Exploring User Behavioral Intention of the Tourist Guiding System by Users' Perspective

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Abstract—**Taiwan has lifted a restriction to tourists from China since 2008, Chinese tourists increasingly tour in Taiwan. People can get tourism information everywhere and every time, but such amount of information usually confuses users. This study adopted Unified Theory of Acceptance and Use of Technology (UTAUT) to verify the Mainland China tourist guiding system (MTGS). This study collected the feedbacks from China's students that want to visit Taiwan through an online questionnaire. There are 120 participants finished the questionnaire. The results are the following: (1) "performance expectancy"," effort expectancy", and "facilitating condition" has no effect with "behavioral intention"; (2) "social influence" positively affect the "behavioral intention"; (3) only "effort expectancy" affected by "age". The results of this study can be a reference for the tourism agencies and application developers to understand the factors which can influence the behavioral intention of the tourist for further improvement.**

Index Terms—**Mobile service, Guidance system, Unified Theory of Acceptance and Use of Technology (UTAUT)**

I. INTRODUCTION

The tourism industry and the technology industry are the most popular industry in recent decades. Many countries focus on the development of tourism, and the Taiwan government is also focused on it. Which actively improve the tourism environment and enhance internationalism, and the aim is to attract more visitors to their country. In 2009, with the rise of the tourism industry, the Tourism Bureau of Taiwan made a "Project Vanguard for Excellence in Tourism". Let Taiwan become an important tourist destination in Asia [1]. In the past, tourists came to Taiwan, mainly from Japan, Southeast Asia, Hong Kong, Macau or other countries. But Taiwan has lifted a restriction to Chinese tourists since 2008. More and more Chinese tourists visit Taiwan. Because of Taiwan through a new law about "the individual travelers from China" in 2011, there are more Chinese tourists to Taiwan. According to the statistics, it showed approximately 4 million Chinese tourists came to Taiwan, as Figure 1 [1]. Therefore, visiting Taiwan by Chinese tourists has become the largest business

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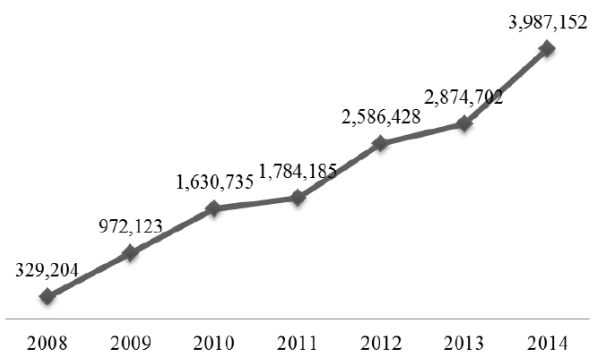
opportunities.

Fig. 1. Trend of Chinese tourists came to Taiwan

From 2008, it is not only promoting the economy, but also brings the new policy. Direct flight between Taiwan and China promoted Chinese tourists to visit Taiwan. The feature of Taiwan will be widely known by everyone, and also bring the huge profit [2]. Li said Chinese tourists visit Taiwan has some benefit to Taiwan. Like promote economic development, enhance the development of Taiwan's tourism industry, the promotion of the international image of the goods, promote the development of cross-strait relations, and promote cross-strait currency in circulation [2].

According to the "Nielsen free individual travel of China to Taiwan research", it shows approximately 90% of Chinese tourists want to visit Taiwan once again. And approximately 50% of Chinese tourists plan to visit Taiwan within a year. The research also reports that the individual traveler uses approximately 40% of the consumption to shopping [3]. In the research of Insightxplorer also mentioned that approximately 40% of Chinese tourists have expended more than 20,000 NT dollars. Approximately 50% of Chinese tourists have expended between 10,000 to 20,000 NT dollars [4]. It approved that Chinese tourists to Taiwan brings the big business.

The technology is increasing progress and popularity. The popularity of mobile networks and devices let cell phone is not only a communication tool, but also like a small portable computer which is very convenient for people. It can get the required information anytime and anywhere. Also provides many mobile services to users. The mobile phone has been widely used. Mobile phones can quickly get information and easy to carry. It made people's lives better than before. The users can intuitively receive the latest message without thinking how to use. With no boundaries of online environments, it produced some problems with increasingly information, such as search became more complex. Users

may not have enough time or knowledge to operate. The mobile guiding system can let people quickly get the information they want.

