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INTEGRATING TECHNOLOGY READINESS WITH UTAUT TO EXPLAIN GEOTAGGING ADOPTION AMONG TOURISTS IN BANGLADESH: THE MODERATING ROLE OF TECHNOLOGY ANXIETY

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Abstract: This study aims to investigate the examine tourists' behavioral intention to adopt geotagging services, a technology imperative for tracking tourist movement and destination branding. It integrates the drivers of technology readiness (TR)—optimism, innovativeness, discomfort, and insecurity—with the core constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The research specifically tests the hypothesis that the influence of these TR drivers on behavioral intention is completely mediated by performance and effort expectancy. A structured web-based questionnaire was designed to measure the model's constructs. Data was collected from a sample of tourists who are active social networking site users across Bangladesh. The subsequent analysis employed the Structural Equation Modeling (SEM) technique using advanced statistical software to validate the measurement model and test the proposed hypotheses and mediating effects. The findings confirm that the proposed TR-UTAUT integrated model offers superior explanatory power. The impact of technology readiness drivers on intention is significantly mediated through performance expectancy and effort expectancy, while also retaining a direct influence. All UTAUT constructs were significant determinants of adoption except for effort expectancy, perceived risk, and perceived reliability. Critically, multigroup analysis revealed technology anxiety acts as a key moderator. These results provide valuable insights for tourism marketers and SNS providers in developing nations, suggesting strategies should focus on enhancing performance benefits and alleviating user anxieties to promote geotagging adoption. This research offers an enhanced framework to explain geotagging adoption among tourists.

Keywords: tourism, geotagging adoption, social networking sites, technology readiness drivers, technology anxiety, multigroup analysis

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INTRODUCTION

Geotagging—a pervasive feature in social networking sites (SNSs) that embeds geographic coordinates (e.g., latitude/longitude) into digital content—has transformed how tourists document and share experiences (Naeem et al., 2024; Rzeszewski & Luczys, 2018). For the tourism industry, such user-generated geotags provide critical behavioral data for analyzing travel patterns, destination preferences, and brand advocacy (Zhong et al., 2020; Bragg et al., 2020), with tourists actively promoting locations through tagged photos and reviews (Fatanti & Suyadnya, 2015).

In Bangladesh, where social media adoption surges (60 million users) (Simon, 2025), understanding tourists' geotagging adoption is strategically urgent yet underexplored. This study addresses this gap by integrating Technology Readiness (TR) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine adoption drivers, positioning technology anxiety as a key moderator in Bangladesh's unique socio-digital landscape.

According to the 2019 World Digital Report, 44% of the world's population (3.48 billion) uses social media, while 42% (3.26 billion) use a mobile phone. In Bangladesh (e.g., Bangladesh 34 million), consumption is growing rapidly. The location data have become essential information for tourism businesses to analyze visitor movement (Parkinson et al., 2025; Zhong et al., 2020). Tourists often promote brands by tagging digital pictures of places they visit with images of hotels, destinations, and others (Bragg et al., 2020; Fatanti & Suyadnya, 2015; Hughes et al., 2016).

Tourists' geotagging activity has therefore become an essential factor for tourism industry. Thus, understanding tourists' behavior to apply geotagging choices becomes imperative. In the literature, location-based services (Haffner et al.,

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2018), educational benefits (Welsh, 2012), reasons for tagging photos in SNS (Dhir et al., 2018), and untagging photos in SNS (Dhir et al., 2016) are some of the themes and perspectives explored in previous research (Chung et al., 2017). Determinants of geo-location service utilization were also often studied. Using the technological acceptance paradigm, Chen & Chen (2011) found that perceived ease of use, utility, and pleasure influenced GPS product acceptability among Taiwanese drivers (TAM). Chung et al. (2017) emphasize geotagging and merging passengers' TR with TAM. Dhir et al. (2018) use UTAUT2 and social cognitive theory to investigate the significance of picture tagging on SNSs. However, their research only investigated the hedonic motivation and habit as UTAUT2 components.

Limited researches has focused on visitors in developing nations using geotagging systems. Two conceptual paradigms (UTUAT and TR) are not integrated with research that explains geotagging technology adoption. Given the data, this research seeks to fill in the gaps by evaluating tourists' intention to use geotagging services in Bangladesh. This research questions is: (Q1) Can UTAUT explain (predict) tourists' acceptance and usage of geotagging services in Bangladesh? (Q2) Does technological apprehension affect the uptake of geotagging services? The data were collected using an online survey. The Smart PLS 3.3 software was used to evaluate both the measurement and the structural model (Ringle et al., 2015).

