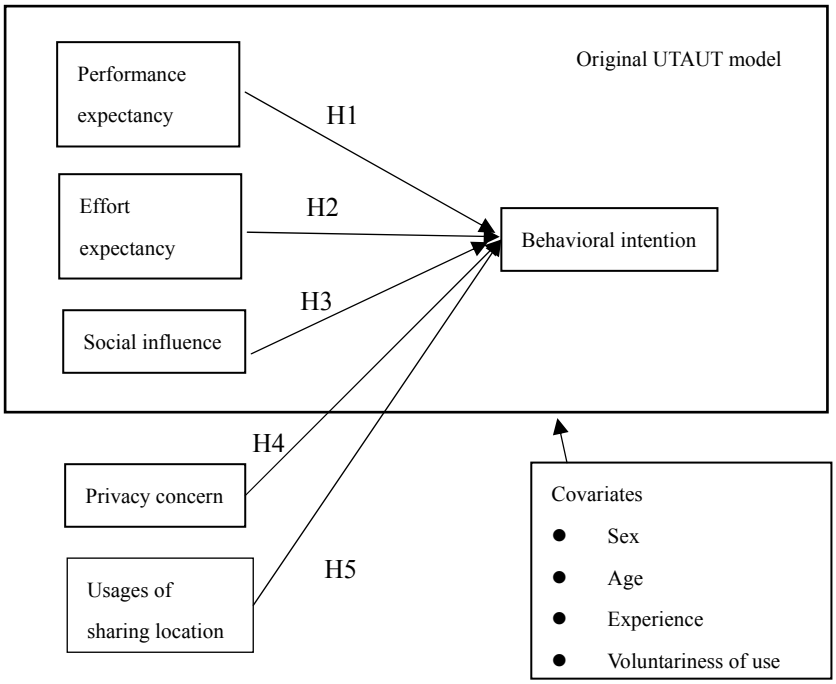

Figure1. The research model

3.2 Research hypotheses

In the context of this study. Performance expectancy referred tothe degree to which an individual believes that using the location sharing services will help him or her to attain improvement in the use of socialnetworks, such as, more efficient to contact friends, more self-expression[18].. Effort expectancy wasdefined as the degree of ease in the use of location sharing services on social networks [18]. Social influence was defined as the influence of important others on the users` adoption of location sharingsystem [18]. According to UTAUT model, the behavior intention of a new information technology was directly and positively influenced byperformance expectancy, effort expectancy and social influence [18].Therefore, we proposed the hypotheses as follows:

H 1: performance expectancy will have a positive influence on behavior intention.

H2: effort expectancy will have a positive influence on behavior intention.

H3: social influence will have a positive influence on behavior intention.

Many people do not check-in because they have privacy concerns about inappropriate personal information disclosure[7] [13]. Therefore, the hypothesis was proposed as follows:

H4: privacy concern will have a negative influence on behavior intention.

Usages of location sharing wasextracted[7] and defined as why people use location sharing services. Social connection, place discovery, and keeping track of places were all the reasons for people to share location. So that the hypothesis was proposed as follows:

H5: usages of sharing location will have a positive influence on behavior intention.

4. An empirical study

4.1 Instrument Development

The instrument used in the survey was all based on the validated instrument measures from previous researches. According to the context of this research, we made some adjustments to the original instrument. The finally instrument and literature referred were showed in appendix†. We used seven point Likert scales to examine participants` responses to all items in the survey, with 1 represent strongly disagree and 7 represent strongly agree.

4.2 Samples

We conducted the survey in China.The survey was distributed in term of Internet-based questionnaire individually from December 15 2014 to January 20 2015. As a result, 235 completed questionnaires were collected from the users of location sharing services, among which 200 responses (85%) were valid questionnaires.The participants were consisted of 52.5% female and 57.5% male. Their age was concentrate, with 93.5% were during 18 to 25 years old. Most of them (57.5%) thought they were familiar with the use of commuters or smart mobile phones, 28.5% of them were especially familiar, and 14% participants thought their qualification in operating electronic equipment was ordinary.

4.3 Reliability and validity

We used seven point Likertscales to collect data to test the proposed hypotheses. As for the reliability of the scales, if a scale`s Cronbach`s $\alpha > 0.7$, the scale can be said reliable [19]. As the result showed in table1, the Cronbach`s αwere all above 0.7, the scales used were all reliable. Besides, the convergent validity was examined. The standardized loadings were all above 0.5 with the largest one with the social of 0.91.

