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Exploring Factors Associated with Wireless Internet via Mobile Technology Acceptance in Mainland China

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ABSTRACT

This study explores factors significantly impact the acceptance of Wireless Internet via Mobile Technology (WIMT) in China. The results indicate that the acceptance of WIMT is related with factors of: perceived usefulness, perceived ease of use, social influences, wireless trust environment, and facilitating conditions. It provides diagnostic insight into how different factors influence user intention to accept WIMT in China, and thus help business build solid strategy to prompt WIMT and m-commerce there.

INTRODUCTION

Mobile Commerce (also called m-commerce or wireless commerce) represents the convergence of two technologies – the web, which has radically changed how to conduct business, and wireless technology, which through mobile devices such as cell phone, PDA, or pager, has added a mobile dimension to e-commerce and mobile computing (Coyle, 2001). Mobile Commerce is a subset of electronic commerce (e-commerce), which is forecasted to continue to grow and has a profound impact on the global business environment despite recent poor performance from the Internet sector (Forrest Research, 2001). Indeed, m-commerce, which delivers e-commerce capabilities directly into the consumer's hand via wireless technology, can be a force with strong

potential to expedite business transactions and significantly change how businesses serve customers in the global market (Jensen, 1998; Cassano, 2000; Kutler, 2000).

While enjoying recent high economic achievement, China is rapidly heading towards having the largest mobile communications network in the world in both cellular and paging businesses. The McKinsey Research predicted that mainland China, with its 1.3 billion people and the huge demand driven by its major cities and economic zones, will overtake the US as the world's largest mobile phone market with more than 300 million mobile subscribers in 2005 (Kenyon & Perkins, 2000). According to this research, there are two main factors driving the growth of wireless Internet via mobile technologies in China: a mobile infrastructure that is more developed than its fixed-line counterpart and the greater affordability of mobile telephones as compared with personal computers. In addition, a number of world leading telecommunications suppliers, such as Ericsson, Nokia, Motorola, and Siemens, have been actively involved in China's telecom industry, especially in cellular supply and service business (Zhang, 2001).

Unlike in the United States and Europe, e-commerce practices can hardly reach ordinary people because of the limited household possession of wired personal computers in China (Hu, 2000). Notwithstanding, many mobile users have already established comfort level with mobile devices' interface and functionality. This may well alleviate the reluctance to conduct mobile commerce activities. However, it might be too optimistic to argue that the acceptance of using WIMT will be based on the popularity of mobile devices since research has shown that the volume of e-commerce activities were not significantly increased simply because of huge penetration of personal computers (Anckar & D'Incau, 2002). WIMT goes far beyond mobile devices. The substantial volume of using WIMT should not be seen as an obvious outcome of high penetration of mobile phones, PDA, or pagers. Therefore, the major objective of this study is to explore factors associated with acceptance of WIMT in China. The following question makes up this work:

What factors significantly impact acceptance of wireless Internet via mobile technologies in China?

The study should contribute to e-commerce literature: First, it will help provide current profile of use and unique characteristics of m-commerce in China. Second, the study will reveal factors affecting m-commerce activities, thus help business build solid strategy to prompt m-commerce in China.

BACKGROUND

The International Data Corporation (IDC, 2001) reports that almost all handsets manufactured in 2001 were equipped with wireless application protocol (WAP). In addition, most of this wireless equipment will have a functionality of global positioning system (GPS), which will enable locating any store in customers' current geographical location (Ostermiller, 2001).

Although much has been accomplished toward the goal of being able to conduct business activities anywhere and anytime with mobile devices, some researchers believe that this concept is too broad and misleading (Saia, 2002; Sliwa, 2001). People want more specific information when they are mobile. Therefore, the content and service people request to access may be quite different than those when they are in a fixed location. The ultimate value of using WIMT is to

provide people with required content services through the portability and accessibility (Goldman, 2000).

