TSINGHUA SCIENCE AND TECHNOLOGY
ISSN 1007-0214 15/16 pp235-245
Volume 15, Number 2, April 2010

Empirical Research on User Acceptance of Mobile Searches*

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Abstract: The mobile search, a combination of a web search engine and a mobile communication system, is viewed as the most influential application in the 3G era. Therefore, mobile search service providers are eager to know which factors most influence user acceptance of mobile searches. Based on the characteristics of mobile searches and a review of previous information technology acceptance research, this study integrates the task technology fit model and the unified theory of acceptance and use of technology model to develop a mobile search acceptance model and empirically tests this model. This study finds that, for mobile searches, the performance expectancy, social influence, and perceived cost all significantly influence use intention and the performance expectancy increases with the increasing user's experience and higher task-technology fit degree. The effort expectancy is found to not affect the use intention of mobile searches and the users' gender does not have a significant moderating effect on the use intention. The results are then used to develop suggestions for mobile search providers to promote their application and development.

Key words: mobile search; unified theory of acceptance and use of technology model; task technology fit model

Introduction

The number of mobile phone subscribers in China reached nearly 500 million by the end of May, 2007, which means that China has become the world's largest mobile communications market. Therefore, Chinese mobile commerce is a promising market. Of the various kinds of mobile commerce applications, mobile search, the combination of a web search engine and a mobile communications technology, is viewed as a killer application in the 3G era. Mobile searches are realized through mobile terminals to obtain the required information using short message service (SMS), wireless application protocol (WAP), automated voice response, and other specific search methods. The core of mobile search services is the combining of the search engine and a mobile device to generate a search result which satisfies both the mobile terminals' characteristics and the customers' needs. The number of mobile searches are rapidly increasing. However, it is not very clear what factors influence user acceptance of the mobile search; thus, more research on mobile search acceptance models is needed.

Information technology adoption has been an ongoing concern in information system (IS) research with many fruitful results, such as the technology acceptance model (TAM)[1], the task-technology fit (TTF) model[2], and the unified theory of acceptance and use of technology (UTAUT) model[3]. However, all these models have flaws. The TAM neglects social impact, gender, age, and other factors which can influence user preferences in using the technology. The UTAUT model adds these factors and is known to be a more

Received: 2009-01-27; revised: 2010-01-20

* Supported by the National Natural Science Foundation of China (Nos. 70831003, 70890081, and 70772022) and the MOE Project of Key Research Institute of Humanity and Social Sciences at Universities (06JJD630014)

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comprehensive model. However, the UTAUT model fails to take technological elements into consideration like in the TTF model. Therefore, an improved IT adoption model could combine the UTAUT and TTF models.

This study analyzes practitioner interests to know the determinants of user mobile search acceptance behavior and fills in the gaps caused by defects in current IT adoption models. This paper first reviews existing technology acceptance models, identifies their shortcomings, and presents a mobile search acceptance model which combines the TTF and UTAUT models. Then, the study analyzes the characteristics of mobile search behavior to identify factors affecting mobile search adoption to provide guidance to practitioners.

1 Literature Review

The research on IT adoption has two streams. One stream focuses on theoretical models based on user perceptions, attitudes, and beliefs. Among these models, the TAM is the most common with the UTAUT model as an extension of the TAM model. Another stream is the TTF model which focuses on the task-technology fit to IT utilization and performance impact. This section introduces these two streams of research and discusses the possibility of combining the UTAUT and TTF models.

Using the Theory of Reasoned Action (TRA), Davis et al.[1] developed the TAM, one of the most influential IT acceptance models, which is widely applied in studying individual adoption and acceptance of information systems. TAM eliminates the subjective norms which have no effect on intention and emphasizes the important role of perceived usefulness and perceived ease of use. The model assumes that perceived usefulness and perceived ease of use are the two main belief factors influencing use intention and behavior.

TAM had attracted wide attention in the IS field with many studies testing the cross-sample consistency of TAM in empirical studies. Some representative works include the empirical studies by Adams et al.[4] and Subramanian[5] and the controversy about the construct validity of TAM [6,7]. Many empirical studies and comparison with the results of similar models[8,9] have confirmed TAM's generality and reasonableness. TAM has gradually become the main model for information technology acceptance research. However, some have pointed out that the dimensions in TAM are too simple and lack completeness[9], with new requirements for theories and models.