Puschel et al. (2010) said that there are different outcomes by using different information system model. It is difficult to compare for each scholar. Unified Theory of Acceptance & Use of Technology (UTAUT) can explain the users' intention about approximately 70% of the variance [5]. So many studies adopted UTAUT to analyze the relationship of users' attitudes and to be the guidance. This study adopted UTAUT to establish and validate the model, and then get user's feedback to continuously improve.

II. LITERATURE REVIEW

A. Unified Theory of Acceptance and Use of Technology

This study sorted out related theories about UTAUT, there are Theory of Reasoned Action (TRA), Motivational Model (MM), Innovation Diffusion Theory (IDT), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), Combined TAM and TPB (C-TAM-TPB), and Social Cognitive Theory (SCT).

The UTAUT model showed that there are four factors directly affecting behavioral intention and use behavior include performance expectancy, effort expectancy, social influence, and facilitating conditions [5]. There are also four moderator variables, include gender, age, experience, and voluntariness of use.

III. RESEARCH METHOD

A. The development of the Chinese tourist guiding system (MTGS)

This study has been reviewed the relevant literatures to develop the mobile guiding application before adopted UTAUT to explore the behavior for the Chinese tourists using the mobile guiding application. This study combined a series of theory related with Human-Computer Interaction, including Norman's Mental Model, User Experience, Shneiderman's "Eight Golden Rules of Interface Design". This application of guidance service is called "MTGS" (Mainland Chinese tourist guiding system).

The "MTGS" has six functions, Tour guide, LBS (location-based service), Theme trip, Common sentence, Cross language comparison (Taiwan and China) and Special offer, and the bottom of page has some useful information as shown in Figure 2. The functions contain some useful

Fig. 2. The interface of the MTGS

information as follows:

(a) Tour guide: This function lets tourists search information by topic, like "hot", "Tourism", and so on. Those are all related with Taiwan.

(b) LBS: This function lets tourists easily find the tourism near their station.

(c) Theme trip: If tourists can't decide where to visit, they can use this function to quickly find their favorite place.

(d) Common sentence: This function lets tourists know what different sentences between Taiwan and China.

(e) Cross language comparison: This function lets tourists know what different language between Taiwan and China.

(f) Special offer: This function lets tourists know where the special price has.

(g) Bottom: At the bottom of the page, there some function about "MTGS", and some function about useful information.

B. Research model

The architecture is based on UTAUT which was proposed by Venkatesh et al. in 2003. It is constructed with four external variables. This study adopted UTAUT to explore the behavior about the Chinese tourists using the mobile guiding application. Whether it will affect with the moderator variables sex, age, and experience or not? The architecture of this study is shown on Figure 3.

C. Research hypothesis

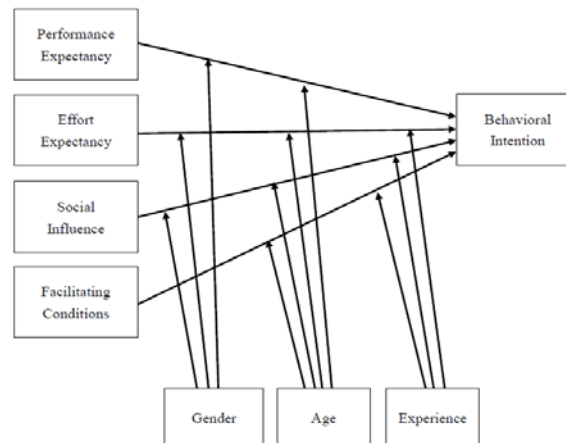When using the information system can effectively

Fig. 3. Research model

improve performance, users will be more positive willingness to accept this system [5] – [11]. In the performance expectance, the interaction of gender and age will affect individual's behavioral intentions. And the research also found that men and younger users are more concerned about the performance expectance of information systems. According to those literatures, this study proposes the following hypotheses

H1: The performance expectancy on the Chinese tourists use the "MTGS" will positively affect behavioral intentions

H1-1: The influence of performance expectancy on behavioral intention will be moderated by gender.

H1-2: The influence of performance expectancy on behavioral intention will be moderated by age.