The paper is arranged as follows. A literature study on the theoretical underpinning and rationale of the proposed integrated model is given after the introduction. The suggested conceptual model is then empirically validated. Then the results and contributions are provided. For further research, the study's shortcomings are given.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

This section discusses the underpinning theoretical background of the research framework (Figure 1), and operationalization of the variables along with the hypothesis development process.

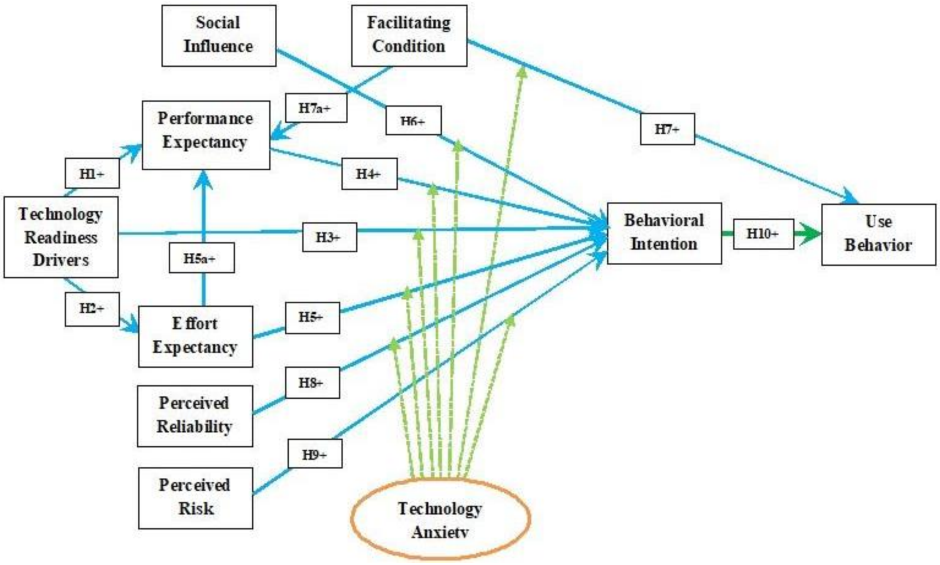

Figure 1. Research model

THE THEORETICAL BACKGROUND

Several researchers and practitioners have researched the user's adoption of new technology for a long time (Lin et al., 2007; Soliman et al., 2019). Among the studied models, the UTAUT (Venkatesh et al., 2003) appears to be the most universally accepted and experimentally confirmed (Soliman et al., 2019). Initially, UTAUT was designed to predict people's technology adoption in organizations. The distinctions between users inside and outside of organizations are clear. Employees may involuntarily embrace a new system to respond to management involvement.

But travelers have various alternatives and may choose one or several technologies (Lin et al., 2007).

Venkatesh et al. (2003) established the UTAUT to describe new technology purpose and usage (Soliman et al., 2019). The UTAUT combines eight theories (Qingfei et al., 2008): the Theory of Reasoned Action (Fishbein & Ajzen, 1975); the Innovation Diffusion Theory (Rogers, 1995); the Theory of Planned Behavior (Ajzen, 1991); the Technology Acceptance Model (Davis, 1989); the combined TAM-TPB (Taylor & Todd, 1995); the Motivational Model (Davis et., 1986). However, many investigations only used a selection of UTAUT components, ignoring possible moderating variables (Armida, 2008). Although the fundamental UTAUT includes the PE, EE, SI, and FC constructs, additional explanatory variables beyond the four major constructs may be necessary depending on the context of technology usage (Marchewka & Kostiwa, 2007; Venkatesh et al., 2012; Dwivedi et al., 2017; Hoque & Sorwar, 2017; Thomas et al., 2013).

This research included two new viable dimensions to integrated UTAUT: perceived dependability (Shareef et al., 2012) and perceived risk (Choe & Si Tou, 2025; Slade et al., 2015). Table 1 summarizes previous studies on geotagging across tourism, disaster management, smart cities, and social media to facilitate better understanding of previous research findings.

Technology Readiness Drivers (TRD)

TR measures people's willingness to embrace and apply new technologies to attain personal and professional goals

(Parasuraman, 2000). The TR construct consists of four dimensions: optimism, innovativeness, discomfort, and insecurity (Parasuraman, 2000). According to Parasuraman (2000), the driving aspects are optimism and innovation, whereas the inhibitor dimensions are discomfort and insecurity.

