# TOURIST ADOPTION OF MAPPING APPS: A UTAUT2 PERSPECTIVE OF SMART TRAVELLERS

**Anil Gupta**
**Nikita Dogra**

***Original scientific paper***
Received 16 December 2016
Revised 9 March 2017
7 June 2017
Accepted 17 July 2017
https://doi.org/10.20867/thm.23.2.6

**Abstract**
Purpose – Mapping apps are location based travel apps used for navigation and routing. These apps are gaining worldwide popularity because of its enormous potential. Despite of the growing popularity and utility of the mapping apps, the published literature in this area is scarce, leaving an unexplored area of research. Thus, the current study aims to identify factors affecting tourist's intentions to use mapping apps while travelling.
Design – The Extended Unified theory of acceptance and use of technology (UTAUT2) was applied as the basis of the present study
Methodology – The data was collected from 284 travellers in India using a structured questionnaire. The data was analyzed using Partial Least Square approach.
Findings – The results indicated that the most significant antecedents of behavioral intentions are habit, facilitating conditions, performance expectancy and hedonic motivation. It was observed that the actual usage behavior was influenced by traveler's intentions and habit to use the technology (mapping apps). However it was noted that effort expectancy, social influence and price value had no significant effects on the tourist's intentions to use mapping apps while travelling.
Originality of the research – Till date limited empirical studies have explored the adoption of mapping apps by travelers. This study is unique as it explores the adoption intentions using a relevant theoretical framework in the developing economy context wherein the use of mapping apps is still in the nascent stage. This research contributes to the literature of innovation adoption and provides an interesting perspective to companies developing location based travel mobile apps.
**Keywords** Location based services, Mapping apps, Technology adoption, Innovation Adoption, UTAUT 2

## INTRODUCTION

The evolution of smart technologies from the very basic to advanced and multifarious features has brought unprecedented opportunities for the tourism industry. The modern smartphones with all time access to internet and innumerable applications (apps) have a great bearing on the tourist behavior (Lu, Mao, Wang and Hu 2015). According to TripAdvisor study it was established that 42% travelers worldwide use smartphones to plan/book their trips. Central to this are the varied forms of smartphone apps which are developed and accepted globally. One of the most interesting smartphone apps for tourists is Location based service apps (Chittoria and Aggarwal 2014). Location-based services (LBS) refer to Information services that can be accessed through smartphones by determining the present location of the smartphone through satellite based GPS

(Antikainen et al. 2006). The conventional uses of LBS are mapping, tracking, routing, navigation and searching for services in proximity such as ATMs, shopping malls, restaurants, hotels, and other travel information such as traffic-related data (Farid, Nordin and Ismail 2013; Ibrahim and Mohsen 2014). The location based service apps act as electronic tour guides enabling the consumers to plan their trips on their smartphone devices by providing the necessary information, direction and real time reviews about a destination/point of interest ( Li 2015). There are various types of location based service apps available for travelers such as, apps for trip planning (TRIPIT), flight tracking (FLIGHT TRACKER), weather forecast apps (weatherpro), mapping and navigation apps (google maps, triposo) and many more (Chong and Ngai 2013). The mapping apps allow users to locate even the smallest streets of any remote areas of the country. It enables the tourists to plan trips to multiple destinations by selecting the shortest routes and covering maximum destinations in limited time (Chen and Chen 2011) and has replaced the traditional maps with digital maps (Chong and Ngai 2013).

Despite of the growing popularity and effectiveness of these mapping apps, it was established that still more than 50% travelers are yet not able to tap the potential of these mapping/navigational apps (AARP real responsibilities). Thus, it is pertinent to study the factors affecting the adoption and usage of mapping apps among the tourists. Also, it is observed that published literature examining the tourist's intention to use mapping apps is very limited, leaving an unexplored are of research. Therefore, the current study shall aim to understand the underlying psychological factors influencing the user's intentions to adopt and use mapping apps while travelling.

The Extended Unified theory of acceptance and use of technology (UTAUT2) was applied as the basis of the present study, as it is the latest technology acceptance model which incorporates all the major developments in consumer technology adoption literature (Satama 2014). Additionally, the predictive validity of the extended UTAUT model in consumer context is better in comparison with the previous models as the variance explained in both Behavioural Intentions and Use behavior is considerable as compared to the baseline UTAUT model (Venkatesh et al. 2012).