After 1995, the emphasis of IT adoption research gradually shifted to the integration and amendment of theoretical models. In 1995, Taylor and Todd[9] compared the empirical results of TAM and the Theory of Planned Behavior model (TPB) and developed an integrated model containing the characteristics of both TAM and TPB. In 2003, Venkatesh et al.[3] compared eight prominent models for IT acceptance research and formulated a unified model called the UTAUT model, which integrates elements from across the eight models[3]. Since the UTAUT model makes up for the one-sidedness and narrow weaknesses of past models, UTAUT has been found to outperform the eight individual models (adjusted R^2 of 69 percent). The UTAUT model is shown in Fig. 1.

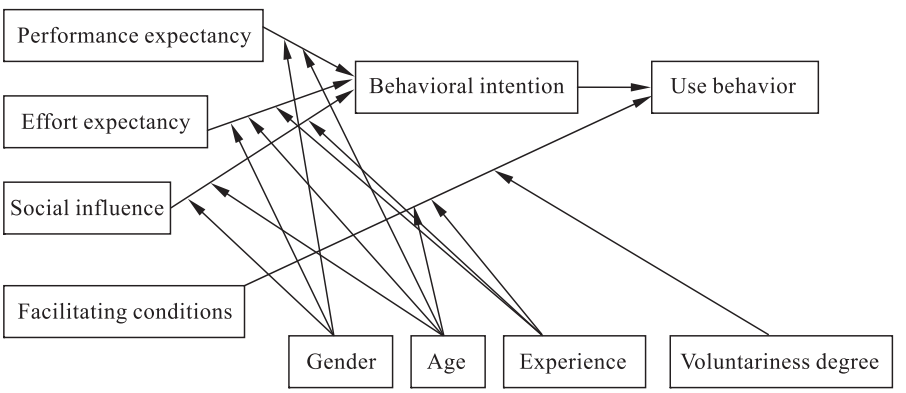


Fig. 1 Unified theory of acceptance and use of technology (UTAUT) model

The TTF model reflects the interactions between information technology and task demands[2]. The TTF model supposes that if and only if the functions of IT technology provided to users fit activities in which

users are engaged, the technology would be used. Rational and experienced users will choose tools that help them complete tasks and maximize net profits. If information technology cannot create enough advantages, it will not be used. The TTF model points out that the technology performance is rooted in the fit degree between technology and tasks, that is, the degree to which a technology assists an individual in performing his or her portfolio of tasks, as shown in Fig. 2.

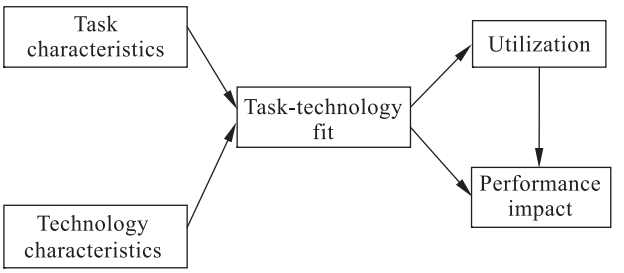


Fig. 2 Task-technology fit model

Dishaw and Strong[10] pointed out that the TTF model clearly identified task characteristics that were exactly the shortcoming of the TAM model but the TTF model did not explicitly contain the factor of attitudes to IT which was the core of the TAM model. Therefore, they added the merits of the TTF model to the TAM model and established an integrated TAM / TTF model, which contains both the factor of attitudes to IT and the factor of fit degree of IT functions and task characteristics.

However, this combination model still has some shortcomings. It does not include social influence, facilitating conditions, gender, and other factors that may affect the users use intention and their further use behavior. Since the UTAUT model is considered to be a more comprehensive model based on the TAM model, we believe that the combination of the UTAUT model and TTF model would more effectively predict the user mobile search acceptance behavior.

2 Research Model and Theoretical Hypotheses

Mobile search characteristics are integrated into an existing research model here to develop a new mobile search acceptance model.

