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Gen-Y Behavioral intention to adopt mobile tourism apps: Extending UTAUT2 with trust and security

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A B S T R A C T

The evolution of technology and the widespread adoption of smart mobile devices like smartphones and tablets have significantly altered tourists' behavior using tourism services. Based on The Unified Theory of Acceptance and Use of Technology, this research aims to investigate the factors affecting Gen-Y's inclination to use tourism apps in Vietnam. The model was tested using structural equation modeling (SEM) in quantitative methodology with 337 users from Vietnam. The result showed that five factors positively impact the intention behavior of using mobile tourism applications: performance expectancy, effort expectancy, social influence, trust, and perceived security. Moreover, the findings propose practical implications and provide valuable insights for tourism app developers, marketers and operators in developing more effective tourism apps.

1. Introduction

Recent statistics indicate that the trend of smartphone usage will persist in its growth, with an estimated 6.8 billion users by 2023 (Statista, 2023a). Total number of apps downloaded in 2022 from the two largest channels, the iOS App Store and Google Play, will reach 255 billion, a 10.8% increase over 2021 (Statista, 2023b). In recent years, the fast growth of mobile Internet technology has increased the popularity of mobile tourism applications among tourists (Kim & Law, 2015; Lu et al., 2015). These applications include features that aim to improve the trip experience, such as real-time navigation, local suggestions, and booking services for lodging, airline tickets, and tourist services (Wang et al., 2016a). According to Tan et al. (2017), mobile apps provide personalization, enhance the efficiency of daily tasks, and offer considerable convenience to travelers. In the realm of customer experience and satisfaction, mobile applications have become an indispensable aspect, offering a quicker and more convenient means for customers to access information, transactions, and communication (Åkesson et al., 2014). Organizations must acquire a deeper comprehension of the correlation between customer behavior and technology adoption before integrating self-service technologies., such as mobile tourism apps (Kaushik et al., 2015). In fact, more organizations nowadays deliver services through mobile applications (Leon, 2018). As a result, it is crucial for these organizations to comprehend the perceptions of service mobile apps among tourists, specifically Generation Y, who are the focus of this study. According to Manheim's (1952) theory, each generation has its own defining features. In the domain of tourism, the behavior of travelers varies across generations. Previous research has identified four distinct generational groups of travelers: Baby Boomers (60 years of age and above), Generation X (between 40 to 60 years of age), Generation Y (between 26 to 40 years of age), and Generation Z (below 26 years of age). Thus, different generations may be utilized to describe the characteristics of tourists (Glover, 2010). To investigate transformations in the tourism market and develop potential future scenarios, it is crucial to explore youth tourists' outlooks, incentives, and actions, commonly called Generation Y and Z.

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According to WYSE (2020), most of the young travelers who are between 15 and 29 years old today come from two generational cohorts: generation Y and X, and it represents 23% of international tourist arrivals. Generation Y is commonly perceived as highly comfortable with technology, being frequent and consistent technology users, and maintaining constant connectivity through various devices (Leon, 2018).

According to Mobile Travel Trends 2019 (Travelport Digital, 2019), 64% of travelers use mobile apps to search for flights/accommodation, 52% use mobile apps to book flights/accommodation deals, and 30% get a boarding pass. Hence, it is crucial to investigate the factors influencing tourists' adoption and use of travel apps. A deeper comprehension of these factors holds the potential to bolster the uptake of smartphone travel applications. Given the increasing investment in travel-related apps, users' acceptance and adoption of such technologies are paramount to ensure the effective implementation of such technologies. Despite the effectiveness and competencies of tourism apps, studies on these apps to adopt among tourists need to be explored more in-depth (Lu et al., 2015). Given that mobile applications are among the most critical distribution channels in the tourism sector (Tan et al., 2017), this research aims to examine the intention of Generation Y tourists to use mobile tourism applications in Vietnam by using an extended version of the Unified Theory of Acceptance and Use of Technology (UTAUT2). To fill the identified research gaps, the objectives of this study are proposed as follows:

- To construct a predictive model concerning the intention to use mobile tourism applications of Gen-Y travelers.
- To investigate the factors impacting the intention of Gen-Y travellers to use mobile tourism applications.
- To suggest recommendations for operators and application developers to enhance their apps to attract a broader user base.