Table 1.Reliability Statistics

Scale	Cronbach's Alpha	N of Items
ULS	.740	4
PE	.808	3
EE	.810	4
SI	.781	3
BI	.894	3
PC	.885	6

4.4 Descriptive Statistics

The means and standard deviations are listed in the table2.

Table2. Descriptive Statistics of variables

	N	Minimum	Maximum	Mean	Std. Deviation
ULS	200	1.00	7.00	3.5581	1.28360
PE	200	1.00	6.67	3.3670	1.34973
EE	200	1.00	7.00	4.9773	1.13750
SI	200	1.00	7.00	3.8653	1.28545
BI	200	1.00	7.00	3.8519	1.47031
PC	200	1.00	7.00	5.6414	1.03543
Valid N (listwise)	200				

†Appendix available at the following URL: http://pan.baidu.com/s/1c02bCpq

The scale of usages of location sharing services was consisted of three kinds of usages and the scale,while privacy concern was consisted of items from the perspective of control and awareness. The descriptive statisticsof these two scales were presented in the Table 3.

Table3. Descriptive Statistics

scale		Item	N	Minimum	Maximum	Mean	Std. Deviation
Usages of location sharing	Social connection	ULS1	200	1	7	4.21	1.699
		ULS2	200	1	7	2.63	1.471
	Place discovery	ULS3	200	1	7	3.33	1.715
	Keeping track of places	ULS4	200	1	7	4.07	1.932
Privacyconcern	Control	PC1	200	1	7	5.33	1.442
		PC2	200	1	7	5.77	1.165
		PC3	200	1	7	5.44	1.353
	Awareness	PC4	200	1	7	5.63	1.295
		PC5	200	1	7	5.91	1.114
		PC6	200	1	7	5.78	1.400
	Valid N (listwise)		200				

4.5 Hypotheses testing result

We tested the model using structural modeling (SEM). The CFI =0.92 (recommended > 0.9).Therefore, the measurement model was considered acceptable.TheTable 4showed regression weights and the results of the structural model were showed in Fig. 2. Effort expectancy positively and significantly influenced behavioral intention of location sharing (0.013<0.05), with a path coefficient of 0.69. Social influence positively and significantly influenced behavioral intention of location sharing, path coefficient was 0.29.Usages of location sharing have a positive and significance impact on behavioral intention of location sharing (0.024<0.05), with a path coefficient of 0.27. Performance expectancy and privacy concern have negative influence on behavioral intention and werenot significant (showed as dotted lines inFig. 2). Thus hypothesesH2, H3 and H5 weresupported. Hypotheses H1 and H4 were not supportedby the result of this research.

Table 4.Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P
BI<---PE	-.299	.205	-1.460	.144
BI<---SI	.763	.199	3.824	***
BI<---EE	.298	.120	2.472	.013
BI<---ULS	.336	.149	2.262	.024
BI<---PC	-.087	.101	-.858	.391