2.1 Mobile search characteristics

Mobile searches combining the characteristics of web searches and mobility have the following unique merits.

(1) Users are moving when using mobile search services, with mobile searches often conducted when traveling, waiting for buses, or in the subway.

(2) The requirements of users are immediate. Users ask for the return of query results as soon as possible. If the search results take too long, the users will not have patience.

(3) The use of mobile searching is a private behavior. The mobile phone and other mobile terminals are generally for personal use, so the mobile search has the characteristic of privacy, especially with more personalized services.

(4) Mobile searches must be convenient. Due to the constraints of mobile terminals such as mobile phones, mobile searches require simplicity of operations and short response times.

(5) Mobile searches require that the returned results are precise, well matched, and in line with the users requirements.

(6) The use experience of mobile terminals and mobile Internet devices may influence the acceptance of the mobile search.

(7) Mobile search is a voluntary behavior which may be heavily influenced by family and friends.

(8) Users are sensitive to the cost of mobile searching. The major costs are the information services or Internet access charges, as well as the content download charges.

(9) The development of mobile search relies on cell phone functions, the development of WAP websites, and the coverage, bandwidth, and stability of the mobile communication network.

(10) The major users of mobile searches are 18-30 years old people.

2.2 Research model and hypotheses

These mobile search characteristics were used to develop a mobile search acceptance model and specific hypotheses. The model is mainly based on the TTF and UTAUT models. As discussed, the TTF model explicitly contains the task characteristics, which is the weakness of the UTAUT model, but it does not explicitly contain the effects of perception and attitude towards IT, which is the core of the UTAUT model. Therefore, these models were combined to get a more

comprehensive model which contains both the perceptions and attitudes towards IT and the fit degree of IT functions and characteristics of user tasks. This gives the integrated mobile search acceptance model shown in Fig. 3. The remainder of this section defines each of the constructs and provides theoretical justifications for the hypotheses.

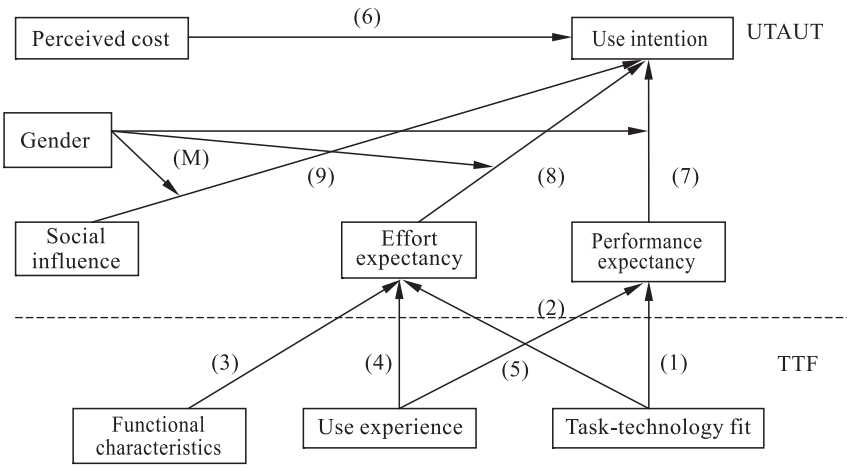


Fig. 3 Conceptual mobile search acceptance model

The TTF is the degree to which a technology assists an individual in performing his or her portfolio of tasks. More specifically, TTF is the correspondence between task requirements, individual abilities, and the functionality of the technology[2]. In the research of Yuan and Zheng[11], fit represented the interaction between the task and technology assessed by matching the functionality available in a tool with the anticipation of users regarding the functionality required to complete various tasks. Similar to the definition of Yuan and Zheng[11], this paper defines the task characteristics of mobile search as the users' expectancy about the functional characteristics of the mobile search. The functional characteristics of a mobile search are defined as the actual functional characteristics of the current mobile search. The task-technology fit of the mobile search is defined as the fit degree between the task characteristics and the functional characteristics of the mobile search.

Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. The construct of perceived usefulness in TAM pertains to the performance expectancy. Effort expectancy is defined as the degree of ease associated with the use of the system. Perceived ease of use in TAM captures the concept of effort expectancy[3]. The performance expectancy of the mobile search is defined here as the degree to which users believe that using the mobile search will improve the efficiency of searching for information and materials while the effort expectancy is defined as the ease which users associate with using the mobile search to find related information and materials.

The TTF degree is assumed to significantly influence performance expectancy and effort expectancy. This hypothesis is reasonable based on rational behavior theory as in the TAM and UTAUT models that a person assesses the benefits of an engaged action, expects to receive a certain result and then performs the action. According to the definition of task-technology fit, performance expectancy, and effort expectancy, if the mobile search functions fit well to the user's tasks, the user should be able to feel that the functions are easy to use and are useful for performing tasks, thus they will expect to improve their work efficiency. The study of Dishaw and Strong[10] found that the task-technology fit degree had a significant positive effect on perceived ease of use and also had a positive but not significant effect on perceived usefulness. Thus, we have the following hypotheses 1 and 2 for paths (1) and path (2) in Fig. 3.

H1: The task-technology fit degree of a mobile search has a positive effect on the individual performance expectancy for a mobile search.

H2: The task-technology fit degree of a mobile search has a positive effect on the individual effort expectancy for mobile search.

Effort expectancy should be determined partly by the functional characteristics of the mobile search. Dishaw and Strong[10] thought that tools with more functionality were likely to be harder to use, and their empirical results showed that tool functionality negatively influenced perceived ease of use. However, based on past research on the functional characteristics of mobile search, functional characteristics of mobile search make searches more convenient for users, such as a strong search engine and personalized results. Thus, the functional characteristics may make users feel that their mobile searches are easier. Therefore, we have the following H3 as path (3).

H3: The functional characteristics of a mobile search have a positive effect on individual effort expectancy for a mobile search.

The use experience of a mobile search can influence the acceptance of a mobile search and this effect actually works through effort expectancy and performance expectancy. Dishaw and Strong[10] empirically tested the influence of tool experience on perceived ease of use and perceived usefulness, and found tool experience positively affected these two constructs[10]. That is, increased user experience with IT tools enabled the users to feel that IT was easier to use, then they could see more usefulness in the IT tools. Thus, we think that users who have more mobile search use experience will feel that mobile search is easier to use and mobile search can improve their work performance when searching for information. Thus, we get the H4 and H5 as paths (4) and (5).

H4: Individual use experience with a mobile search has a positive effect on individual effort expectancy for the mobile search.

H5: Individual use experience with a mobile search has a positive effect on individual performance expectancy for a mobile search.

The UTAUT, TTF, and other models have not considered cost factors for IT acceptance factors, perhaps because the adoption of additional information technology often does not cost individuals much. However, mobile search users need to pay significant fees so the costs cannot be ignored. Therefore, we increased path (6) and supposed that cost has a significant reverse effect on use intention. Use intention refers to the strength of one's intention to perform a mobile search. The cost for a mobile search is the additional expenses for using the search, including equipment costs, access costs, and transaction costs[12]. The reason for using "perceived cost" here is that the same spending has different perceived costs for different people. The differences can be affected by an individual's family background, income, and other factors. Therefore, we have H6.

H6: Individual perceived cost has a negative effect on the individual use intention of a mobile search.

Performance expectancy and effort expectancy can also influence use intention. In the UTAUT model, Venkatesh et al.[3] showed that performance expectancy and effort expectancy had significant effects on the use intention of information technology. These are similar to the perceived usefulness and perceived ease of use impacts on use intention in the TAM model. Accordingly, we assume that with the help of a mobile search to find information and data, users can improve their work performance, so their use intention is stronger and when users feel mobile searches are easy to use, their use intention will also be stronger, as in paths (7) and (8). Therefore, we have the following H7 and H8.

H7: Individual performance expectancy for a mobile search has a positive effect on the individual use intention for a mobile search.

H8: Individual effort expectancy for a mobile search has a positive effect on the individual use intention for a mobile search.

Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system, which has a positive effect on the use intention[3]. Venkatesh et al.[3] proved this hypothesis through empirical research. Analysis of the main characteristics of the mobile search shows that the use of the mobile search is heavily influenced by family and friends. Research pointed out that the third most important reason for people to use mobile searches is social conformity. People may feel they should use a mobile search often after watching other people. Therefore, we believe that the social influence to users has a significant effect on their use intention for the mobile search.

H9: The social influence to users has a positive effect on the individual use intention for the mobile search.

The moderating variable in this study model is gender. Gender is assumed to moderate the roles of social influence, effort expectancy, and performance expectancy on use intention. The empirical study of

Venkatesh et al.[3] showed that the effect of performance expectancy on behavior intention was stronger for men while the effect of effort expectancy on behavior intention was stronger for women and women were easily influenced by others[3]. Similarly, men are assumed to pay more attention to the improvement of work performance through mobile searching than women and women are assumed to pay more attention to the ease of use of mobile searching than men. In addition, women are more sensitive to others' perspectives and are more easily influenced by important people. Therefore, we have the following HM.

HM: The influence of performance expectancy, effort expectancy, and social influence on use intention are moderated by gender. Specifically, men pay more attention to the performance expectancy of the mobile search, while women pay more attention to the effort expectancy and the social influence on the mobile search.

3 Questionnaire Design and Data Collection

The construct variables are distinguished as reflective variables or formative variables. Latent constructs are research abstractions that cannot be measured directly. When latent constructs are measured indirectly through several indicators, these indicators are called reflective indicators and the construct is called a reflective construct. On the other hand, when constructs are conceived as explanatory combinations of indicators that are determined by a combination of variables[13], their indicators should be formative and the constructs are formative constructs (for example, perceived costs).

When designing indicators of construct variables, we firstly reviewed the relevant research and amended the indicators to suit a mobile search. Yuan and Zheng[11] used the characteristics of mobile tasks as difficulty, interdependence, time criticality, mobility, and location dependency. From this and other research[2,11] and from the characteristics of mobile searching, we believe that the use of the mobile search is not complex, that mobile searching has no interdependences, that mobile searching requires mobility and time criticality because users use mobile search while they are moving and want to get search results soon, and that mobile search has location dependency since users hope it can provide services according to their locations. Therefore, the following six indicators were designed for the task characteristics of mobile search in a formative construct: to get information and data in time, to search information anytime and anywhere, to get concise results, to return exact results, to provide location-based services, and to conveniently download pictures and music.

After comparing past research about the functional characteristics of new technologies[2,10,11] with the characteristics of mobile searching, the following indicators were designed for the functional characteristics of mobile searching to match the task characteristics of mobile searching: easy to carry mobile devices, rich content, strong mobile search engine, friendly user interface, broad mobile network coverage, mobile network stability, sufficient mobile network bandwidth, good positioning capability, personalized services and easily downloaded information and data. These indicators and the construct are formative.

The task-technology fit is the fit degree between the task characteristics and the functional characteristics of the mobile search. According to Goodhue and Thompson[2], the TTF indicators are the interaction between indicators of the task characteristics and functional characteristics and that the indicators and construct are reflective.

Previous research[3] has given 24 indicators for performance expectancy. Combining these characteristics with those of the mobile search, we chose the following four indicators which were amended to get suitable indicators for mobile search: to get helpful information and data, to get the information and data faster, to improve the quality of the information and data, and to get the information and data easier. As when designing the performance expectancy, the following indicators were chosen for the effort expectancy from Venkatesh's research[3] and then amended to suit mobile search: clarity and understandability of use, easily mastered, easily used, and easily learned. Indicators of social influence were also chosen from the optional list provided by Venkatesh et al.[3] The social influence is the degree to which an individual perceives that other people such as influential people, important people, and colleagues or friends believe he or she should use the new system. Since these people use mobile search, an individual would believe using it makes them exalted. The constructs of performance expectancy, effort expectancy,

social influence, and use intention are all reflective.

The UTAUT model does not contain the variable of cost. However, cost is a significant factor that affects the acceptance of the mobile search. Therefore, the concept of perceived cost was defined with the cost divided into three parts: equipment cost, access cost and transaction cost, which had been used in the research of Wu and Wang[12]. The indicators for perceived costs includes the high cost to replace equipment, the high cost of information services or accessing the Internet, and the high cost of downloading content. The indicators and the construct are formative.