The current study is divided into following sections. Section 2 shall discuss the theoretical background and hypotheses developments. Section 3 consists of the research methodology followed by results and findings in Section 4. Last section includes the discussions and conclusions.

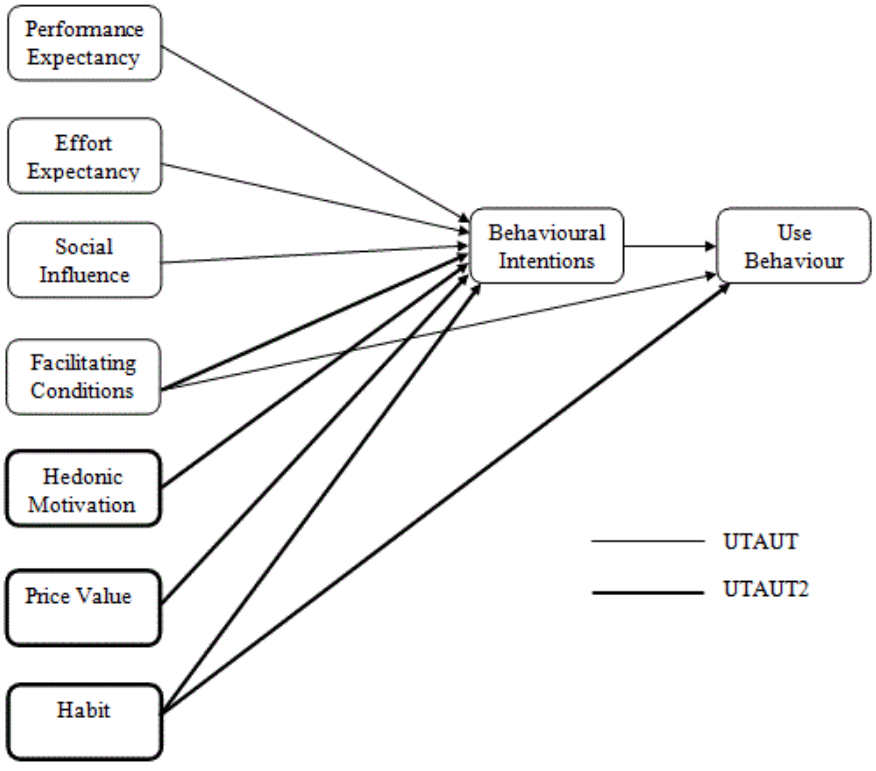
## 1. THEORETICAL BACKGROUND AND HYPOTHESES

Existing studies on technology acceptance within the tourism context have mostly applied models including Diffusion of Innovation (Chang and Jang 2014; Lu, Mao, Wang and Hu 2015). Social Cognitive Theory (Lu, Mao, Wang and Hu 2015), TAM (Huh, Kim, and Law 2009; Kim et al. 2008), UTAUT model (San Martín and Herrero 2012) etc.

### 1.1. The extended Unified Theory of acceptance and use of technology

The UTAUT 2 model was developed by Venkatesh et al. in 2012 to explain the acceptance and use of technology particularly by the **consumers**. UTAUT 2 is an extension of Unified theory of acceptance and use of technology (UTAUT) given by Venkatesh et al. in 2003 which mainly focused on determining the adoption and usage of technology by **employees**. Venkatesh et al (2003) after extensively reviewing eight predominant theories of technology acceptance including TRA (Fishbein 1975), TAM (Davis 1989), the motivational model (MM) (Davis, Bagozzi and Warshaw 1992), TPB (Ajzen 1991), the PC utilization model (MPCU) (Thompson, Higgins, and Howell 1991), IDT (Rogers 1962), the social cognitive theory (SCT) (Bandura 1986), and an integrated model of technology acceptance and planned behaviour (TAM-TPB) (Taylor and Todd 1995), identified four main constructs i.e (i) performance expectancy, (ii) effort expectancy, (iii) social influence, and (iv) facilitating conditions influencing behavioural intentions and usage behavior of Individuals towards a particular technology. However, the extended UTAUT or UTAUT 2 added three new constructs namely Hedonic motivations, Price value and Habit to the original UTAUT to determine the behavioural intentions and usage behavior of consumers.

Fig. 1: **UTAUT2**




Source: Venkatesh et al. 2012

The UTAUT 2 model has been applied in several contexts and its hypothetical relationships are empirically proved and widely supported by various researchers (Baptista and Oliveira 2015; Chong and Ngai 2013; Escobar-Rodríguez and Carvajal-Trujillo 2014; Nair, Ali and Leong 2015; Satama 2014). The next setions will discuss hypotheses related to UTAUT2 in the context of use of mapping apps while travelling.