Table 1. Summary of past studies on geotagging (Authors own research)

Authors	Research Domain	Method	Findings
Chung et al. (2017)	Geotagging in tourism	Partial least squares (PLS) analysis	Found a negative and insignificant relationship between traveller's readiness and geotag usefulness, and positive relationships between traveller's readiness and geotag ease of use and enjoyment.
Chong et al (2018)	Geotagged twitter data	Data mining	Found geotagged picture in tweeter play key role during the disaster management e.g., flood in Chennai, India.
Drakopoulou (2017)	Self-representation using geotagging in SNS	Qualitative study	SNSs devise ways to keep users constantly interacting with the present moment in time and simultaneously create memories of the recent past.
Aina (2017)	GeoICT for smart city	Qualitative study	GeoICT can be a useful tool for cities to monitor urban sustainability and corresponding policy effects.
Nguyen et al. (2016)	Geotagged twitted data	Text mining	A random subset of tweets had excellent levels of agreement: 73% for happiness; 83% for food, and 85% for physical activity.
Vu et al. (2015)	Geotagged photo in Photo-sharing site	Data mining	The mapping of tourist behaviour using geotagged photos informs tourists' movements.
Kádár & Gede (2013)	Geotagged photo in a Photo-sharing site	Mapping	Correlation between tourists' attractions and the photo-taken place is found. The photos taken by locals are related to the recreational or interesting places for locals.
Kurashima et al. (2013)	Geotagged photo in a Photo-sharing site	Topic model, Markov model	The personalized travel plan is suggested based on the user's preference, location, time, and means of transportation.
Humphreys & Liao (2011)	Mobile geotagging	Naturalistic and interpretivist framework	Users communication about place to help build social familiarity with urban places and allow users to create place-based narratives and engage in identity management.
Crandall & Snavely (2011)	Geotagged photos in a Photo-sharing site	Build 3D model	A geotagged photo distinguishes places, represents a destination visually and its name at a global level. At a local level, 3D models are made based on the information from photos and from major points.
Hollenstein & Purves (2010)	Geotagged photos in Photo-sharing site	Metadata analysis	The most of georeferenced images are presented as the name of special places.
Crandall et al. (2009)	Geotagged photos in Photo-sharing site	Content analysis, structural analysis	Temporal and visual features of geotagged photos more reinforce their abilities which can estimate the location taken pictures than their textual features.
Dickinger et al. (2008	Geospatial Web pages	Test automated tagging procedure	Geo-tagger's implementation relatively accurate.
Rattenbury et al. (2007	Geotagged photo in Photo-sharing site	Burst-analysis techniques, Scale-structure Identification	The photo data have two semantics: place and event. The mapping of events and locations is useful for searching images, consists of collective visual data, and help photo-related works.
Amitay et al. (2004)	Geotagged photo in Web content sharing site	Data mining	Correctly tag individual name place occurrences 80% of the time and able to recognize the correct focus of a page 91% of the time.

Optimistic individuals are more receptive to new technologies than pessimistic folks (Walczuch et al., 2007; Son & Han, 2011). A person who values technological innovation and optimism loves to learn new technology, adopts it easily, and even advises others on utilizing it (Walczuch et al., 2007; Son & Han, 2011). Chen et al. (2009) found that innovativeness and optimism influence self-service technology usage satisfaction. As a result, those with higher TR are more likely to feel positive and confident about using technology-based self-service. Chen & Li (2010) discovered TR to be a strong predictor of e-service retention and use intention. Timehaml et al. (2002) also argued that TR influences customer e-shopping behavior. TR influences the desire to use a kiosk (Lee et al., 2012; Bhattacherjee, 2001). According to these results, effort and performance anticipation may modulate the link between TR drivers and behavioral intention. Also, TR drivers may directly influence tourists' behavioral intent to employ geotagging technology. Thus, the following hypotheses are proposed:

H1: Tourists' technology readiness drivers positively influence performance expectancy of geotagging technology use.

H2: Tourists' technology readiness drivers positively influence effort expectancy of geotagging technology use.

H3: Tourists' technology readiness drivers positively influence behavioral intention of geotagging technology use.

Performance Expectancy (PE), Effort Expectancy (EE) and Social Influence (SI)

Effort expectation (EE) is defined as "the degree of ease associated with utilizing the system" while performance expectancy (PE) is defined as "the degree of belief that using the system would improve work performance" (Venkatesh et al., 2003; Triandis, 1980). Social influence (SI) is defined as "the degree to which a person believes others should utilize new technology" (Venkatesh et al., 2003). Venkatesh et al. (2003) claim that PE, EE, and SI strongly predict a user's intention to accept technology. The favorable influence of (EE) on technology adoption is also well-established in the literature (PE). Based on these assumptions, it is assumed that PE, EE, and SI may favorably impact tourists' inclination to utilize geotagging technology and that PE can both directly influence BI and indirectly influence EE. So, here are some hypotheses:

H4: PE has a positive impact on the tourists' behavioral intention to use geotagging technology

H5: EE has a positive impact on the tourists' behavioral intention to use geotagging technology

H5a: EE has a positive and significant impact on the tourists' PE of geotagging technology adoption.