The use experience used indicators from the empirical study of Dishaw and Strong[10] and then amended for mobile search, including the total hours of use, number of mobile search each year, and experience using mobile search. The indicators and the construct are reflective.

The questionnaire consisted of three parts: use experience, questions about each construct, and personal information. The items in each construct were measured using the 5 point Likert scale. 250 questionnaires were sent to students in two MBA classes of undergraduate students and graduate students in Tsinghua University from May, 2008 to June, 2008. After removal of invalid questionnaires, there were 195 valid questionnaires, so the valid response rate was 78%.

4 Results Analysis

This PLS graph and SPSS software were used for the data analysis. First, the initial exploratory factor analysis eliminated one improper indicator of performance expectancy and tested the dimension validity using the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity. The Bartlett value is 1388 (p<0.0001), which shows that factor analysis can be used on the correlation matrix and that the KMO value is 0.762, indicating that the factor analysis results are acceptable. Then, the reliability and validity test results for the reflective construct variables in Table 1 show that Cronbach's alpha for the reflective construct variables are higher than 0.6 and all the composite reliabilities of the reflective construct variables are higher than 0.8, so the model has reasonably good reliability[14]. Then confirmatory factor analysis was used to test the convergent validity and discriminant validity. When the loadings of the external model's T-statistical estimates listed in Table 2 are greater than 1.96[13], then the construct

Table 1 Cronbach's alpha and composite reliability

Construct variable	Indicator number	Cronbach's alpha	Composite reliability	Overall reliability
Use experience	4	0.931	0.955	
Performance expectancy	3	0.645	0.808	
Effort expectancy	4	0.815	0.877	0.824 (Cronbach's alpha)
Social influence	4	0.768	0.851	
Use intention	2	0.672	0.858	

Table 2 T-statistic estimate of external model loadings

Construct variable		Original sample	Mean of subsamples	Standard error	T-Statistic estimate
Use intention	bi1	0.8970	0.8969	0.0209	42.8342
	bi2	0.8354	0.8302	0.0409	20.4181
Performance expectancy	pe1	0.7496	0.7497	0.0644	11.6460
	pe2	0.8468	0.8411	0.0334	25.3749
	pe4	0.6903	0.6955	0.0843	8.1874
Effort expectancy	ee1	0.7533	0.7523	0.0628	11.9873
	ee2	0.8653	0.8666	0.0213	40.5985
	ee3	0.7843	0.7928	0.0556	14.1031
	ee4	0.7953	0.7966	0.0435	18.2739
Social influence	si1	0.8298	0.8170	0.0470	17.6720
	si2	0.8476	0.8416	0.0394	21.4937
	si3	0.7095	0.7071	0.0612	11.5973
	si4	0.6696	0.6675	0.0650	10.2983
Use experience	ex1	0.9198	0.9180	0.0266	34.5940
	ex2	0.9384	0.9343	0.0185	50.6505
	ex3	0.9505	0.9492	0.0191	49.6381

variables have relatively good convergent validity. The confirmatory factor analysis results listed in Table 3 show that the indicator loadings for each construct variable are greater than 0.5 (the minimum is 0.66), while the indicator loadings for the other construct variables are less than 0.5 (the maximum is 0.46). Also, the square roots of AVE for each construct variable listed in Table 4 are higher than the correlation coefficients for the other construct variables, which means that the construct variables have relatively good discriminant validity[14]. Thus, the questionnaire scale has good reliability and validity.