#### 1.1.1. Performance Expectancy

According to Venkatesh et al. (2012) performance expectancy is "the degree to which using technology will provide benefits to consumers in performing certain activities". Performance expectancy has proved to be a strong antecedent in consumer e-commerce travel adoption studies. Amaro and Duarte (2013) conducted a meta-analysis of online travel purchasing adoption research and found that performance expectancy was a significant variable. San Martin and Herrero (2012) applied UTAUT model in their study and established that Performance expectancy positively influences online travel purchase intentions. Past studies (Ayeh et al. 2012; Huh et al. 2009) have confirmed performance expectancy to be one of the most significant predictor of technology usage in tourism settings. Im, Hong and Kang (2011) examined the effects of culture on UTAUT variables. It was established that Performance Expectancy was the strongest antecedent of behavioural intentions and no significant variation was observed despite of the cultural differences. The following hypothesis is therefore proposed:

H1: Performance expectancy positively influences tourist's behavioural intention to adopt mapping apps while travelling.

#### 1.1.2. Effort Expectancy

Effort expectancy can be defined as the "degree of ease/effort associated with consumers' use of the technology" (Venkatesh et al. 2012). Consumers prefer a user-friendly technology with maximum efficiency (Godoe and Johansen 2012). Curtis et al (2010) in their research found that PR practitioner's intention to adopt social media was influenced by the ease and self adequacy of the forum. Existing literature confirmed that lower the efforts to understand a technology, the more is the intention to adopt the technology (Kang 2014). The technology which is easy to use in the adoption phase has positive influence on the consumer's attitude towards using it (Satama 2014). Effort expectancy has been strongly supported in case of online travel shopping adoption (Amaro and Duarte 2013). The following hypothesis is therefore proposed:

H2: Effort expectancy positively influences tourist's behavioural intention to adopt mapping apps while travelling.

### 1.1.3. Social Influence

Venkatesh et al.( 2003) describes social influence as the "degree to which an individual perceives that important others believe he or she should use the new system" . Social influence emphasizes on the role and opinions of important people like friends, family and colleagues (Tan, Ooi, Chong and Hew 2013).

In a study by Yang (2010) on adoption of mobile shopping services, it was found that consumer's intentions to engage in mobile shopping are influenced by the opinions of people important to the consumer. Further, similar results were reported by Leong, Hew, Tan, and Ooi (2013) and Lu and Su (2009) in case of adoption of online banking and mobile credit card and wireless mobile data services respectively. A study on mobile app usage intentions (Hew et al., 2015) has also confirmed a positive relationship between social influence and behavioural intentions. Thus, the following hypothesis is proposed:

H3: Social influence positively influences tourist's behavioral intention to adopt mapping apps while travelling.

### 1.1.4. Facilitating Condition

Facilitating Conditions is described as "Consumers' perceptions of the resources and support available to perform a behavior" (Venkatesh et al. 2003). UTAUT model suggested that user's perception of facilitating conditions directly influences the acceptance of technology, as it was affirmed that surrounding environment either encourages or restricts the adoption (Venkatesh et al. 2003). Existing studies (e.g. Akour and Dwairi 2011; Alwahaishi and Snášel 2013) established and supported that facilitating conditions have considerable effects on actual usage and behavioural intentions. Thus, the following hypotheses are posited:

H4 a. Facilitating conditions positively influences tourist's behavioral intention to adopt mapping apps while travelling.

H4 b. Facilitating conditions positively influences the tourist's Use behaviour of mapping apps while travelling.

### 1.1.5. Hedonic Motivation

Hedonic motivation is referred to as "the pleasure or enjoyment derived from using a technology" (Venkatesh et al. 2012). Brown and Venkatesh (2005) stated that hedonic motivation is an important predictor of technology adoption and usage. Zhang et al. 2012 suggested that consumer's intention to use a technology increases if the perceived entertainment value of the particular technology is more. Existing literature in information systems confirmed that hedonic motivation positively influences technology adoption and use behavior (Thong et al 2006). Similarly, past literature in m-banking and m-commerce also revealed that hedonic motivation is a chief determinant of user's intentions to adopt new technology (Baptista and Oliveira 2015; Zhang, Zhu and Liu 2012). Thus, the following hypotheses are posited:

H5. Hedonic motivation positively influences tourist's intention to adopt mapping apps while travelling.