Mobile devices, especially cell phones, experienced three-generation development so far. The first generation provided the ability of mobile communications. The second generation improved the reception and enabled a range of sophisticated services to be offered by using the global system for mobile communications (GSM). The third generation, which is offered in many Chinese cities, has the ability to conduct wireless Internet access by using GPRS (general packet radio service). With GRPS, data transmission speeds will expand from 9.6 or 14.4 kbps in the GSM system to the current 115 kbps (Kenyon & Perkins, 2000). It can support a wide range of services ideal for mobile users, including unified messaging, e-shopping, location-based, and time critical services (Darrow and Harding, 2000). With the huge mobile subscriber base in China and the long habit of using mobile phones in various business activities, the potential for m-commerce is tremendous.

THEORETICAL FRAMEWORK

The theoretical framework, presented in Figure 1, was constructed in a conceptual research effort based on information systems (IS) literature review on technology acceptance, system success, technology adoption, and on theoretical reasoning with the objective of identifying value-added features of WIMT.

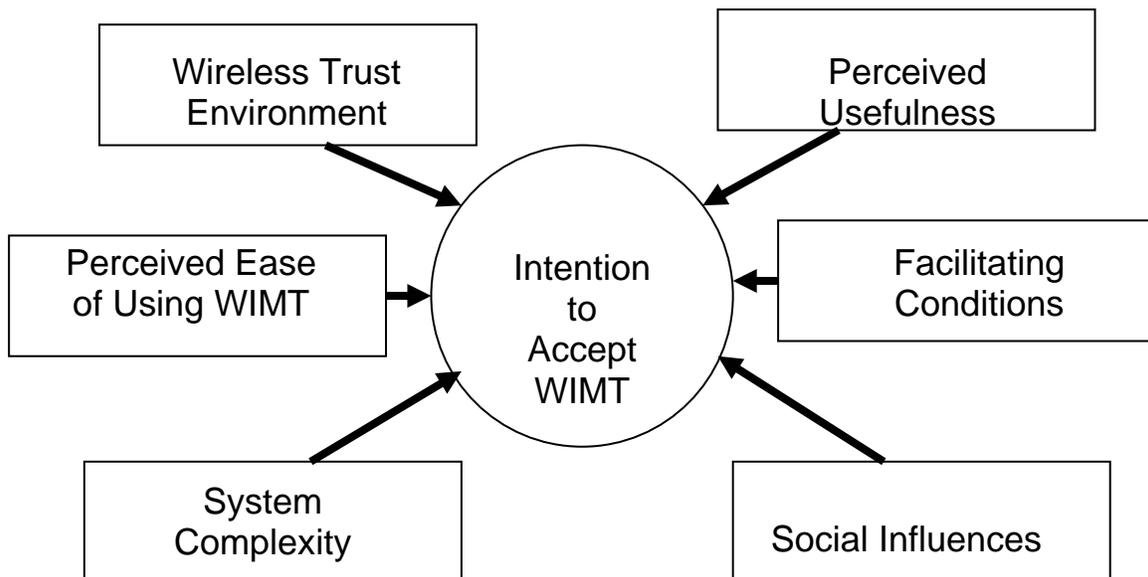


Figure 1: Factors Influencing Wireless Internet via Mobile Technology Acceptance

Wireless Trust Environment

As business marketers place greater emphasis on building long-term relationships with their customers, trust has assumed a central role (Viega, Kohno and Potter, 2001; Garbarino and Johnson, 1999; Doney and Cannon, 1997). Trust is a complex social phenomenon that reflects technological, behavioral, social, psychological, as well as organizational aspects of interactions among various human and non-human agents. All business transactions require an element of trust, especially those conducted in the uncertain environment of mobile commerce (Lee, 1998).