2. Literature review

2.1. Mobile Applications in Tourism

Enterprises in tourism industry are now actively exploring the features of mobile applications (apps) on smartphones and other mobile internet devices to improve their business operations within the tourism industry (Dickinson et al., 2014). In addition, tourism businesses are utilizing mobile applications to optimize their websites for mobile devices and enhance their mobile applications by integrating different technologies to execute fundamental promotional and marketing tasks, leading to a competitive edge. As the use of smartphones becomes more widespread, there is a corresponding increase in the number of companies and organizations investing in tourism-related applications (Lu et al., 2015). Plus, the popularity and usage of mobile applications, particularly those used for travel searches, have grown among smartphone users (Wang & Xiang, 2012; Wang et al., 2016b). Tourism apps provide a wide range of tourism-related services, such as airline tickets (e.g. cheapflights.com, Skyscanner), lodging (e.g. Booking.com, Airbnb), and dining options (e.g. OpenTable, Yelp) as well as searching for travel-related information (eg. Tripadvisor, Google map). According to Wang et al. (2016c), previous studies on mobile tourism apps have mainly concentrated on specific industries such as lodging bookings, sharing economy services, or air transportation. Mobile tourism apps enable tourists to access current and comprehensive information about tourist destinations and activities before or during their trip without being constrained by time or location (Lu et al., 2015; Xu et al., 2019). Mobile apps play a significant role in shaping the customer experience, as consumers utilize them not only for gathering information on destinations and attractions but also for a range of travel-related functions, including working with travel agencies, using translation services, accessing entertainment content, and checking in for airline flights (Leon, 2018). While mobile apps offer substantial benefits to users, there has been a scarcity of research conducted on the factors that can influence the adoption and use of tourism mobile apps.

2.2. Generation Y

The group known as Generation Y has been defined in different ways, with various birth year ranges suggested. For example, Howe and Strauss (2000) proposed a range from 1982 to 2004, while Valentine and Powers (2013) suggested a range from 1977 to 1996. The present study defines the Millennial generation as individuals born between 1981 and 1995. This range was proposed by Solka et al. (2011), includes individuals between the ages of 27 and 43, and closely aligns with the commonly accepted range. Leask et al. (2013) characterize Generation Y as a technologically adept cohort whose defining traits include a strong association with the Internet and global connectivity and a tendency to lead immersive digital lives. Yeoman et al. (2010) argue that the defining factors that have influenced the development of Generation Y can be categorized into two primary areas: the shift from an industrialized culture and economy to an information-based one, and the transition from print-based communication to a multimedia digital approach enabled by information communication technology (ICT). Prensky (2001) refers to this generation as "digital natives," fluent in the language of computers, video games, and the Internet, and compares them to their "digital immigrant" predecessors, who have adjusted to new technology but still rely on traditional methods of learning and discovery. Abram and Luther (2004) describe Generation Y as collaborative, integrated, experiential, principled, adaptive, and direct multitaskers. Additionally, members of Generation Y are optimistic, social, and receptive to change, with high expectations of themselves and others (PricetonOne, 2017). Overall, they exhibit qualities such as confidence, ambition, realism, curiosity, innovation, a shorter attention span, and high expectations. Therefore, it is unsurprising that Gen-Y draw upon their connection to technology as a central component of their identity. According to Nielsen (2014), 24% of Gen-Y believe that they are distinctive due to their use of technology. They are aware of the immense power that

technology holds and as a result, about 74% of Gen-Y express that technology has made their lives more convenient, and about 54% believe that technology helps them stay connected with their friends and family. An astonishing 83% of Gen-Y admit to sleeping with their smartphones nearby. Additionally, Nielsen (2014) revealed that Gen-Y exhibited a greater propensity than other generations to engage in online activities such as online trading, banking, and insurance. Considering these traits of Gen-Y, it's reasonable to infer that they are proficient technology users and crave a continuous influx of information. Some studies related to Mobile apps have been taken, but mobile tourism app research has not been studied in-depth to understand Gen-Y's adoption and use behaviors.