1.1.6. Price Value

UTAUT 2 was developed to study the behavioural intentions of usage in consumer context. Price value was the new variable in the extended UTAUT model. It was added for the sole reason that the consumers are more sensitive to prices as compared to corporate employees, since the monetary cost involved in using the technology is paid by the consumers which is different in case of corporate employees (Venkatesh et al. 2012). If the perceived benefits of the technology are greater than monetary cost, then the price value is positive, which further significantly affects the behavioural intentions (Venkatesh, Thong, and Xu 2012). Thus, the following hypotheses are posited:

H6. Price value positively influences tourist's intention to adopt mapping apps while travelling.

1.1.7. Habit

Habit is defined as "the extent to which people tend to perform behaviours automatically because of learning" (Limayem et al. 2007). Habit reveals the outcome of past behaviours or experiences (Venkatesh et al. 2012), the repetitiveness of past behaviour is one of the major antecedent of present actions (Ajzen 2002). Kim et al. (2005) found that inclination to use technology can be inferred from the past usage of IT. Past studies have reflected that habit is an essential factor for technology acceptance (Gefen 2003; Kim et al. 2005; Wu and Kuo 2008). Liao, Palvia and Lin (2006) in their study on the use of e-commerce found out that habit substantially affects the behavioural intentions to utilize e-commerce services. Similar results were reported by, Lewis et al. (2013) wherein it was established that habit significantly affects the intentions to adopt classroom technology. Hence it can be inferred that propensity to use technology is directly proportional to past habit (Limayem et al. 2007).Therefore, we propose the following hypothesis:

H7 a. Habit positively influences tourist's behavioral intention to adopt mapping apps while travelling.

H7 b. Habit positively influences the tourist's Use behaviour of mapping apps while travelling.

1.1.8. Behavioural Intentions

According to Ajzen (1991) intentions can be described as a person's willingness to engage in a particular behaviour. Behavioural Intention is often regarded as the predecessor of behaviour. Pavlou and Fygenson (2006) argued that intentions have significant impact on the usage behaviour and the relationship has been validated empirically. Kwok and Gao (2005) stated that individuals tend to engage in a particular behavior if their intention towards that behavior is positive and vice-versa. It was supported by Venkatesh et al (2003) in the UTAUT model that behavioural intentions

have strong influence on the use of technology. A positive intention influences the individual's acceptance and usage of innovation. Mafe et al (2010) in their study confirmed that behavioural intention is a major determinant of using mobile services and use behaviour as well. Therefore, we propose the following hypothesis:

H8. Behavioral intention to adopt mapping apps influences use behaviour of tourists.

## 2. DATA COLLECTION AND RESEARCH METHODOLOGY

### 2.1. Measurement

A set of scale items in respect of information and communication technology acceptance literature and tourism literature (i.e. the original UTAUT model, the extended UTAUT model (UTAUT2), other studies and related theories) were adapted to the specific context of this study on the use of location based travel apps while travelling (Antunes & Amaro, 2016; Escobar-Rodríguez & Carvajal-Trujillo, 2014; Jensen, 2012; San Martín & Herrero, 2012; Venkatesh et al., 2003, 2012; Wen, 2012).

A total of 27 items were obtained, following the above procedure. It can be seen that the performance expectancy and effort expectancy construct is composed of four items each (Baptista and Oliveira, 2015; Escobar-Rodríguez and Carvajal-Trujillo, 2014; San Martín & Herrero, 2012; Venkatesh et al., 2012). Social Influence, Facilitating conditions, Price Value, Hedonic Motivation, Habit and Behavioural Intention constructs consists of three items each (Escobar-Rodríguez and Carvajal-Trujillo, 2014; San Martín and Herrero, 2012; Venkatesh et al., 2003 & 2012) and the use behavior construct comprises one item (Venkatesh et al., 2012). **All these constructs under study were modelled using multi-item reflective indicators.** The responses of the survey participants to each of the items were measured on a five point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The survey was divided into two sections, wherein the first section contained questions about the Demographic profile of the respondents and the second part had questions to measure the constructs that influence behavioural intentions to use mapping apps while travelling. The first section contained a qualifying question which confirmed that the person had used mapping apps at least once, following which the respondent was directed to go the next section.