There are two key ingredients of a wireless trust environment: security and privacy. Wireless security must be seen in the border context of Internet-based e-commerce systems to include confidentiality, authentication, and message integrity (Coyle, 2001). Comparing to e-commerce which relies on wired Internet, m-commerce is on wireless Internet and is exposed to greater danger of insecurity, since hackers may intercept anywhere in the free air. To build consumer's trust in the safety of using wireless devices for transaction, wireless transport layer security (WTLS), public-key infrastructure (PKI), certificate authority (CA), device independent smart card, and wireless biometric services have emerged as common solutions. WTLS offers security feature for wireless application protocol (WAP) to deliver communications by using wireless devices. PKI uses public key cryptography to authenticate the sender of a message and to encrypt and decrypt messages to ensure security. Smart card and/or wireless biometric services provide a core authorization infrastructure to verify that only the authorized user is making the transaction.

Privacy concerns often arise when new information technologies such as the Web enabled mobile technology that support enhanced capabilities for collection, storage, use, and communication of personal information (Webster, 1998; Milberg, Burke, Smith and Kallman, 1995, Culnan, 1993). Reports of concerns about privacy on wireless Internet are recently on the rise (Phillips, 2002; Green, Alster, Borrus and Yang, 2000). It is impossible to translate the potential business applications of the wireless technology into viable business ventures without first setting up trustworthy online environment.

The discussion above indicates that privacy and security issues should be addressed to ensure a successful emergence and expand the WIMT in China. This leads to the following hypothesis:

H1: Wireless trust environment is directly related to the acceptance of WIMT.

Perceived Usefulness

Prior research indicates that perceived usefulness is an important indicator for the technology acceptance (Davis, 1993; Taylor & Todd, 1995; Chau, 1996; Jiang et al., 2000). Throughout the

years, technology acceptance model (TAM) received extensive support through validations, applications, and replications. TAM is one of the most influential research models in the studies of the determinants of information technologies (IT) acceptance (Chau, 1996).

Perceived usefulness in TAM model originally refers to job related productivity, performance, and effectiveness (Davis, 1989). This is an important belief identified as providing diagnostic insight into how user attitude toward using and intention to use are influenced – perceived usefulness has a direct effect on intentions to use over and above its influence via attitude (Davis et al., 1989; Davis, 1993; Taylor and Todd, 1995). Incorporating concepts used in expectancy theory, Triandis (1980) proposed that an important factor influencing behavior is the expected consequences of the behavior. Individuals evaluate the consequences of their behavior in terms of perceived usefulness and based their choice of behavior on the desirability of the perceived usefulness. If WITM does not help people perform their wireless access and business transaction, it is not likely to be received favorably despite that wireless devices have high penetration rate in China.

Some recent researches have explored user acceptance of the Internet. The result of their studies suggests that the acceptance of Internet technology is positively related to perceived near-term and long-term usefulness (Jiang et al, 2000). However, these studies only investigated the use of wired Internet. It will be interesting to see if their findings can be confirmed in use of WIMT. Thus, we propose:

H2: Perceived usefulness is directly related to the acceptance of WIMT.

Perceived Ease of Using WIMT

The way in which customers use a WIMT is also important. Perceived ease of use can be an important determinant of user satisfaction. In addition, it is another major determinant of attitude toward using perceived ease of use in TAM model. This internal belief ties to an individual's assessment of the mental effort involved in using a system (Davis, 1989). Perceived usefulness and perceived ease of use are distinct but related constructs. Improvements in perceived ease of use may contribute to improved performance. Davis (1989) once proposed to test the generality of the observed usefulness and ease of use tradeoff and assess the impact of external interventions on these internal behavioral determinants. The empirical research findings are, however, mixed (Davis et al., 1989; Davis, 1993; Chau, 1996; Venkatesh, 1999).

On the other hand, quite a few empirical studies have confirmed the effect of ease of use on attitude toward using IT/IS (i.e., Al-gahtani and King, 1999; Lu and Gustafsen, 1994; Moore and Benbasat, 1991; Venkatesh and Davis, 1996). Venkatesh (2000) believes that for any emerging IT/IS, perceived ease of use is an important determinant of users' intention of acceptance and usage behavior. Even though Chau (1996) excluded the original construct of perceived ease of use in his Modified TAM model, he also admitted that in the exploratory state of technology use, ease of use plays an important role. This point was also supported by a recent survey done in Europe. A mail survey by Embedded Solutions among 800 professionals in England in 1999

found that ease of use is among the top five factors in order of significance for determining use of wireless handheld devices (Clarke, 2000). Therefore, another hypothesis is:

H3: Perceived ease of use is directly related to the acceptance of WIMT.