H6: SI has a positive impact on the tourists' behavioral intention to use geotagging technology

Facilitating conditions (FC)

Facilitating condition (FC) refers to "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003). FC also pertains to customer expectations for readily available resources (Brown & Venkatesh, 2005; Venkatesh et al., 2012). FC combines constructs from four models: TPB/DTPB, C-TAM-TPB, MPCU, and IDT (Venkatesh et al., 2003). The positive relationship between FC and usage behavior has been established in numerous previous studies, including adoption of health information systems (Islam et al., 2019; Bhattacherjee & Hikmet, 2008), adoption of information services (Soliman et al., 2019; McKenna et al., 2013), adoption of mobile banking (Oliveira et al., 2014), acceptance and use of interactive whiteboards (Tosuntas et al., 2015), and using smartphones for health services (Boontarig et al., 2016). FC may impact tourists' PE when using geotagging technology based on those mentioned above. So, the following hypotheses can be developed accordingly:

H7. FC has a positive impact on the tourists' use behavior (UB) of geotagging technology

H7a. FC has a positive and significant impact on the tourists' PE of geotagging technology adoption.

Perceived Reliability (PRe)

Perceived reliability (PRe) is the idea of trust and confidence of tourists while interacting with technology that has adequate and accurate functioning as assured by its service providers (Shareef et al., 2012). According to Sharma & Sharma (2019), reliability is the greatest predictor of intention to use, which influences actual usage. To use ICT driven services, Shareef et al. (2012) said perceived dependability was important. Many studies have shown that trust in terms of reliability impacts the adoption of technology, such as the adoption of SNSs (Lorenzo-Romero et al., 2011), the use of SNSs (Staples & Webster, 2008), and the adoption of mobile banking (Islam et al., 2019; Alam et al., 2020). These studies assist in generating the following hypothesis.

H8. Perceived reliability has a positive impact on the tourists' behavioral intention to use geotagging technology

Perceived Risk (PR)

Perceived risk (PR) relates to the perceived negative effect of buying a new product or service (Karjaluoto et al., 2019). In the context of technology adoption, risk affects consumers' faith in their intentions and actions, and outcomes are unpredictable (Im et al., 2008). There is a growing body of research on the impact of PR on consumer behavior and technology adoption in areas such as m-banking, m-wallet, electronic banking, remote mobile payment, and e-government. Thakur & Srivastava (2014) found that PR reduces the desire to embrace new technologies. In the case of geotagging, further research is needed to determine its influence on technological acceptability. The following hypothesis is then proposed:

H9. Perceived risk has a negative impact on the tourists' behavioral intention to use geotagging technology

Behavioral Intention and Actual Use

The link between behavior intention (BI) and actual use behavior (UB) is widely known in many disciplines. This proves BI is a reliable UB predictor (Venkatesh & Davis, 2000). For example, Venkatesh et al. (2003; 2012) studied how BI explains users' real UB. BI determines the UB of health IT (Hoque & Sarwar, 2017). And in mobile banking adoption research, Yu (2012) and Oliveira et al. (2014) found a significant link between BI and use. Based on the literature as mentioned earlier, this research hypothesized:

H10. BI positively impacts use behavior (UB) of tourists.

Moderating Role of Tourists' Technology Anxiety

Anxiety is a social cognitive predictor of BI (Compeau & Higgins, 1995). Consumer anxiety is the emotional condition of customers questioning their ability and preparedness to utilize technology (Meuter et al., 2003). The size of enabling conditions in technology usage is expected to be viewed differently by users with low and high anxiety. In other words, the potential discomfort caused by online technologies may deter tourists from using geotagging. Tourists are more anxious than other customers because geotagging services have no time or space constraints, unlike new technology-mediated services. Also, clients with low anxiety will have higher expectations of performance and effort than customers with high anxiety (Yang & Forney, 2013). Thus, technology anxiety increases risk and reduces user dependability. Taking into account the aforementioned, the following hypothesis is proposed:

HM (1-7). The relationships between (PE and BI), (EE and BI), (SI and BI), (PRe and BI), (PR and BI), (TRD and BI) as well as (FC and UB) will be higher for tourists with a low level of anxiety than for tourists with a high level of anxiety in geotagging adoption.