### 2.2. Sample and Data collection

The data was collected in India from August to November 2016. The target population of the study was travelers in India, whose email addresses were taken from various travel agencies catering to domestic tourists. An Email invitation giving a brief explanation about mapping based apps along with a link to the survey was sent to all the respondents. A total of 757 email invitations were successfully delivered, out of which 349 participants responded to the survey. Of these only the respondents who had used location based travel apps particularly mapping apps were retained in the analysis. A total of 284 valid responses were obtained, providing a response rate of 37.5 %. It was observed that respondents over the age of 50 years had not used the technology and thus were not eligible for the survey.

Table 1 indicates the respondent's profile which shows that out of 284 valid responses 126 were female and 158 were male. It was also observed that largest proportion of respondents were aged between 20-30 (44.7%) followed by those between the age group of 30-40 (34.5%), 40-50 (14.7%) and below 20 (6.33%).

Table 1: **Gender and Age characteristics of the respondents**

| | Characteristics | Frequency | % |
|---|---|---|---|
| Gender | Male | 158 | 55.6% |
| | Female | 126 | 44.3% |
| | Total | 284 | 100% |
| Age | Below 20 | 18 | 6.33% |
| | 20-30 | 127 | 44.7% |
| | 30-40 | 97 | 34.5% |
| | 40-50 | 42 | 14.7% |
| | Total | 284 | 100% |

## 3. DATA ANALYSIS AND RESULTS

Statistical analysis and hypotheses were tested using structural equation modeling based on the optimization technique of partial least squares. SmartPLS software, Version 2.0 (Ringle, Wende and Will 2005) was used to conduct the analysis. The PLS is a well-established technique which is used to test structural models. It has been widely accepted and used over the past decade because of its ability to calculate the path estimates and the model parameters under conditions of non normality and is also recommended for small-medium samples (Hulland 1999)

The data analysis was done in two stages wherein the first stage included the development and assessment of measurement model and the second stage included the development of full structure equation model (Gerbing and Anderson 1988).

### 3.1. Measurement Model

The first stage examined the convergent and discriminant validity of the constructs and reliability of all the multiple item scales. The assessment of convergent validity was done in terms of factor loadings and average variance extracted (AVE). Table 2 shows the factor loadings of each item which indicates that all the factor loadings were statistically significant and were above the minimum acceptable value of 0.70 (Fornell and Larcker 1981). Similarly the AVE scores of all the constructs are indicated in Table 3 which shows that all the values are above the desirable threshold of 0.50 (Fornell and Larcker 1981).

Table 2: **Item Loadings**

| Scale Item | Loadings |
|---|---|
| PE1- I find mapping apps useful while travelling | 0.732 |
| PE2- Using mapping apps helps me reach my destination conveniently | 0.840 |
| PE3- Using mapping apps save time while travelling. | 0.804 |
| PE4- Using mapping apps increases my productivity and helps me visit the places of my interest | 0.821 |
| EE1- Learning how to use mapping apps is easy for me | 0.826 |
| EE2- My interaction with mapping apps is clear and understandable | 0.895 |
| EE3- I find mapping apps easy to use. | 0.894 |
| EE4- It is easy for me to become an expert/skillful when using mapping apps | 0.810 |
| SI1-People who are important to me think that I should use mapping apps while travelling | 0.936 |
| SI2- People who influence my behavior think that I should use mapping apps while travelling | 0.941 |
| FC1- I have the resources necessary to use mapping apps | 0.868 |
| FC2- I have the knowledge necessary to use mapping apps | 0.879 |
| HM1- Using mapping apps is fun | 0.933 |
| HM2- Using mapping apps is enjoyable | 0.949 |
| HM3- Using mapping apps is very entertaining | 0.811 |
| PV1- The cost of using mapping apps is reasonable | 0.825 |
| PV2- Using mapping apps is worth the cost | 0.892 |
| PV3- At the current price, mapping apps provides a good value | 0.877 |
| HT1- The use of mapping apps has become a habit for me. | 0.858 |
| HT2- I am addicted to use mapping apps when travelling. | 0.910 |
| HT3- I must use mapping apps when travelling. | 0.871 |
| BI1- I intend to continue using mapping apps in the future. | 0.883 |
| BI2- I will always try to use mapping apps when travelling | 0.895 |
| BI3- I plan to continue to use mapping apps frequently. | 0.881 |
| AU1-How often do you use mapping apps while travelling? | 1.000 |

The reliability of the indicators was also verified by using Composite reliability coefficient (Werts, Linn & Joreskog, 1974) and Cronbach coefficient alpha (Cronbach, 1970). The values of all the coefficients are presented in Table 3. Since the Composite reliabilities and Cronbach alpha coefficients are above the minimum acceptable levels of 0.70 (Churchill, 1979), it is recommended for confirmatory research.