Facilitating Conditions

Facilitating conditions originally provide two dimensions: resource factors such as time and money needed and technology factors regarding compatibility issues that may constrain usage. The argument is that when all other things are equal, behavioral intention and IT usage would be expected to be less likely as less time and money are available and as technical compatibility decreases (Taylor and Todd, 1995). In the context of workplace technology use, facilitating conditions are believed to include the availability of training and provision of support. This variable was tested in a number of technology acceptance researches, and empirical supports were found on the proposed effect on the technology acceptance (Thompson, Higgins and Howell, 1994; Taylor and Todd, 1995; Jiang et al., 2000; Vekatesh, 2000).

It has been argued that the facilitating conditions for WIMT is much better than for the PC based Internet access (Anchar & D’Incau, 2002) due to the lower hardware investments and the proficiency with mobile devices. Therefore, the high cell phone penetration in China provides favorable facilitating conditions for the acceptance of WIMT.

Facilitating conditions, however, can also be viewed as external control related to the environment (Terry, 1993; Triandis, 1980). Behavior could not occur if objective conditions in the environment prevent it (Triandis, 1980), or if the facilitating conditions make the behavior difficult (Thompson et al., 1994). Policies, regulations, and legal environment are therefore all conditions critical to technology acceptance. Both businesses and consumers who engage m-commerce activities need legal protection as they are conducting traditional business transactions. However, there are no special laws or regulations in China regarding online business activities. But, facilitating conditions can hardly be neglected in wireless environment. Therefore, another hypothesis is:

H4: Facilitating conditions is directly related to the acceptance of WIMT.

System Complexity

Literature has already revealed that characteristics of wireless mobile systems link directly to issues concerning user demand (e.g., Beaulieu, 2002; Bergeron, 2001; Burnham, 2002; Coyle, 2001; Dornan, 2001). To study the impact of the typical wireless mobile technology on user intentions to accept WIMT, we propose a conceptual construct, System Complexity. The impact of system characteristics has been widely recognized in system and technology user acceptance research. Davis et al. (1989), for example, proposed that system characteristics exhibit indirect effects on usage intentions or behaviors through their relationships with perceived usefulness and perceived ease of use.

WIMT has its own complexity that is different from what has been discussed in the technology user acceptance research. WIMT system complexity can be defined as the degree of integration between wireless Internet and mobile technologies supporting various communications and services.

Operationally, it could be examined in four facets: efficiency of data transfer, system functionality, interface design, and mobile device capacity. Effectiveness of WIMT largely depends on efficiency of data transfer on the system (Clarke, 2000; Macker, Park, and Corson, 2001; Varshney and Vetter, 2001). In addition, the mobile devices for accessing wireless Internet all provide small screens. The smaller the screen, the less information is displayed at any one time. The user interface, therefore, becomes central in application delivery (Bergeron, 2001; Regis, 2001). Mobile devices currently serve as entry points into the wireless Web, carrying with them their own capabilities and limitations (Beaulieu, 2002; Bergeron, 2001; Raisinghani, 2001). Each aspect serves as an indispensable part of the entire WIMT system complexity. Any aspect may have some impact on users' satisfaction of performance and mental effort, which in the long run would shape their overall intention to accept WIMT. Thus, we propose:

H5: System complexity is directly related to the acceptance of WIMT.