Table 3 Loadings of measure indicators for each latent variable

	Use experience	Performance expectancy	Effort expectancy	Social influence	Use intention
Use experience 1	**0.920**	0.083	0.156	0.247	0.254
Use experience 2	**0.939**	0.153	0.163	0.251	0.326
Use experience 3	**0.951**	0.164	0.226	0.279	0.339
Performance expectancy 1	0.119	**0.750**	0.238	0.071	0.384
Performance expectancy 2	0.165	**0.847**	0.219	0.307	0.405
Performance expectancy 4	0.037	**0.690**	0.303	0.302	0.324
Effort expectancy 1	0.125	0.295	**0.753**	0.061	0.180
Effort expectancy 2	0.202	0.316	**0.865**	0.113	0.196
Effort expectancy 3	0.163	0.224	**0.784**	0.149	0.085
Effort expectancy 4	0.147	0.193	**0.795**	0.103	0.169
Social influence 1	0.191	0.305	0.166	**0.830**	0.275
Social influence 2	0.242	0.225	0.092	**0.848**	0.374
Social influence 3	0.247	0.201	0.050	**0.710**	0.245
Social influence 4	0.175	0.150	0.090	**0.669**	0.233
Use intention 1	0.443	0.452	0.202	0.418	**0.897**
Use intention 2	0.099	0.389	0.147	0.215	**0.835**

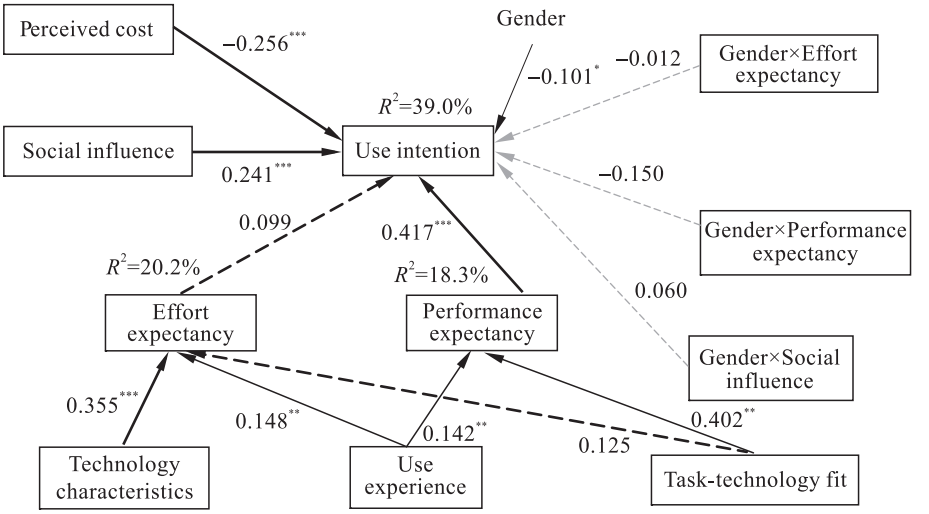
Table 4 Square root of AVE for each construct variable and correlation coefficients

	Use experience	Performance expectancy	Effort expectancy	Social influence	Use intention
Use experience	**0.936**				
Performance expectancy	0.488	**0.765**			
Effort expectancy	0.204	0.322	**0.801**		
Social influence	0.377	0.288	0.130	**0.768**	
Use intention	0.333	0.148	0.199	0.279	**0.867**

Notice: The values on the diagonal are the square roots of AVE and the off-diagonal values are the correlation coefficients between the construct variables.

The path coefficients for the mobile search acceptance model were then calculated using PLS, with the results shown in Fig 4. The model explains 39% of the use intention variance, with most of the assumptions well verified. For H1, the task-technology fit degree for the mobile search has a significant positive effect on the performance expectancy for the mobile search. This means that when users find that the functional characteristics of a mobile search match the tasks they have to finish, they will think mobile search improves their work performance. For H2, the effect of TTF on effort expectancy is positive but not significant, which means that this path provides some explanation, but the effect is weak. For H3, the functional characteristics of the mobile search have a significant positive effect on the individual effort expectancy for the mobile search. Therefore, users feel that the functional characteristics of the mobile search make them easier to use. For H4, individual use experience with a mobile search has a significant positive effect on the effort expectancy for mobile search. For H5, individual use experience with a mobile search has a positive effect on the performance expectancy for the mobile search. H4 and H5, which are similar to the hypotheses verified by the

Dishaw and Strong research[10], indicate that users with more experience using mobile searches would find them easier to use and more useful for work. For H6, the individual perceived cost has a significant negative effect on individual use intention for the mobile search. This result, which is similar to the research by Diamantopoulos and Winklhofer[13], shows that if the perceived costs are high, users will not use a mobile search. For H7, individual performance expectancy of a mobile search has a significant positive effect on the use intention. As in past research using the TAM and UTAUT models, this means that if users feel that mobile searches are useful, they will be inclined to use them in the future. For H8, the effect of effort expectancy on use intention is positive but not significant, which means that this path provides some explanation, but the effect is weak. For H9, the social influence to users has a significant positive effect on use intention for mobile searches. This result agrees with the characteristics of the mobile search that individual acceptance of mobile searching is influenced by other people.