RESEARCH METHODOLOGY

Measurement development

All survey questions are based on earlier research, and their wording is designed to evaluate geotagging usage among tourists in Bangladesh. Performance expectancy, effort expectancy, social influence, and facilitating condition scales were taken from Venkatesh et al. (2003). There are three elements from Malhotra et al. (2004) and Herrero et al. (2017). Scales from Venkatesh et al. (2011) and Gefen et al., (2003). Five questions from Parasuraman (2000) and Lee et al. (2012) were used to assess technological readiness. Items from Hwang & Kim (2007) and Hoque & Sarwar (2017). These scales were developed by Davis et al. (1989) and Davis & Venkatesh (2004).

Data collection

The survey has two components. Part A asks about the internet, social media, and geotagging usage, whereas Part B asks about variables of interest. For each element, the Likert scale ranged from (1) "strongly disagree" to (7) "strongly agree". Appendix 1 lists the scales utilized. Initially, 20 users were interviewed in person to assess the questionnaire's reliability and face validity and make improvements based on user feedback. The online questionnaire was verified and then randomly disseminated to tourists in Bangladesh in January and February 2019 using a non-probabilistic 'snowball' method. When the user clicked the link, a brief explanation of geotagging technology was shown. Initially, 80 Facebook.com members who previously tag in SNSs, either location or images of places they visited, were asked to participate using an online Google form. Then they were asked to geotag the link and share it with their SNS friends. The procedure went on until 434 answers came in. After removing 15 surveys owing to missing information, 419 responses were chosen for further study. This sample size is sufficient for SEM (Tabachnick & Fidell, 1996), with practically all factor loadings greater than 0.70 (Hair et al., 2006).

Data analysis

SPSS was used to develop the descriptive statistics. SEM is used to test the hypothesised relationships. SmartPLS 3.0 is a well-known software tool for PLS-SEM measurement model as well as hypothesis testing (Hair et al., 2013). PLS SEM has been used by prior studies to investigate behavioural intention of respondents (Islam et al., 2024; Awais et al., 2025) Additionally, multigroup analysis was conducted to test the moderation impact of technology anxiety. It is suggested to use multigroup analysis when the moderating variable impacts all the relationships between exogenous and endogenous variables (Hair et al., 2006).

RESULTS AND DISCUSSIONS

Demographic portfolio of respondents

The ratio of male and female participants is 63 to 37. The majority of the respondents (61%) were between 20 and 30 years of age. Most of the participants (68%) had attained a bachelor's degree education. In the case of internet use, 80% of respondents use it at least 5 hours per week, whereas 78% use social networks at least 6 hours per week, and 89% have at least one year of experience of using SNSs. Figure 2 presents graphical representation of age groups and number of social media users.

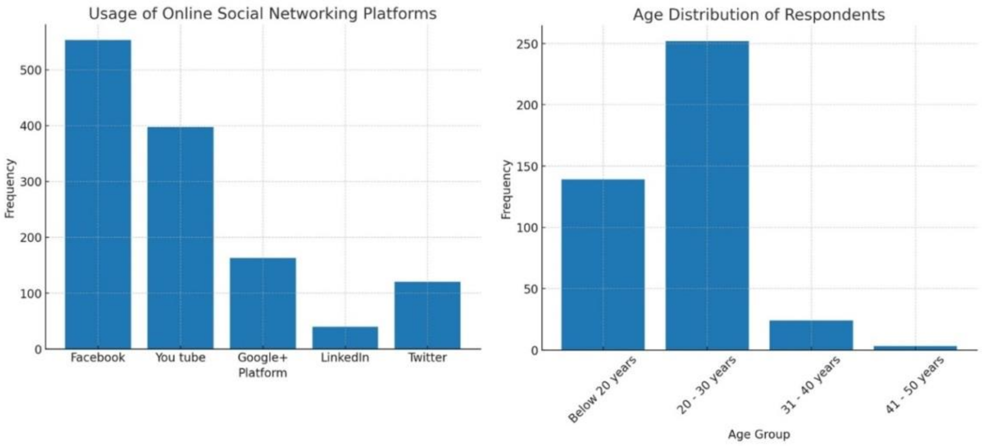

Figure 2. Social media users and age group of respondents

In addition, 61% of participants have used the geotagging technology in social networking sites more than five times, and 87 % of respondents have more than 100 friends in SNSs. This reflects the extensive use of the internet and SNSs as well as geotagging technology use. In the case of SNSs platform and hardware use, each respondent can use one or more SNSs platform and hardware. Table 2 shows that 58% used a smartphone to use geotagging technology in Bangladesh. All the demographic factors were taken as the control variable in data analysis.