Social Influences

In Taylor and Todd's study (1995), social influences were equivalent to subjective norm and defined as other people's opinion, superior influence, and peer influence. Venkatesh and Davis (2000) later expanded social influences to include subjective norm and image as well. Image is derived from the research on diffusion of innovations. Moore and Benbasat (1991) defined it as the extent to which use of an innovation is perceived as enhancement of one's status in a social system. Davis and his colleagues (1989) believed that in some cases people might use a system to comply with others' mandates rather than their own feelings and beliefs. Empirical support for the relationship between social norms and behavior can be found in many studies (e.g., Tornatsky and Klein, 1982; Venkatesh and Davis, 2000). Mobile users are usually in social situations. In front of another person, not only speed is important, sense of social image is rendered as critical for many. In China, 73 percent of the executive class in big cities owned mobile phones early in 1998 not only for its convenience but also as a symbol for social status (Samson and Hornby, 1998). In addition, young people treat smart-phones as new fashion items to show off in the public. Thus, we propose the final hypothesis is:

H6: Social influences are directly related to the acceptance of WIMT.

RESEARCH METHODOLOGY

Survey technique was used in this study. Research subjects were selected on a convenience basis from enrollment in a required MBA-level e-commerce course at a large university in Beijing, China. Over 160 students participated in the survey; however, only 128 data points were usable. Although the use of students is largely criticized in academic research, the use of students as

subjects may be appropriate when trying to explore certain patterns of relationships (Dickson, 1989; DeSanctis, 1989). Moreover, the use of MBA-level students who are taking e-commerce course in Beijing, China may be even more appropriate since most of them have cell phones and have enough knowledge to explore wireless technology issues in China.

Measurement of Variables

The research model was derived from the study of IS literature on technology acceptance, system success, technology adoption, and on theoretical reasoning with the objective of identifying value-added features of WIMT. Some measurement variables were adopted from previous studies such as TAM. Others were from literature review on mobile commerce and key word searches of mobile device, m-commerce security, privacy, system design, technology acceptance, and China in ABI/INFORM, an online database marketed by University of Microfilms (UMI). Search results were scanned by reading titles and abstracts. All variables in the survey were measured on a seven-point Likert scale from (1) completely disagree to (7) completely agree. Table 1 show the research constructs, their measurement variables, and the internal reliability assessment.

Table 1. Research constructs, measurements, and reliability assessment

Hypothesis	Research Construct	Measurement Variables	α .
H1	Wireless Trust Environment	notice; choice; access; managerial security protection; security technique protection;	0.70
H2	Perceived Usefulness	decreased the time needed for work/study/life; increase quality or output for life; increase the effectiveness of life; improve works/study/life; increase opportunities; increase varieties; increase flexibilities; gain job/life security;	0.88
H3	Perceived Ease of Use	clear and understandable; doesn't require a lot of mental effort; easy to use;	0.71

H4	Facilitating Conditions	easy to do what I want it to do; help/instruction availability; training; resource; knowledge; wireless access availability; legal protection; government policies/regulations;	0.71
H5	System Complexity	screen design; input feature; response time; roaming capabilities; data transmission rate; data throughput in uplinks and downlinks; bandwidth; memory storage; battery power; screen size; email and messaging services; time and location based services; personalization; long time wireless access;	0.75
H6	Social Influences	more prestige; high profile; status symbol; other people influences	0.75

4.1.1. Wireless Trust Environment

From our literature review, we selected the following variables for measuring wireless trust environment: notice (where appropriate, prior to collection of data from users); choice (providing people a choice to share or use their information); access (allowing people access to data collected about them); managerial security protection (keeping the data secure to authorized employees); and security technique protection (keeping the data secure both internally and externally) (FTC, 2000). The average score of these variables is our measure of wireless trust environment.

Perceived Usefulness

As revealed from the TAM literature, the measurement variables of perceived usefulness are: decreased the time needed for work/study/life; increase quality or output for life; increase the effectiveness of life; improve works/study/life; increase opportunities; increase varieties; increase flexibilities; and gain job/life security. The average score of these variables is our measure.

Perceived Ease of Use

Four variables were used to measure perceived ease of use: easy to get to do what I want it to do; interaction with a mobile device is clear and understandable; easy to use; and easy to learn (doesn't require a lot of mental work to figure out). The average score of these variables is our measure.