Notice: *** means $p<0.001$, ** means $p<0.05$,* means $p<0.1$

Fig. 4 Path coefficients from the empirical data

The task-technology fit degree for a mobile search does not display a significant impact on the effort expectancy and the effort expectancy displays no significant impact on the use intention. The possible reason may be that for young users who are accustomed to all kinds of Internet and mobile phone functions, mobile search is not very complex, but is very easy to use. Therefore, the effort expectancy for mobile search can not be improved much, so the TTF degree cannot improve the effort expectancy much. Similarly, since mobile search uses a combination of simple functions rather than complicated functions, the mobile search is very simple. As a result, the effort expectancy is not important to the use intention of the mobile search.

In addition, gender does not demonstrate a moderating effect on the paths from efforts expectancy, performance expectancy, and social influence to the use intention. That men pay more attention to the performance expectancy than women is partly verified by the negative path coefficient from Gender×Performance expectancy to use intention (value for men is 1 and for women is 2, so the greater value indicates a negative effect). However the path coefficient is not significant so the moderating effect is weak. Whether women pay more attention to effort expectancy and social influence of mobile search than men has not been verified. Since the path from effort expectancy to use intention is not significant, then the moderating effect is not significant. The possible reason that the moderating effect of social influence is not significant may be that young people are very familiar with IT applications and communicate widely with their friends; thus, their perspectives about this new mobile search technology are similar.

5 Results Discussion

The paper contributes to both research on the theoretical model of IT adoption and research on mobile searching acceptance behavior. The integrated TTF and

UTAUT model is reasoned to be a more comprehensive model for IT adoption, but it has not been used in previous studies. This empirical research supports the validity of this integrated model. These models were combined with the characteristics of mobile searching to establish a mobile search acceptance model for predicting the acceptance behavior of mobile search users and to provide guidance for developers of mobile search platforms.

This empirical study shows that the performance expectancy of the mobile search is the factor with the strongest positive impact on use intention while use experience has a significant positive effect on performance expectancy. Social influence has a significant positive effect on use intention and perceived cost has a significant negative effect on use intention. Therefore, developers in the mobile search industry should try to improve the users' performance expectancy for mobile searching, reduce the users' perceived cost, and create a positive social influence.

Firstly, to improve the performance expectancy, mobile service providers can increase investment in research to develop more powerful search functions so as to meet customers' needs to more precisely locate information and data.

Secondly, since use experience will affect performance expectancy, the providers should help users have a better understanding of mobile searching by providing popularity functions and free use. Users would then have higher performance expectancy for mobile searching which would increase their use intention.

Thirdly, corresponding to the impact of perceived cost on mobile searching, providers could reduce costs at first to attract users and cultivate more customers. Less people will then be discouraged from using mobile searches because of the cost, so more people will use mobile search. Free use for customers will help them fully understand the usefulness of mobile search which will increase their use intention.

Finally, since social influence has a significant positive effect on the use intention for mobile search, providers should make advertisements with popular stars to convince them that mobile searching is very stylish. Advertisements made by well known people will create a positive social influence to encourage people to be more willing to use mobile searching.

6 Limitations

In addition to the many contributions of this paper, there are some limitations. Due to the restricted resources, this study cannot track user behavior for a long time. We did not investigate whether the participants actually used mobile searching after the survey; thus, we cannot explore the actual use of mobile searching. We will investigate the actual use of mobile searching in the future.

In addition, this study only surveyed students in Tsinghua University, so the sample may not represent all people which may lower the universality of the empirical results of this research model. Future studies will also use this mobile search acceptance model to do similar studies among other people.

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