For individuals without spending too much time or energy to learn, they can obtain what they want from the information system that has positively intended to accept [5], [11], [12]. Individuals' have a different effort expectancy that will be influenced by gender and age. In addition, the research displayed that women and elderly users are more respect to the effort expectancy of information systems. But this influence will be a change in the use of the accumulated experience [13]. According to those literatures, this study proposes the following hypotheses:

H2-1: The influence of effort expectancy on behavioral intention will be moderated by gender.

H2-2: The influence of effort expectancy on behavioral intention will be moderated by age.

H2-3: The influence of effort expectancy on behavioral intention will be moderated experience.

The social influence is a determinant to behavioral intentions, when the new system is easier to learn and operate. The user will have positively willingness to accept this system. It also impacted by gender, age and experience [5], [11], [13]. In addition, when the research also shows that women are more susceptible, the individual's experience increase this influence will be decreasingly [13]. According to those literatures, this study proposes the following hypotheses:

H3: Using the "MTGS", the social influence on the Chinese tourists will positively affect behavioral intentions.

H3-1: The influence of social influence on behavioral intention will be moderated by gender.

H3-2: The influence of social influence on behavioral intention will be moderated by age.

H3-3: The influence of social influence on behavioral intention will be moderated by experience.

Venkatesh et al. proposed that facilitating conditions are the factor in causing the users use information system. They must solve the restrictions on use and provide hardware and software to users if they want users actually use information system in 2003 [15], [16]. According to those literatures, this study proposes the following hypotheses:

H4: The facilitating conditions for the Chinese tourists use the "MTGS" will positively affect behavioral intentions

H4-1: The influence of facilitating conditions on behavioral intention will be moderated by age.

H4-2: The influence of facilitating conditions on behavioral intention will be moderated by experience.

D. Questionnaire design

This study collected questionnaires from college and forum (Baidu and Google), actively invite 120 people to fill in the questionnaire. This questionnaire is based on Venkatesh et al. proposed in 2003, including two parts: classification questions and operation questions, and adopted Likert scale to measure. The degrees of satisfaction have five sections from 1 (Strongly Disagree), 2 (Disagree), 3 (Neither Agree nor Disagree), 4 (Agree) to 5 (Strongly Agree).

E. Experimental process

This study collected online questionnaires and feedbacks through Typeform, Sojump.com and google. They provide those website links through Baidu, Google and the education system of National Kaohsiung First University of Science and Technology. Because of the many internet restrictions in China, this study adopted many online questionnaire websites to continuously collect users' feedback. The experimental process is shown on figure 4.
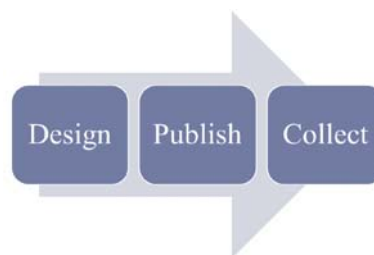

Fig. 4. Experimental process

IV. RESULTS AND DISCUSSION

This study collected questionnaires from the internet. There are totally collected 120 subjects. We have analyzed those data by IBM SPSS Statistics 19 and SmartPLS. The total of the questionnaire samples is more than 30 parts, it is the SmartPLS minimum sample requirements [17], so it was confirmed that the method can be used to test the model. The result shows social influence positively affects behavioral intentions, T-value is 2.792, and it supports H3. The R square is 0.597; it means the construct is adequate to explain (Figure 5).

A. Descriptive statistic

After analyzing this data, in this study, there are 59.5% of respondents are female; 40.8% of respondents are male. About the age, there are 10% of respondents, their age is under 20 years; 68.3% of respondents, their age is between 21 to 30 years; 12.5% of respondents, their age is between 31 to 40 years; 7.5% of respondents, their age is between 41 to 50 years; 1.7% of respondents, their age is above 51 years. About the education, there are 1.7% of respondents, their education degree is under senior; 84.2% of respondents, their education degree is college/university; 14.2% of respondents, their education degree is a master. About the profession, there are 46.7% of respondents, they are students; 5.8% of respondents, they are there are finance; 10.8% of respondents, they are there are sales; 5.0% of respondents, they are there are processed; 31.7% of respondents, they are there are others. There are 55.8% of respondents, they never use the likely software, and 44.2% of respondents have been used.