Facilitating Conditions

The following variables were used to measure the proposed facilitating conditions: help/instruction availability; training; resource availability; knowledge of using WIMT; wireless access availability; availability of legal protection; and government policies/regulations encourage use of WIMT. The average score of these variables is our measure.

System Complexity

As discussed in Section 3.5, WIMT system complexity comprises four sub-constructs: data transfer efficiency; system functionality; interface design; and mobile device capacity. Data transfer efficiency can be measured by items of response time; bandwidth; transmission rate; and data throughput in uplinks and downlinks. System functionality comprises items of email and messaging services; time and location based services; and personalization. Interface design includes items on screen design and input feature. Mobile device capacity includes roaming capabilities; memory storage; battery power; long time wireless access; and screen size. Since there is no justification for assigning different weights to these variables, the average scores of these variables is our measure of system complexity.

Social Influences

More prestige than those who don't use WIMT; high profile; status symbol; and other people influences are used to measure social influences. These measurements are well established in IS and marketing literature. The average score of these variables is our measure.

Reliability of the Measure

In order to ensure that the variables comprising each proposed research construct were internally consistent, reliability assessment was carried out using Cronbach's alpha. A low value of Cronbach's alpha (i.e. close to 0) implies that the variables are not internally related in the manner expected (Churchill, 1979). As can be seen in Table 1, the internal consistency reliability coefficients for research constructs in this study are equal or well above the 0.70 level. Therefore, we assume that we had internal consistence for the proposed constructs (Nunnally, 1978).

Validity of the measure

To ensure content validity, a thorough examination was made of the relevant literature. To further reduce the possibility of non-random errors, a pilot was conducted in May 2002 in the US to examine the questionnaire for validity (measuring what is intended), completeness (including all relevant variable items), and readability/understandability. The results of the pilot study suggested several changes to the questionnaire questions. These changes were incorporated in this study. In addition, the authors examined language translation to ensure that the interpretation of both questionnaire (used in the pilot study in US and the one in China) had the same linguistic interpretations for all subjects.

DATA ANALYSIS AND RESULTS

The survey was conducted in May 2002. Table 2 presents the characteristics of the respondents. Almost all respondents included in this study have some experience of using WIMT.

Hypothesis Testing

One purpose of the questionnaire survey was to provide data in order to test the research hypotheses. Mean values and a matrix of intercorrelations among the research constructs were calculated. The average response of user intention to use the WIMT is considered by us to be the measure of intention to accept the WIMT. If the intention to accept WIMT mean value rating correlated positively and significantly with the six research constructs, the six hypotheses could be supported. The means, standard deviations, and matrix of intercorrelations among the six research constructs are presented in Table 3.

Table 2. Characteristics of Respondents

	Number	Percentage
1. Experience with mobile devices		
(1) Web phones (e.g., the US/European WAP Phone, Japanese I-Mode phone)	36	25.90%
(2) Wireless handholds (e.g., palmtops, PDA)	65	46.76%
(3) Two-way pages	18	12.95%
(4) Voice portals (receiving information services with mobile devices)	28	20.14%

(5) Web PCs	109	78.42%
(6) Others	27	19.42%

2. Gender

(1) Male	78	56.12%
(2) Female	<u>61</u>	<u>43.88%</u>
	139	100%

3. Age Group

(1) 20-25	113	81.29%
(2) 26-30	12	8.63%
(3) 31-35	2	1.44%
(4) 36-40	1	0.72%
(5) 40-45	2	1.44%
(6) Greater than 45	2	1.44%
(7) Missing	<u>8</u>	<u>5.76%</u>
	139	100%

Table 3. Matrix of Intercorrelations Among Study Constructs (N=139)