Table 3: **Composite Reliability, AVE and Cronbach alpha coefficient**

| Construct | Composite Reliability | AVE | Cronbach Alpha |
|---|---|---|---|
| Performance Expectancy (PE) | 1.000 | 1.000 | 1.000 |
| Effort Expectancy (EE) | 0.917 | 0.786 | 0.864 |
| Social Influence (SI) | 0.917 | 0.735 | 0.881 |
| Facilitating Conditions (FC) | 0.865 | 0.762 | 0.689 |
| Hedonic Motivation (HM) | 0.927 | 0.809 | 0.884 |
| Price Value (PV) | 0.912 | 0.775 | 0.854 |
| Habit (HT) | 0.877 | 0.641 | 0.812 |
| Behavioural Intentions (BI) | 0.899 | 0.749 | 0.835 |
| Use Behaviour (AU) | 0.937 | 0.882 | 0.866 |

The discriminant validity of the constructs can be confirmed if the square root of AVE is greater than the correlation between the constructs (Fornell and Larcker 1981). The values of AVE square root and the correlation of the constructs are presented in Table 4 which suggests satisfactory discriminant validity of the measurements. All the above results supported the validity and reliability of the scales; hence these scales were further utilized to test the structural model.

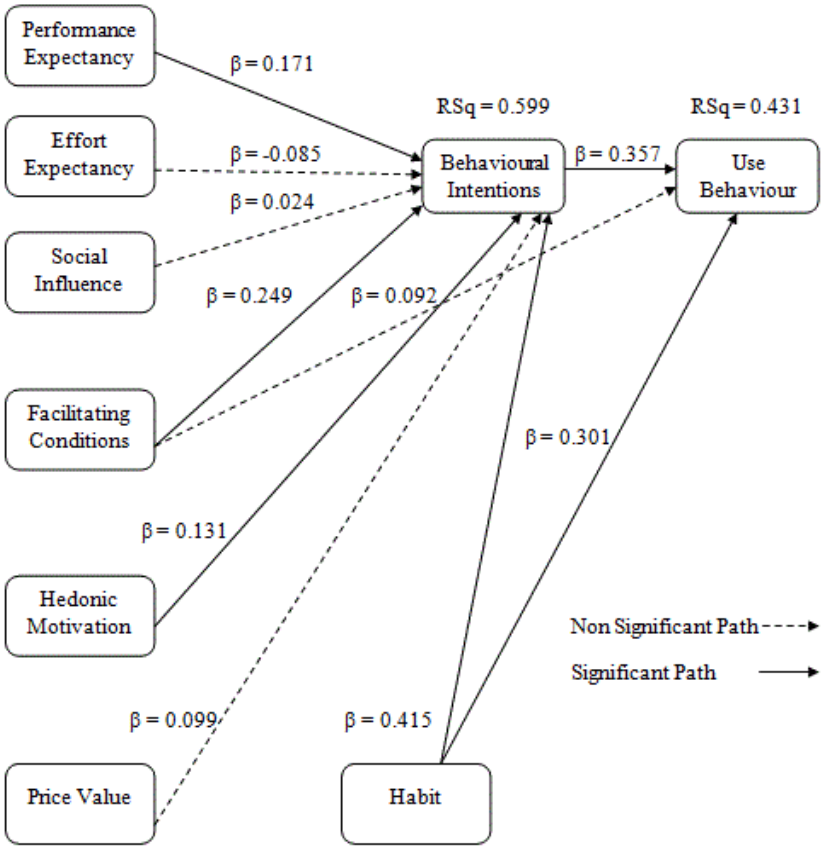
Table 4: **Discriminant validity of constructs**

| | AU | BI | EE | FC | HM | HT | PE | PV | SI |
|---|---|---|---|---|---|---|---|---|---|
| AU | 1.000 | | | | | | | | |
| BI | 0.612 | 0.887 | | | | | | | |
| EE | 0.425 | 0.451 | 0.857 | | | | | | |
| FC | 0.413 | 0.556 | 0.575 | 0.873 | | | | | |
| HM | 0.366 | 0.516 | 0.420 | 0.416 | 0.900 | | | | |
| HT | 0.581 | 0.680 | 0.435 | 0.411 | 0.481 | 0.880 | | | |
| PE | 0.457 | 0.537 | 0.645 | 0.497 | 0.359 | 0.480 | 0.880 | | |
| PV | 0.302 | 0.476 | 0.424 | 0.374 | 0.464 | 0.428 | 0.441 | 0.865 | |
| SI | 0.320 | 0.444 | 0.224 | 0.373 | 0.427 | 0.502 | 0.332 | 0.261 | 0.939 |