B. Path coefficients

In this section, the study adopted SmartPLS to evaluate the path coefficients and validate the hypothesis. If T value greater than 1.96, it considered significant and marked "*"; if T value greater than 2.58, it considered highly significant and marked "**" ; If T value greater than 3.29, it considered extremely significant and marked "***". Falk and Miller (1992) recommended that R square should be equal to or greater than 0.10 in order for the variance explained of a particular endogenous construct to be deemed adequate. Chin (1998) recommended R square for endogenous latent variables based on: 0.67 (substantial), 0.33 (moderate), 0.19 (weak).
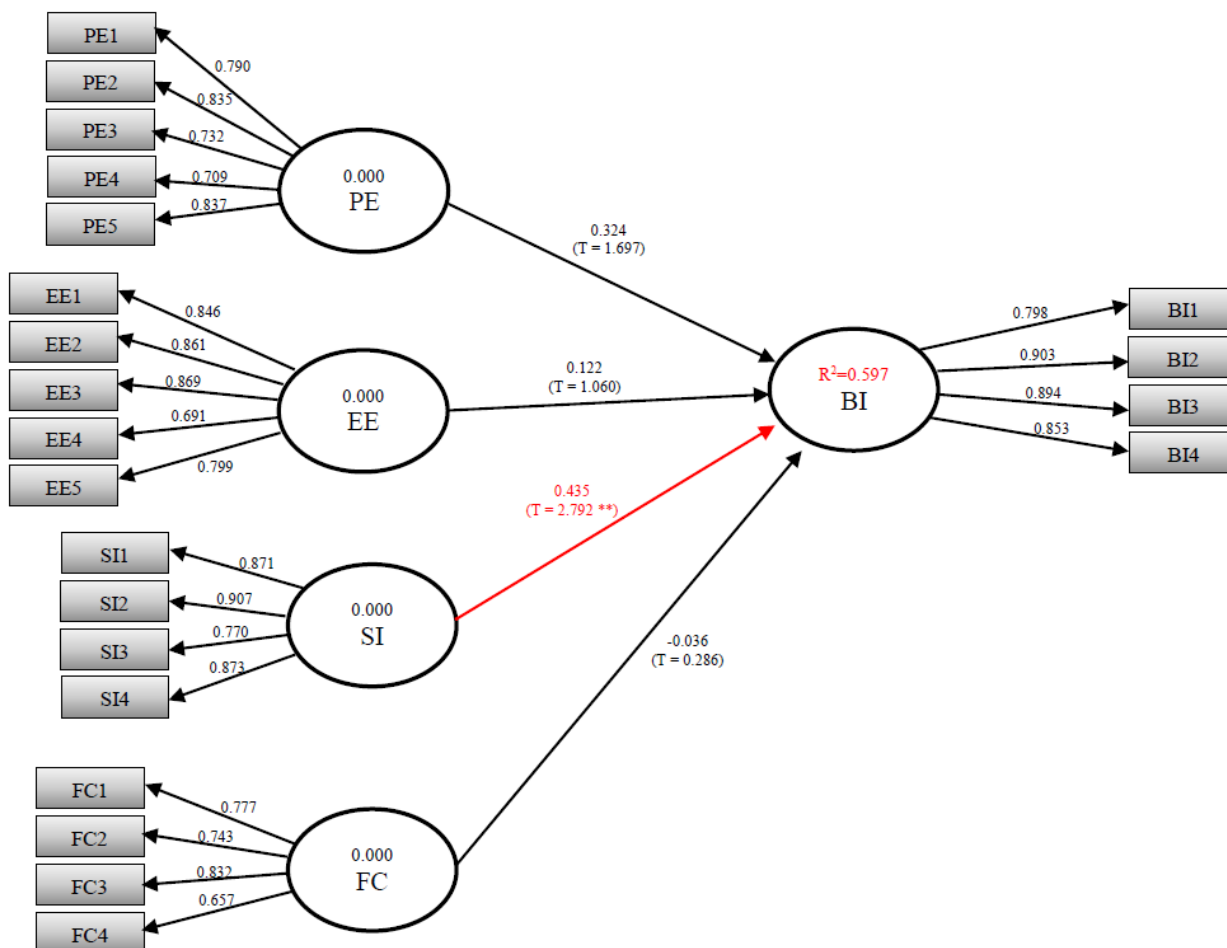
Fig. 5. Model testing results

V. CONCLUSION

A. Conclusion

First, the main target of this study is adopted UTAUT to explore the behavioral intention of users on "MTGS" and analyze the data from investigation of questionnaire to present the result. Second, this study has been confronted with some limitation through the study period will introduce in this section. Finally, this study will provide some issues to study in the future.