Table 2. Demographic Analysis

Variable	Description	Frequency	Percentage	Variable	Description	Frequency	Percentage
Gender	Male	266	63%	Online Social Networking (OSNs) platform	Facebook	553	38%
	Female	153	37%		You tube	397	27%
					Google+	163	11%
Age (Years)	Below 20 years	139	33%		LinkedIn	40	3%
	20 - 30 years	252	60%		Twitter	120	8%
	31 - 40 years	24	6%		Pinterest	14	1%
	41 - 50 years	3	1%		All	58	4%
	51-60 years	0	0%		Other	107	7%
	Above 60 years	1	0%				
				Hardware use	Smartphone	580	58%
Education	Below Higher Secondary	6	1%		Laptop	205	21%
	Higher secondary	26	5%		Desktop	124	13%
	Bachelors	128	25%		Tablet	21	2%

	Masters	328	64%		All	33	3%
	PhD	21	4%		Other	29	3%
	Others	1	0%				
				No. of friends	Less than 100	53	13%
Marital Status	Single	377	90%		101 - 500	114	27%
	Married	39	9%		501 - 1000	120	29%
	Others (Divorced/Widowed)	3	1%		1001 - 1500	61	15%
					1501 - 2000	27	6%
					More than 2000	43	10%
SNSs Use (years)	Less than 1 year	45	11%				
	1- 3 years	149	36%	Internet use	Less than 5 hours	84	20%
	4 - 6 years	151	36%		5 - 10 hours	101	24%
	7 - 9 years	55	13%		11 – 15 hours	87	21%
	More than 9 years	19	5%		16 - 20 hours	67	16%
SNSs Use (per week)	Less than 5 hours	93	22%		More than 20 hours	80	19%
	6 - 10 hours	89	21%	Geotagging use (per month)	Less than 5 times	162	39%
	11 - 15 hours	93	22%		6 - 15 times	147	35%
	16 - 20 hours	63	15%		16 - 25 times	69	17%
	More than 20 hours	81	19%		More than 25 times	39	9%

Assessment of measurement model

It is required to assess the measures' validity and reliability, including internal reliability, convergent validity, and discriminant validity, before testing the hypothesis (Bagozzi et al., 1991; Hair et al., 2013). The structural equation modeling (SEM) is adopted to assess the measurement model and followed the two-step statistical analysis method suggested by Anderson & Gerbings (1988). Besides, when Cronbach's alpha and composite reliability value is ≥ 0.70, adequate internal consistency and internal reliability have been established (Hair et al., 2010).

Table 3. Results of measurement model

Constructs	Indicators	Loading	Cronbach's Alpha	CR	AVE
Behavioral Intention	BI1	0.892	0.853	0.911	0.773
	BI2	0.855			
	BI3	0.891			
Effort Expectancy	EE1	0.861	0.875	0.914	0.727
	EE2	0.842			
	EE3	0.859			
	EE4	0.848			
Facilitating Condition	FC1	0.887	0.859	0.914	0.780
	FC2	0.879			
	FC3	0.883			
Performance Expectancy	PE1	0.921	0.907	0.942	0.843
	PE2	0.925			
	PE3	0.908			
Perceived Risk	PR1	0.876	0.848	0.905	0.760
	PR2	0.919			
	PR3	0.818			
Perceived Reliability	PRe1	0.870	0.842	0.904	0.759
	PRe2	0.880			
	PRe3	0.864			
Social Influence	SI1	0.875	0.858	0.913	0.779
	SI2	0.870			
	SI3	0.902			
Technology Readiness Drivers	TRD1	0.788	0.866	0.903	0.651
	TRD2	0.842			
	TRD3	0.730			
	TRD4	0.855			
	TRD5	0.814			
Use Behavior	UB1	0.890	0.771	0.867	0.686
	UB2	0.731			
	UB3	0.856			
Note: AVE = Average Variance Extracted; CR = Composite Reliability					

Table 3 shows Cronbach's alpha (α) values varied from 0.771 to 0.901 and composite reliability 0.867 to 0.942. The outcome shows significant internal reliability as the values were greater than the cutoff vale 0.70. Two standards recommended by Fornell & Larker (1981) are employed to test convergent validity. First, the value of each item loading should be ≥ 0.70, and second, the AVE value should surpass 0.50. Accordingly, the values of all item loadings were significant and more than 0.70, as well as AVE values were above 0.50 (Fornell & Larcker, 1981; Hair et al., 2011). Therefore, the study confirms the convergent validity of the proposed measurement model.