2.3. The Unified Theory of Acceptance and Use of Technology

Numerous studies have pointed out the shortcomings of the Technology Acceptance Model (TAM) in comprehensively addressing the relationship between technology and actual user adoption and usage behaviors (Lim et al., 2016). Research indicates that the Technology Acceptance Model (TAM) may not fully explain comprehensively capturing the determinants affecting mobile usage and the influence of social factors and environmental circumstances on behavior (Torres & Gerhart, 2019). To address the limitations of the Technology Acceptance Model (TAM), Venkatesh et al. (2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT), which integrated eight distinct theoretical frameworks. These included the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (TPB) (Ajzen, 1991), the Technology Acceptance Model (TAM, TAM2) (Davis et al., 1989; Venkatesh & Davis, 2000), the Motivation Model (MM) (Vallerand et al., 1997), the Combined TAM and TPB (TAM&TPB) (Taylor & Todd, 1995), the Model of PC Utilization (MPCU) (Thompson et al., 1991), the Innovation Diffusion Theory (IDT) (Rogers, 1995), and the Social Cognitive Theory (SCT) (Bandura, 1986). This comprehensive model aimed to provide a more thorough understanding of the factors influencing individuals' technology acceptance and usage.

The Unified Theory of Acceptance and Use of Technology (UTAUT) seeks to elucidate individuals' adoption of information and communication technologies (ICTs) through four variables: performance expectancy, effort expectancy, social influence, and facilitating conditions. The first three variables affect individuals' intentions to use ICTs, whereas the fourth construct, facilitating conditions, impacts the actual usage of technology. These relationships are subject to moderation by factors such as gender, age, experience, and voluntariness of use. To optimize the consumer usage framework, UTAUT2 was developed as an extension of UTAUT (Venkatesh et al., 2012). UTAUT2 integrates three additional variables: hedonic motivation, price value, and habit. While hedonic motivation and price value are directly linked to intentions to use, habit influences intentions to use and actual usage. Furthermore, UTAUT2 introduces a new relationship between the facilitating conditions and the intention to use. As consumption in the consumer environment is always voluntary, UTAUT2 does not consider voluntariness of use as a moderating variable; instead, it introduces experience as a moderator in the relationship between intentions to use and usage. According to UTAUT2, performance expectancy, effort expectancy, social influence, hedonic motivation, price value, and habit all influence the intention to use technology. Besides that, intentions to use, facilitating conditions, and habit are significantly correlated with actual usage.

3. Hypotheses Development

3.1. Performance expectancy

‘Performance expectancy’ is the extent to which the utilization of technology can result in advantageous outcomes for individuals when engaging tasks (Venkatesh et al., 2012). From the perspective of Gupta & Dogra (2017) and Rahman & Sloan (2017), performance expectations include utility, ease of use, time efficiency, and effectiveness. Mobile apps have the potential to provide valuable features to consumers using mobile devices (Wu & Chen, 2014). These applications can facilitate access to various services (Erkan & Evans, 2016). Furthermore, tourism apps empower customers to conveniently compare airfare costs, make reservations for car rentals and lodgings, and acquire precise and timely details about various products from the convenience of their homes. In another study, Lai & Lai (2014) found that Performance expectancy significantly impacts the intention to use m-commerce. Other research on mobile payments (Morosan & DeFranco, 2016), tour guides apps (Lai, 2015), and Restaurant apps (Palau-Saumell et al., 2019) also found a positive correlation between Performance expectancy and the intent to use mobile applications. Users who see mobile apps as beneficial are more inclined to have a positive attitude towards the application, leading to more use (Choi et al., 2011). Accordingly, the research hypothesized as follows:

H_1: *Performance expectancy positively influences Gen-Y’s behavioral intention to use mobile tourism apps.*