This study, analyze the questionnaire by SEM, ANOVA, and so on, to obtain the result and verify hypotheses, as following:

(a) The influence of effort expectancy on behavioral intention will be moderated by age.

(b) The social influence on the Chinese tourists use the "MTGS" will positively affect behavioral intentions.

(c) The performance expectancy on the Chinese tourists use the "MTGS" will not positively affect behavioral intentions.

(d) The effort expectancy on the Chinese tourists use the "MTGS" will not positively affect behavioral intentions.

(e) The facilitating conditions on the Chinese tourists use the "MTGS" will not positively affect behavioral intentions.

(f) The influence of performance expectancy, effort expectancy, social influence, facilitating conditions on behavioral intention will be not moderated by moderators.

B. Study limitations

In this section, this study was limited by online environment, different questionnaire platform, and many other factors, so it can't consider the entire situation to research. There are some limitations as following:

(a) Tested platform

"MTGS" is provided to Chinese tourists, so the invites are all come from China. In order to collect more feedbacks from different level of age and fields, this questionnaire not only provide in Taiwan to students come from China, but also provide in the online questionnaire in China. However, there are many limitations between Taiwan and China, such as browsers (affect resolution of "MTGS"), network speed, and others. It is the main limitation in this study.

(b) Questionnaire

In order to understand the behavior intention of Chinese tourists, this study adopted questionnaires to require feedbacks. However, this study use UTAUT to design the questionnaire, and the construction are all limited with the model, but there more practice factors will influence the behavior, so many issues can be explored in the future.

REFERENCES

[1] Tourism Bureau, http://www.taiwan.net.tw/w1.aspx
[2] National Policy Foundation http://www.npf.org.tw/
[3] Nilsen http://www.nielsen.com/tw/zh.html
[4] Insightxplorer: http://www.insightxplorer.com/index.html
[5] V. Venkatesh, M. G. Morris, G. B. Davis and F. D. Davis, "User acceptance of information technology: Toward a unified view," MIS Quarterly, vol. 27, pp. 425–478, 2003.
[6] F. D. Davis, "User acceptance of information technology: system characteristics, user perceptions and behavioral impacts," International journal of man-machine studies, vol. 38, no. 3, pp. 475–487, 1993.
[7] J. W. Moon and Y. G. Kim, "Extending the TAM for a World-Wide-Web context," Information & Management, vol. 38, no. 4, pp. 217–230, 2001.
[8] J. K. Park, S. J. Yang, and X. Lehto, "Adoption of mobile technologies for Chinese consumers, "Journal of Electronic Commerce Research, vol. 8, No. 3, pp. 196–206, 2007.
[9] D. J. Neufeld, L. Dong and C. Higgins, "Charismatic leadership and user acceptance of information technology," European Journal of Information Systems, vol. 16, no. 4, pp. 494–510, 2007.
[10] S. S. Al-Gahtani, G. S. Hubona and J. Wang, "Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT," Information & Management, vol. 44, no. 8, pp. 681–691, 2007.
[11] C. M. Chiu and E. T. Wang, "Understanding Web-based learning continuance intention: The role of subjective task value," Information & Management, vol. 45, no. 3, pp. 194–201, 2008.
[12] F. D. Davis, R. P. Bagozzi and P. R. Warshaw, "User acceptance of computer technology: a comparison of two theoretical models," Management science, vol. 35, no. 8, pp. 982–1003, 1989.
[13] V. Venkatesh and M. G. Morris, "Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior," MIS quarterly, pp. 115–139, 2000.
[14] R. Agarwal and J. Prasad, "The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies," Decision Sciences, vol. 28, pp. 557–582, 1997.
[15] R. L. Thompson, C. A. Higgins and J. M. Howell, "Personal Computing: Toward a Conceptual Model of Utilization," MIS Quarterly, vol. 15, no. 1, pp. 124–143, 1991.
[16] G. C. Moore and I. Benbasat, "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," Information Systems Research, vol. 3, no. 2, pp. 192–222, 1991.
[17] W. W. Chin, B. L. Marcolin and P. R. Newsted, "A Partial Least Squares Latent Variable Modeling Approach for Measuring Interaction Effects: Results from a Monte Carlo Simulation Study and an Electronic-Mail Emotion / Adoption