Table 4. Correlation matrix, Square root of AVE and VIF

	VIF	BI	EE	FC	PE	PR	PRe	SI	TRD	UB
BI	2.610	**0.879**								
EE	3.338	0.616	**0.852**							
FC	2.774	0.597	0.775	**0.883**						
PE	3.312	0.654	0.788	0.656	**0.918**					
PR	1.073	0.086	0.215	0.312	0.156	**0.872**				
PRe	2.930	0.685	0.708	0.720	0.719	0.185	**0.871**			
SI	3.151	0.662	0.757	0.719	0.748	0.183	0.741	**0.882**		
TRD	1.865	0.777	0.569	0.603	0.579	0.233	0.644	0.585	**0.807**	
UB	1.552	0.816	0.610	0.564	0.622	0.078	0.657	0.640	0.756	**0.828**

Discriminant validity was tested based on the two tests: (1) the value of correlations among constructs should be within the recommended range that is less than 0.850 (Kline, 2023), and (2) the value of the correlations of each construct with other latent constructs should be exceeded by the square root of AVE in the measurement model (Fornell & Larcker, 1981; Henseler et al., 2009). The measurement model results shown in Table 4 reveal that all constructs satisfy both criteria and the discriminant validity of the data is also confirmed.

Assessment of structural model

The integrated model of UTAUT with TR drivers explains the maximum amount of variance 70.2% in behavioral intention, 67.5% in use behavior, and the 64.7% in performance expectancy, and 32.4% in effort expectancy. Chin (1998) suggested that results beyond the threshold level "0.67", "0.33" and "0.19" to be "substantial", "moderate" and "weak" respectively. Thus, this model supersedes the substantial cutoff value (0.67%) that indicates a well-fitted model. The UB and BI construct explain the relatively high percentage compared to preceding research in IT/IS acceptance where UTAUT is integrated with other models/theories including Chang et al. (2016) with R^2 25.8%, Oliveira et al. (2014) with R^2 53.4%, Zhou et al., (2010) with R^2 57.5%, along with original UTAUT (Venkatesh et al., 2003). The effect size (f2) was examined to check the significant impact of the research model. Cohen's (1988) advised that "0.02"," 0.15" and "0.35" represent "small", "medium" and "high" effect size, respectively. So far, the proposed model suggests that behavioral intention (f2 = 0.633), use behavior (f2 = 1.127), performance expectancy (f2 = 0.524), and effort expectancy (f2 = 0.479) had a large effect. Furthermore, the study also used Cohen's (1988) statistical measures to examine the substantive influence of the research model. The model suggests that use behavior had (Q2 =0.438), behavioral intention (Q2 =0.510) and performance expectancy (Q2 =0.516) had a large substantive effect whereas, effort expectancy (Q2 = 0.221) had a small substantive effect. The result also confirmed the predictive relevance of this model.

The hypothesized relationships among different constructs and the path coefficients of the structural model were tested by employing SmartPLS 3.0 (Figure 3). Structural multicollinearity may have in the reflective or formative model when the coefficients of inner VIF or structural VIF would be greater than 4.0 or 5.0 preferably (Garson, 2016).

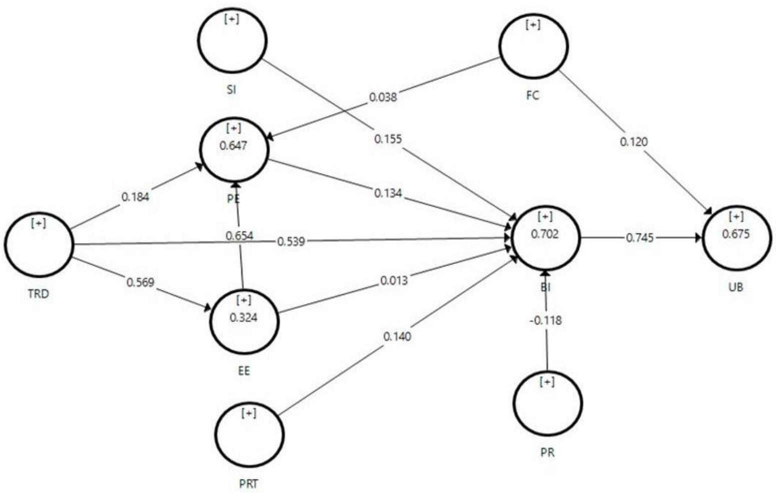

Figure 3. The result of the structural model

The inner VIF values produced from SmartPLS ranged from 1.073 to 3.338 (Table 4) specify that the study is free from multicollinearity issue. The hypothesis testing result implies that H1, H2 and H3 cannot be rejected because of having statistically significant values. It indicates that TR drivers positively impact performance expectancy and effort expectancy and behavioral intention of tourists during geotagging technology use. This result uncovered that individual differences are vital components to adopt the technology. Individual differences accelerate the users' efficiency and ease of technology use and motivate the users to adopt the technology. This finding confirms the notion of a multilevel framework (Venkatesh et al., 2016) where they indicated that individual differences could not be skipped in technology adoption. Still, they did not mention the TR driver. This result matches with Lin (2007), where they constructed TRAM incorporating TAM and TR and identified that TR had a positive effect on the perceived usefulness as the core variable of performance expectancy and perceived ease of use as the key variable of effort expectancy as along with the intention to use. It also coincides with Oh et al. (2014) results of revised TRAM where they reveal the same results of the original TRAM in internet service adoption in China & Korea. These findings profusely confirm the necessity of integrating the TR drivers with UTAUT in technology adoption studies.