Construct	Mean	St.D.	1	2	3	4	5	6	7
1. Intention to accept WIMT	5.53	1.46	1.00 (0.0)						
2. Wireless Trust Environment	5.23	0.83	0.21 (0.0112)	1.00 (0.0)					
3. Perceived Usefulness	4.80	0.96	0.36 (0.0001)	0.31 (0.0002)	1.00 (0.0)				
4. Perceived Ease of Use	4.65	1.16	0.32 (0.0001)	0.27 (0.0014)	0.36 (0.0001)	1.00 (0.0)			
5. Facilitating Conditions	4.44	0.80	0.15 (0.0883)	0.43 (0.0001)	0.40 (0.0001)	0.36 (0.001)	1.00 (0.0)		
6. System Complexity	4.77	0.61	0.39 (0.0001)	0.35 (0.0001)	0.33 (0.0001)	0.29 (0.0004)	0.36 (0.0001)	1.00 (0.0)	

7. Social Influences	4.04	1.05	0.17	0.33	0.49	0.31	0.47	0.28	1.00
			(0.0441)	(0.0001)	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0)

* Note: (1) p values are in the ().

(2) The measurement scale of mean values is from 1 (strongly disagree) to 7 (strongly agree).

The first hypothesis (H1) stated that wireless trust environment is directly related to the acceptance of WIMT. The correlation coefficient is 0.21 with the p value less than 0.05. As results in Table 3 suggest, a strong relationship exists.

The second hypothesis (H2) stated that perceived usefulness is directly related to the acceptance of WIMT. The correlation coefficient is 0.36 with the p value less than 0.0001. Therefore, there is a support for this hypothesis.

Hypothesis H3 stated that perceived ease of use is directly related to the acceptance of WIMT. The correlation coefficient is 0.32 with the p value less than 0.0001. Subsequently, strong support for this hypothesis exists.

Table 3 also provides the results for testing Hypothesis 4. This hypothesis suggests that facilitating conditions is directly associated with the acceptance of WIMT. As can be seen a correlation coefficient is 0.15 with the p value greater than 0.05 but less than 0.1, it provides a weak support for this hypothesis.

The fifth hypothesis states that system complexity is directly related to acceptance of the WIMT. The correlation coefficient is 0.39 with the p value less than 0.0001. Subsequently, strong support for this hypothesis exists.

The last hypothesis (H6) suggests that social influences are directly related to the acceptance of WIMT. The correlation coefficient is 0.17 with the p value less than 0.05. Therefore, there is a support for this hypothesis.

CONCLUSIONS

Apparently, acceptance of WIMT is related with six major factors: wireless trust environment, perceived usefulness, perceived ease of use, facilitating conditions, system complexity, and social influences. Business organizations that launch wireless applications in China should be more aware of these factors. Based on the results, several recommendations can be advanced.

First, businesses should actively seek ways to improve wireless trust environment to bring security and privacy concerns in their applications. Without security and privacy protection, customers will shy away from your wireless services.

Second, businesses should add more values for the wireless applications and services. In addition, wireless application designer should focus on the way in which customers use the wireless devices for Internet access. The results indicated the importance, in general, intention to accept to perceived usefulness and perceived ease of use.

Third, this study has yielded some findings on system complexity for WIMT that should be valuable for researchers as well as practitioners interested in system utility and user acceptance of WIMT. Results of the measurement procedures reveal that each of the four sub-constructs – data transfer efficiency, interface design, mobile device capacity, and functionality – are correlated to measure the construct of System Complexity. This means that these four conceptual sub-factors are indispensable parts of WIMT technology complexity. To investigate the system characteristics of WIMT, these factors should be carefully assessed. From a theoretical perspective, the findings of this study add value to M-commerce

and technology acceptance literature by providing a current profile of what needs to be considered in terms of technology when assessing the acceptance of M-Commerce.

Fourth, the results corroborated the hypothesized direct relationship between facilitating conditions with the acceptance of WIMT. Surprisingly, this study revealed only a weak support for this hypothesis. It may be because that the huge penetration rate of mobile devices in China exerts an ease on the training and support need for wireless access via mobile devices. More studies may be needed here.

Finally, businesses should actively seek ways to use social influences factor to increase the acceptance of WIMT. Fashion and social images seemed critical in this study for the acceptance of WIMT.

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