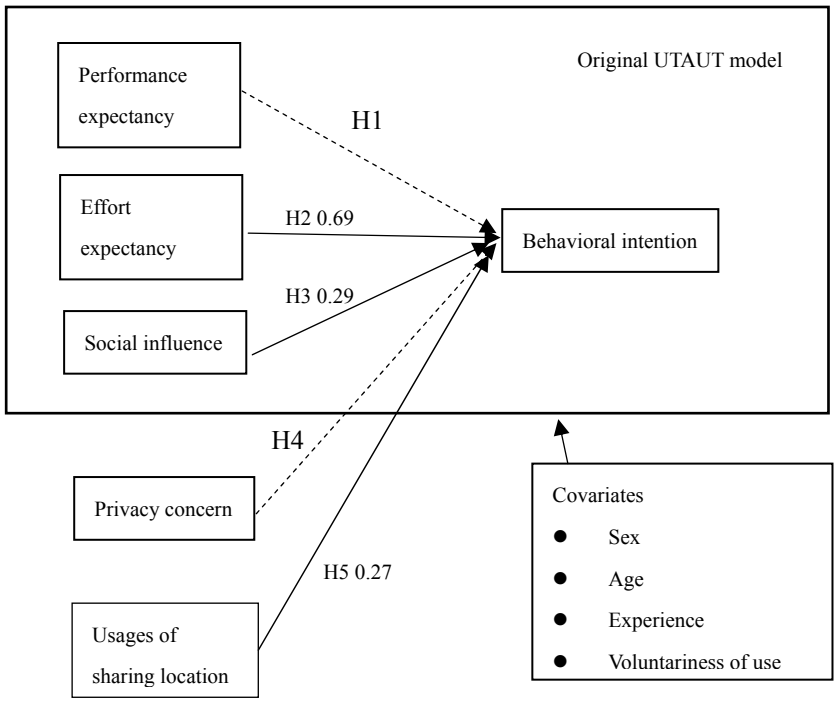

Figure2.Results of structural modeling

5. DISCUSSION

From the result of model testing, it can be seen that two hypotheses were not supported. Firstly, performance expectancy did not significantly influencedbehavior intension of sharing location on social network platforms. In the previous study of the UTAUT model, the performance expectancy directly and significantly influenced behavior intension [18].Performance expectancyreferred to the degree to which an individual believes that using the location sharing services will help him or her to attain improvement in the use of social networks, such as, more efficient to contact friends, more self-expression. Maybe we can explain that sharing location on social networks are not perceived as a way to enhance performance. The result of Cramer also indicated that check–in behavior was not always motivated by the desire to enhance ones self-presentation [8]. Secondly, the privacy concern did not have a significantly influence on behavior intension of sharing location on social network platforms. From the previous studies about location sharing privacy, many studies [7] [8] [20] have emphasized the importance of privacy issuesin location sharing services. We have observed that the mean value of the privacy concern using seven point Likertscale was relatively high, which have proved that the privacy concern was high among the users of location sharing services. However, there are many ways for users to manage privacy, for example, the users can set the location information not be seem by inappropriate people. Tochet al. indicated that locations had an inherent privacy characteristic [20]. Different locations lead to different levels of privacy concern, such as home and a restaurant. We had not classified the differences on location in this study. We plan to consider this aspect in the future research.

Furthermore, from the data analysis of the model, the behavior intention of sharing location on social networks was positively and significantly impacted by effort expectancy, social influence and usages of the location sharing services.Effort expectancy and social influence were the variables in the original UTAUT model[18]. Effort expectancy means that users tend to use location sharing services on social networks when the system is easy to use. Social influence indicate that the adoption of location sharing is influence by other people to some extent, this confirmed the findings byScellato et al.[12] that social purpose wereamong the reasons for

people to share their location information.Usages of the location sharing servicesextracted in Lindqvist,et al. [7], Crameret al. [8] and Scellato et al.[12] are the direct reasons for users to sharing location on social networks.

6. IMPLICATIONS

6.1 Theoretical implications

From a theoretical perspective, this study investigated users' adoption of location sharing services on social networking platforms in China.It contributed to the current literature on users' adoption of location sharing services. We adapted the Unified Theory of Acceptance and Use of Technology model to the location sharing services on social networks. The findings indicated that performance expectancy in the original UTAUT model dose not significant affect behavior intention of sharing location. Additionally, the usages of the location sharing investigated in the previous study of Lindqvist et al.[7]were the factors positively and significantly influence behavior intention of location sharing.

6.2 Managerial implications

With increasing social networks integrated location sharing services, the geographicposition has become the new element in the online social. There are some managerial implications showed by our study to the location sharing service developers and marketing personnel. Firstly, among the three factors, effort expectancy have the highest path coefficient, that is to say, the ease of using the location sharing services largely matters. Thus, thelocation sharing service developers should make this service easy to use and easy to be understood by users. Secondly, social influence is also an important factor of location sharing services on the social networks, which means the location sharing have social effect and tend to be popular among social groups online.The marketing personal can better promote location based services by taking this research finding into account. Last but not least, the usages of the location sharing service are the direct reasons why people check-in, for example, when somebody arrive in an interesting place, if he want to inform his friends, he may update his social network state with his location information appended.

7. CONCLUSIONS

There are more and more location sharing services on social networking platforms. Users are able to share location information with their smart phones, but not every people like to post their location information on social networking platforms.The adoption of location sharing has not been investigated much in previous studies. This researchhas exploredthepotential factors influence location sharing behaviour intention.Five research hypotheses were proposed in the study, of which three researchhypotheses were positively significant supported and two researchhypotheses were rejected. Effort expectancy, social influence and usages of location sharing services were proved to have positive and significant influence on location sharing intention,

Therewerealso some limitations in this study. Firstly, the age group of our study was relatively young. They can represent the users of location sharing to some extent, but they cannot represent the entire population in China. Furthermore, besides the factors in our structural model, there may have other factorsaffecting users' adoption of location based services. In addition, some mediating factors (e.g. gender and age) in additional to the current research model mayprovide fresh insights and offer new directions for future research.

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