3.2. Effort expectancy

‘Effort expectancy’ refers to the level of simplicity linked to the utilization of a system, which can impact users’ intentions (Venkatesh et al., 2012). ‘Effort expectancy’ comprises different facets, such as perceived ease of use, complexity, comprehensibility, and proficiency. Within the realm of information technology, this construct encompasses users' perceptions of a system's adaptability, ease of use, user-friendliness, and interface clarity when engaging with the system (Venkatesh & Davis, 2000). The perception of ease of use, referred to as effort expectancy, plays a vital role in predicting the usage of information technology (Venkatesh et al., 2003) Therefore, their conclusion highlights the significant impact of effort expectancy on the intention to use technology, emphasizing its prominent role as one of the most influential factors in technology acceptance. If the mobile application is easy to use, individuals are more inclined to adopt it (Davis et al., 1989). In this study, effort expectancy pertains to the anticipated level of simplicity and convenience associated with using tourism applications. Effort

expectancy has been demonstrated to be a robust predictor of behavioral intentions across various domains, such as mobile banking (Merhi et al., 2019), mobile applications (Leon, 2018), mobile payments in hotels (Morosan & DeFranco, 2016), and online shopping for travel (Amaro & Duarte, 2013), and mobile tourism apps (Lai, 2015; Okumus et al., 2018; Tan et al., 2017). Hence, the following hypothesis was proposed:

H_2: *Effort expectancy positively influences Gen-Y's behavioral intention to use mobile tourism apps.*

3.3. Social Influence

Within the realm of technology, social influence is delineated as the extent to which an individual perceives others' beliefs regarding their obligation or encouragement to adopt a novel system (Venkatesh et al., 2012). There are two forms of social influence: mass media and interpersonal (Rogers, 1995). This study utilizes the interpersonal influence typically exerted by colleagues, acquaintances, and family members (Rao & Troshani, 2007). According to Singh et al. (2010), close relationships, such as friends or family, significantly influence an individual's decision to use a service, and they will recommend that service if they are satisfied with it. In the mobile app context, Yang (2010) conducted a study on adopting mobile shopping services and found that consumers' intentions to use mobile shopping services are affected by the viewpoints of individuals who are significant to the consumer. Further, many similar studies conducted on mobile adoption supported the correlation between Social influence and Intention to use. This includes accommodation booking apps (Ba et al., 2023), and m-commerce (Chong, 2013), Thus, the following hypothesis was proposed:

H_3: *Social influence positively influences Gen-Y's behavioral intention to use mobile tourism apps.*

3.4. Facilitating Conditions

Facilitating conditions pertain to how consumers perceive the availability of resources and support that aid in the execution of a particular behavior (Venkatesh et al., 2012). According to Lewis et al. (2013), individuals commonly seek assistance or guidance when encountering unfamiliar technologies. Higher levels of facilitating conditions are anticipated to decrease the levels of uncertainty or ambiguity experienced with mobile applications (Al-Gahtani et al., 2007). Several previous studies, such as smartphone apps (Gupta et al., 2018) and mobile banking (Khan et al., 2017) have demonstrated the significant influence of facilitating conditions on behavioral intentions. However, other studies, such as diet apps when ordering food (Okumus et al., 2018), and tourism apps in Spain and Portugal (Palos-Sanchez et al., 2021), have failed to establish analogous associations. Therefore, the study proposes the hypothesis:

H_4: *Facilitating Conditions positively influence Gen-Y's behavioral intention to use mobile tourism apps.*

3.5. Hedonic Motivation

Hedonic motivation refers to the enjoyment or pleasure derived from using technology-related things, and research has consistently demonstrated its significant influence on technology acceptance and usage patterns (Venkatesh et al., 2012). Previous research has effectively established the significance of hedonic motivation in stimulating the adoption of technology, as it fosters favorable attitudes among users towards the technology (Poong et al., 2017). Most previous studies using the UTAUT2 framework consistently show that hedonic motivation stands out as a strong predictor of technology adoption across diverse contexts, such as tourism apps (Palos-Sanchez et al., 2021), accommodation booking apps (Ba et al., 2023) , online hotels booking (Chang et al., 2019), restaurant apps (Palau-Saumell et al., 2019). Based on the discussion above, the study proposes the following hypothesis:

H_5: *Hedonic motivation positively influences Gen-Y's behavioral intention to use mobile tourism apps.*

3.6. Trust

According to (Gefen et al., 2003), trust refers to the belief or expectation that individuals or companies with whom one engages in interactions or transactions will not exploit the reliance placed on them. Trust plays a crucial role in facilitating participation in commercial activities, particularly in online contexts, where vendors have a greater opportunity to act in opportunistic ways (Reichheld & Schefter, 2000). Trust simplifies consumers' social complexity in e-commerce by enabling them to subjectively eliminate undesirable yet possible behaviors of e-vendors, such as the improper use of purchase information (Gefen et al., 2003). Consequently, the trust serves as a catalyst for encouraging business engagement by online customers. A higher level of trust in technology was found to decrease its perceived risk, positively impacting behavioral intention (Merhi et al., 2019). In the context of e-commerce, trust encompasses multiple dimensions. These dimensions include customers' expectations regarding online shops fulfilling their promises and commitments regarding products and services, ensuring transaction security, and consistently demonstrating trustworthiness through their capabilities (Singh & Matsui, 2017). The presence of trust can significantly impact users' intention to use e-commerce platforms. The importance of trust in shaping the intention to adopt a technology was identified as a significant factor in some previous studies, such as mobile banking (Alalwan et al., 2015, 2017), room-sharing (Dinh & Ngoc, 2021), m-commerce (Yadav et al., 2016). In this study, faith refers to the trust that customers place in the transaction information provided by keepers through mobile tourism apps. The concept of trust in the service encompasses both the initial confidence in the service and the subsequent trust that develops after using the service. Therefore, the following hypothesis was proposed:

H_6: *Trust positively influences Gen-Y's behavioral intention to use mobile tourism apps.*

3.7. Perceived Security

According to Balapour et al. (2020), the perceived security of mobile applications refers to the comprehension of the actions taken by the application provider to safeguard shared data from security breaches while being transmitted through mobile devices. Indeed, security breaches were perceived as significant barriers preventing consumers from accessing sensitive information online. Furthermore, these breaches were particularly relevant in the mobile context, exerting a notable impact on the adoption rates of mobile technologies (Merhi et al., 2019). Only when users' concerns regarding information security are adequately alleviated will they contemplate using the technology more frequently (Belanger et al., 2002). The correlation between perceived security and user intention has been extensively examined across different contexts. For example, researchers in e-commerce have discovered that users who perceive higher levels of security regarding technology are more inclined to adopt an e-banking system (Merhi et al., 2019) or utilize an e-commerce platform (Suh & Han, 2003). Therefore, the following hypothesis was proposed:

H_7: *Perceived Security positively influences Gen-Y's behavioral intention to use mobile tourism apps.*

The research model is proposed and adapted from the UTAUT2 model. Fig. 1 displays the suggested research model.