### 3.2. Structural Model

The structural model and the hypothesized relationships were tested by using PLS analysis. The statistical significance and the path coefficients were examined by performing bootstrapping procedure with 5000 iterations and the results of the same are summarized in Figure 2 and Table 5.

Fig. 2: **Results of the structural model**




The results indicate that the model explains a variation of 59.9% and 43.1% in behavioural intentions and use behavior respectively. Performance Expectancy ($\beta$ = 0.171, $p<0.05$), Facilitating conditions ($\beta$ = 0.249, $p<0.05$), Hedonic motivations ($\beta$ = 0.131, $p<0.05$) and habit ($\beta$ = 0.415, $p<0.05$) were found to be statistically significant in explaining behavioral intentions. Thus it can be inferred that behavioural intentions to use mapping apps is dependent upon the expected performance level/usefulness of the technology, availability of necessary resources or other facilitating conditions, individual habit of using it, and fulfillment of hedonic motives. On the contrary it was found that effort expectancy, social influence and price value were statistically insignificant and had no influence on behavioral intentions to use mapping apps. It was also established that main antecedents of actual usage behavior are Behavioural intentions and habit, however it was found that the effect of facilitating conditions on actual usage behavior was not statistically significant. Therefore, it can be stated that actual use of mapping apps is influenced by the consumer's behavioural intentions and consumer's habit to use mapping apps.

Table 5: **Summary of Test results for the structural model**

| Hypothesis | Path | Standardized Path Coefficient | P-Value | Supported? | Construct | R-squared |
|---|---|---|---|---|---|---|
| H1 | PE-BI | 0.171 | 0.041 | Yes | Behavioural Intention | 0.599 |
| H2 | EE-BI | -0.085 | 0.333 | No | | |
| H3 | SI-BI | 0.024 | 0.758 | No | | |
| H4a | FC-BI | 0.249 | 0.004 | Yes | | |
| H5 | HM-BI | 0.131 | 0.031 | Yes | | |
| H6 | PV-BI | 0.099 | 0.116 | No | | |
| H7a | HT-BI | 0.415 | 0.000 | Yes | | |
| H4b | FC-AU | 0.092 | 0.221 | No | Use Behaviour | 0.431 |
| H7b | HT-AU | 0.301 | 0.000 | Yes | | |
| H8 | BI-AU | 0.357 | 0.001 | Yes | | |

## 4. CONCLUSION/DISCUSSION

The current study applied UTAUT 2 model to examine the factors influencing consumer's acceptance and use of mapping apps while travelling. Since existing studies examining this issue are limited, the present study can contribute in providing a better understanding of user's needs and requirements in context of location based services in tourism.

The main findings of this study indicate that Habit is one of the strongest predictor of intentions to use mapping apps while travelling and it also influences the actual usage behavior of the consumers. These results are consistent with previous research findings (Arenas-Gaitán, Peral-Peral and Ramón-Jerónimo 2016; Luo et al. 2010; Venkatesh et al. 2012; Zhou et al. 2010). In fact existing studies suggest that respondents see habit as the most significant factor affecting the actual usage behavior. Therefore, it is suggested that mapping app developers could incorporate maximum utilitarian features like providing all the necessary information and directions about nearby attractions, restaurants and various other necessary services like nearest ATMs, medical shops, taxi stands / bus stands etc in a single app so that travelers do not have to explore any other app to find such information and eventually develop a habit of using mapping apps especially while travelling.

The results suggested that facilitating conditions was another very significant antecedent of behavioral intentions which coincides with the results of previous research (Escobar-Rodriguez and Carvajal-Trujillo 2014; Venkatesh et al. 2012). However no significant relationship was found between facilitating conditions and actual usage behavior which is consistent with the earlier research (Martins et al. 2014; Yuen et al. 2010) this could be due to the increasing use of smart technology and facilities like 3G and 4G services

which have enabled the users to have all time access to high speed internet, it could be assumed that users who have access to such facilities will always be in a position to utilize location based services, thus undermining the influence of facilitating conditions on actual usage behavior.