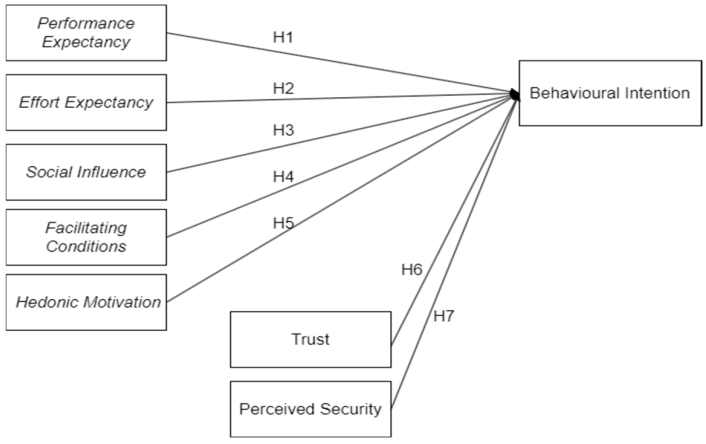

Fig. 1. Research model

4. Research Methodology

4.1. Data collection

An overview of the research, along with a survey link, was sent via email invitation to all participants. Out of the 600 email invitations delivered, 337 valid responses were received, resulting in a response rate of 56.16%. Questionnaires with missing or incomplete data were excluded from the analysis, and only valid answers were used for data analysis purposes. An online survey was employed for the data collection and divided into two segments. The first part encompassed four closed-ended questions aimed at ascertaining demographic variables utilizing a nominal scale. The second part incorporated items from the UTAUT2 model, as outlined by Venkatesh et al. (2012). Additionally, the questionnaire included constructs of 'Trust' (D. J. Kim et al., 2008) and 'Perceived Security' (Dinh & Ngoc, 2021), which were examined for their significant influence on app usage intentions. These indicators were assessed using a 5-point Likert scale, where respondents could express their agreement or disagreement, with 1 denoting "Strongly Disagree" and 5 signifying "Strongly Agree". The questions pertaining to demographic characteristics such as gender, income, marital status, and travel frequency were also integrated into the questionnaire.

4.2. Data analysis technique

Following the survey, all gathered responses underwent categorization and scaling before being encoded into SPSS 26.0 and AMOS 24.0 for statistical analysis and processing. The profile of the respondents' characteristics was reported by using descriptive analysis. Confirmatory factor analysis was conducted to verify the reliability of the measurement items. Finally, the hierarchical linear regression analysis was used to test the study hypotheses.

5. Results

5.1. Profile of participant

Table 1 summarizes the demographic characteristics of the 337 respondents. Descriptive information of the sample reveals that 57.2% of participants were male, and 42.8% were female. 53 participants (15.7%) indicated that they are single, and approximately 43.6% of respondents reported travelling four to five times within 12 months. Approximately 71.8% of participants indicated a monthly income falling within the range of 10 - 20 million VND.

Table 1
Demographic characteristics of respondents (n=337)

Characteristics		Frequency	Percent
Gender	*Male*	193	57.2
	Female	144	42.8
Marital status	*Married*	284	84.3
	Single	53	15.7
Monthly household income	*< 10 million VND*	5	1.4
	10 – 20 million VND	242	71.8
	21 – 30 million VND	51	15.1
	31 - 40 million VND	24	7.1
	> 41 million VND	15	4.6
Travel in last 12 months	*< 3 times*	63	18.7
	3- 4 times	98	29.1
	4-5 times	147	43.6
	> 5 times	29	8.6

5.2. Validity and reliability of measurements

A measurement model specifies how latent variables were assessed and represents the validity and reliability of the observed variables' responses to the latent variables (Hair et al., 2019). Due to all the measurements that were tested in previous studies, CFA and the maximum likelihood estimation approach were performed to verify the accuracy of the measurement. The CFA results indicate an acceptable fit with the chi-square (χ^2) value of the model was 832.399, and with a significant level of .000. It implied that the measurement fit the data well. The model fit indices used for this study were as follows: χ^2/df (832.399/467) = 1.782, which falls below the threshold of 3, indicating an acceptable fit; the comparative fit index (CFI) of .936; the incremental fit index (IFI) of .937; the Tucker–Lewis index (TLI) of .928; and the root mean square error of approximation (RMSEA) of .048. Furthermore, the Standardized root mean square residual (SRMR) of .044. The indices exceeded the recommended cut-off values, indicating strong evidence of fitting between the data and the tested measurement model.

Table 2
Measurement model

Constructs and item	Factor loading	SMC (R^2)	CR	AVE
'Performance Expectancy' (PE)			.841	.570
PE1	.778	.606		
PE2	.768	.589		
PE3	.764	.584		
PE4	.706	.499		
Effort Expectancy (EE)			.842	.516
EE1	.720	.518		
EE2	.675	.456		
EE3	.751	.564		
EE4	.747	.559		
EE5	.696	.485		
Social Influence (SI)			.841	.570
SI1	.785	.617		
SI2	.826	.682		
SI3	.661	.437		
SI4	.739	.546		
Facilitating Conditions (FC)			.834	.558
FC1	.694	.482		
FC2	.763	.582		
FC3	.822	.676		
FC4	.703	.494		
Hedonic Motivation (HM)			.862	.612
HM1	.816	.666		
HM2	.827	.683		
HM3	.792	.627		
HM4	.686	.471		
Trust (TR)			.877	.640
TR1	.799	.638		
TR2	.761	.579		
TR3	.824	.680		
TR4	.815	.664		
Perceived Security (SE)			.830	.549
SE1	.755	.570		
SE2	.738	.544		
SE3	.749	.561		
SE4	.722	.521		
Intention to use (IU)			.841	.575
IU1	.827	.394		
IU2	.870	.463		
IU3	.681	.757		
IU4	.628	.684		

'χ^2 = 832.399; df=467; χ2/df = 1.782; CFI=.936; TLI=.928; IFI=.937; RMSEA= .048; SRMR=.044'

The measurement model result (Table 2) presents the factor loadings, average variance extracted (AVE), and composite reliability (CR) of the measurement variables. The factor loadings of all 33 items surpassed .5, indicating strong associations with their respective latent constructs. Additionally, all CR values exceeded .70, surpassing the .60 thresholds, thereby demonstrating a high level of internal consistency for the latent variables. Alternatively, the average variance extracted (AVE) served as the primary measure to evaluate discriminant validity. According to Fornell & Larcker (1981), when the square root of the Average Variance Extracted (AVE) for a particular factor exceeds the correlations between that factor and other factors, it suggests discriminant validity with respect to other constructs. The findings presented in Table 3 revealed that the square roots of the AVEs exceeded the off-diagonal elements within the corresponding rows and columns. This outcome validates a sufficient level of discriminant validity among the constructs.

Table 3
Discriminant validity

Construct	PE	EE	SI	FC	HM	TR	SE	IU
PE	**.755**							
EE	.547	**.719**						
SI	.335	.394	**.755**					
FC	.333	.236	.408	**.747**				
HM	.303	.265	.407	.432	**.782**			
TR	.370	.358	.515	.514	.577	**.800**		
SE	.378	.363	.388	.477	.500	.619	**.755**	
IU	.656	.596	.688	.526	.550	.732	.641	**.758**

Note: PE = Performance expectancy, EE = Effort expectancy, SI = Social influence, FC = Facilitating conditions, HM = Hedonic motivation, TR = Trust, SE= Perceived Security, IU = Intention to use

5.3. Hypothesis Test

The hierarchical method was employed to assess the significance of the additional impacts of trust and perceived security among Generation Y individuals on their inclination to use tourism apps. In this study, the multicollinearity was assessed by variance inflation factor (VIF), while any autocorrelation within the residuals was detected by the Durbin-Watson (DW). The dependent variable examined was the intention to use hotel booking applications. Initially, model number 1 included five UTAUT2 constructs as independent variables, and then trust and perceived security were added in model number 2. This study is suitable for multiple regression analysis because there is no sign of multicollinearity when VIF values in the context of covariance-based SEM were less than 3.3 (Kock & Lynn, 2012) (Table 4). Furthermore, the Durbin-Watson test was employed to detect autocorrelation within the residuals of the regression analysis. In model number 2, the DW value was 1.681, falling within the range of 1.5-2.5 observed for all regression models, suggesting a low level of autocorrelation within the residuals of the regression analysis (Chatterjee & Hadi, 2012).

Table 4
A predictive model of Gen Y behavioral intention to use mobile tourism apps

Independent Variable	Model 1		Model 2		VIF
	β	*t*-value	*β*	*t*-value	
UTAUT2					
Performance Expectancy	.154	6.792***	.250	6.488***	1.382
Effort Expectancy	.147	5.012***	.169	4.394***	1.375
Social Influence	.286	7.395***	.233	6.032***	1.386
Facilitating Conditions	.210	3.795***	.061	1.575	1.383
Hedonic Motivation	.305	3.603***	.023	0.569	1.483
Trust			.275	6.216***	1.819
Perceived Security			.152	3.714***	1.553
R^2	.564		.640		
F-value (*sig*)	87.884***		86.229***		
ΔR^2 (*sig*)			.077***		

'Note: *p<0.1, **p<0.05, ***p<0.01 (Durbin-Watson: 1.681)'