Performance expectancy is also a very important factor which influences the behavioural intentions of consumers. Similar results have been reported in past studies (Antunes and Amaro 2016; Kim et al. 2008; Oliveira, Faria, Thomas, and Popovicˇ 2014; Oh et al. 2009). These findings suggest that if the perceived usefulness of the technology is more, then the user's intentions to use mapping apps while travelling are greater. For this reason app developers should lay emphasis on providing effective, useful and reliable information which would further lead to increasing acceptance of mapping apps among the travelers. It is also suggested that marketers should focus on creating awareness of the utility and potential of mapping apps while travelling, so that more and more travelers would adopt the technology. The results suggest that Hedonic Motivation also influences the behavioural intentions of consumers which is supported by previous research findings (Baptista and Oliveira 2015; Raman and Don 2013; Venkatesh et al. 2012). Thus it is recommended that app designers should develop apps which are more entertaining, enjoyable and easy to use so that it can fulfill the hedonic motives of the users.

The results revealed no significant relationship of three constructs of UTAUT 2 on behavioural intentions, i.e. effort expectancy, social influence and price value. The effort expectancy finding coincides with findings of some existing studies (Baptista and Oliveira 2015; Faria 2012; Zhou et al. 2010). This is probably because of high level usage of other mobile technologies that users find it very easy to operate and get used to it very quickly. The insignificant relationship between Social influence and behavioural intentions is consistent with earlier research findings (Baptista and Oliveira 2015; Wang and Yi 2012). The past literature suggests that as the experience with technology increases then the social influence reduces over time (Venkatesh and Morris 2000). Price value finding was consistent with previous researches (Baptista and Oliveira 2015; Yang et al. 2012). The possible reason behind this could be the low cost of technology and easy availability of mapping apps on smart devices which are free of cost and it is only the mobile net charges which the user needs to pay.

Finally, the results highlighted the direct effect of traveler's intentions to use mapping apps on its actual usage behaviour. It was noted that behavioural intentions to use mapping apps was the strongest predictor of actual usage behaviour which means that greater the intentions to use mapping apps the higher is the probability to actually make use of these apps while travelling. Therefore the developers and practitioners should try to include more utilitarian features and ensure privacy of the users so that they feel secured while using location based services which further would strengthen the tourist's intentions to use mapping apps while travelling.

The above findings can provide useful insights for practitioners as understanding the important constructs of technology acceptance can be helpful in developing and refining new technologies which further can lead to high acceptance among tourist. This study also contributes in the existing literature by providing new knowledge about the factors affecting the adoption of mapping apps among the travelers.

### 4.1. Future Research

The UTAUT 2 model suggests that age, gender and experience can influence the effect of habit, facilitating conditions and hedonic motivations on behavioural intentions. Thus, future studies could focus on studying the moderating effects of these variables on other UTAUT2 constructs. Future research could combine variables (like self efficacy, innovativeness, trust, perceived privacy etc) of other technology acceptance models with Extended Unified theory of acceptance and use of technology which may help in finding other important factors influencing adoption of new technology. Future studies can also include independent variables like perceived control, perceived risk and examine its relationship with variables like habit, behavioral intentions and actual usage. Since this study only incorporates the significant factors affecting the acceptance and usage of mapping apps, the future research could also focus on understanding the factors behind the resistance to use mapping apps. In addition futures studies could extend the current research by analyzing the cross cultural differences in determining the factors that influence user's intentions to use mapping apps while travelling. Finally a longitudinal analysis of the same research could also be done which would help in determining the change in these variables over time.

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**Anil Gupta,** PhD., Senior Assistant Professor
University of Jammu
School of Hospitality and Tourism Management & The Business School
University of Jammu, Jammu, India
Phone: +91-94191-43987
E-mail address: anil1975@yahoo.com

**Nikita Dogra,** Research Scholar
University of Jammu
School of Hospitality and Tourism Management & The Business School
University of Jammu, Jammu, India
E-mail address: nikdogra@gmail.com

Please cite this article as: Gupta, A., Dogra, N. (2017), Tourist Adoption of Mapping Apps: a UTAUT2 Perspective of Smart Travellers, Tourism and Hospitality Management, Vol. 23, No. 2, pp. 145-161, https://doi.org/10.20867/thm.23.2.6