As a result, Model 1 encompassed five constructs of UTAUT2, elucidating approximately 56.4% of Intention (F=87.884, sig=.000). Notably, 'Hedonic Motivation' (β=.305; sig=.000) and Social Influence (β=.286, sig=.000) emerged as the most influential predictors. Upon the incorporation of 'trust' and 'Perceived security' in Model 2, the predictive model's explanatory capacity increased by 7.7%, a statistically significant enhancement (ΔF= 35.839; sig=.000). In Model 2, it appeared that 'Trust' factor (β=.275, sig=.000) is significant in predicting Gen-Y's intention to use tourism apps, and 'Perceived security' factor also is significant in predicting (β=.152, sig=.000). Notably, the significant positive effect of 'performance expectancy' and 'social influence' on intention to use remained very strong. However, the effects of 'facilitating conditions' and 'hedonic motivation' were not significant. This finding suggests that after Gen-Y had the truth about tourism apps, these two constructs of UTAUT2 did not affect their intention to use these apps. Consequently, H4 and H5 were rejected out of the seven hypotheses.

6. Discussion and Implications

The study's findings underscore the pivotal role of Trust and Perceived Security as robust predictors of intentions to use tourism apps. These results align with prior research (Alalwan et al., 2015, 2017; Dinh & Ngoc, 2021; Yadav et al., 2016),

which consistently emphasizes the significance of Trust in influencing actual usage behavior. Practically, ensuring effective support for transactional issues by app operators and developers effectively 24/7 can positively shape customers' perceptions, rendering tourism apps as more reliable and useful channels for accessing tourism services. The presence of Trust can significantly impact users' intention to use tourism apps. Furthermore, app operators should devise brand strategies geared towards sustainable development, addressing social concerns. This approach can garner considerable attention from users who prioritize risk mitigation through assurances of quality services, secure transactions, and maximum value. Additionally, security remains a substantial concern and obstacle to the widespread adoption of tourism mobile apps, owing to the potential risks associated with data breaches and leaks. Therefore, strengthening IT infrastructures and security measures within tourism mobile applications is crucial to guarantee the highest level of safety and security in mobile transactions.

The findings suggest that higher perceived usefulness and ease of use of technology lead to greater intentions among users to use tourism apps while travelling. Consequently, app developers should furnish effective, useful, and reliable information which would enhance the acceptance of tourism apps among travelers. Moreover, app design should be enhanced to make the user experience more engaging and enjoyable. Additionally, this research highlights the importance users place on ease of use in these applications, emphasizing the need for app operators and developers to prioritize the design of user-friendly interfaces. Essentially, tourism apps should facilitate easy access to valuable tourism information, saving time and enabling users to compare prices from restaurants, accommodations, and other services effortlessly. Furthermore, marketers should concentrate on raising awareness about tourism apps' utility and potential during travel, encouraging more travelers to adopt this technology.

Given the pivotal role of social factors, operators should consider adopting a suitable marketing approach which allows them to build meaningful connections with customers (Gupta et al., 2018). Building strong relationships with satisfied clients is essential for fostering positive word-of-mouth promotion. Additionally, integrating tourism applications with social networks can facilitate user engagement, and developers should actively moderate user comments to maintain a positive online reputation.

7. Conclusion

This study underscores the relevance of the UTAUT2 model in elucidating the behavioral intention to utilize mobile tourism apps among Generation Y individuals in Vietnam. Adapted from the UTAUT2 framework, the study investigated seven factors: Performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, trust, and perceived security. The research outcomes ranking in descending order of influence indicate that five factors significantly impact Generation Y's intention to use tourism apps in Vietnam, including trust, performance expectancy, social influence, effort expectancy, and perceived security. Apart from theoretical implications, these findings offer practical suggestions for operators and app developers aiming to innovate in tourism app platforms. The study contributes to a comprehensive understanding of Generation Y tourists' behaviors in utilizing tourism services through mobile apps. Furthermore, the identification of influential factors in the intention to use mobile tourism apps facilitates effective product development within the technology landscape, contributing to the digitization and modernization of the tourism industry in the future of national.

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