Remarkably, two new constructs, namely perceived risk and perceived reliability, significantly influence behavioral intention, supporting hypotheses (8 and 9). These indicate risk and reliability are critical components of technology adoption. When the users feel reliable and secure with the technology, they will be motivated to use it. This finding explored the social-economic perspectives of developing countries where most of the users are reluctant to use technology due to the chance of losing their personal information and lack of trust with that technology. But, if users are in a risky circumstance when an image and location is posted, they will not be comfortable in using geotagging technology on SNS platforms. These findings are parallel with Sharma & Sharma (2019), Giovanis & Athanasopoulou (2018), and Alam et al. (2020). Karjaluoto et al. (2019), Thakur & Srivastava (2014), and Dwivedi et al. (2017) in different IS/IT adoption studies.

Finally, behavioral intention has a strong and significant impact on the adoption of geotagging technology among the tourists since the statistical value strongly supports hypothesis (10) with value of ($p < 0.001$, $\beta = 0.745$, $t = 18.559$).This finding is unfailing with other (e.g., Hoque & Sarwar 2017; Yu, 2012; Oliveira et al., 2014) IS/IT adoption studies (Table 5). In Table 5 the results of hypothesized relationship among the constructs are presented.

Table 5. Results of Structural Model (Note: *p<0.05; ** p<0.01; ***p<0.001)

Hypothesis	Construct's Relationship	Std. Beta	t-statistics	P-value	Decision
H1	TRD □ PE	0.184	3.604	0.000	Supported
H2	TRD □ EE	0.569	12.508	0.000	Supported
H3	TRD □ BI	0.539	9.362	0.000	Supported
H4	PE □ BI	0.134	2.087	0.037	Supported
H5	EE □ BI	0.013	0.192	0.848	Not Supported
H5a	EE □ PE	0.654	10.440	0.000	Supported
H6	SI □BI	0.155	2.155	0.031	Supported
H7	FC □ UB	0.120	2.670	0.008	Supported
H7a	FC □ PE	0.038	0.623	0.533	Not Supported
H8	PRe □ BI	0.140	2.345	0.019	Supported
H9	PR □ BI	-0.118	3.496	0.000	Supported
H10	BI □ UB	0.745	18.559	0.000	Supported

Table 6. Moderating effect of Technology anxiety (TA) (Note: *p<0.10, **p<0.05, ***p<0.01)

Hypothesis	Path	Std Beta	t-statistics	P-value	Comments
Hm1	PE* TA □ BI	-.898	-5.908	.000	Moderated
Hm2	EE* TA □ BI	-.700	-4.261	.000	Moderated
Hm3	SI* TA □ BI	-.703	-5.044	.000	Moderated
Hm4	FC* TA □ BI	-.765	-4.564	.000	Moderated
Hm5	PR* TA □ BI	1.035	5.310	.000	Moderated
Hm6	PRe* TA □ BI	-.811	-6.025	.000	Moderated
Hm7	TRD* TA □ BI	-.164	-1.373	.170	Not Moderated

Table 7. Multigroup Analysis (Note: *p<0.10, **p<0.05, ***p<0.01)

	Std.Beta (high GROUP)	Std.Beta (low GROUP)	t-Values (high GROUP)	t-Values (low GROUP)
EE □ BI	0.062	-0.048	0.691	0.826
FC □ UB	0.086	0.152	1.376	2.301**
PE □ BI	0.164	0.117	1.803*	1.447
PR □ BI	-0.075	-0.110	1.685*	0.538
PRT □ BI	0.122	0.169	1.279	1.936*
SI □ BI	0.178	0.106	2.0214**	1.130
TRD □ BI	0.465	0.601	4.865***	8.339***

Moderation effect of Technology Anxiety

This research used PLS-MGA (Henseler et al., 2009) to understand the moderating influence.

The data was divided into two groups based on the Likert scale anchoring technology anxiety (1-7). High groups have Likert scale scores over four, whereas low groups have Likert scale values up to four. Table 6 and 7 present the results of moderation analysis. The low group outperformed the high group in terms of enabling condition and perceived dependability (see Table 6). Fears of technology usage are hence more significant. Both groups' enabling conditions, social influence, perceived risk, perceived dependability, and performance anticipation vary. Thus, technological anxiety distinguished the high and low groups in distinct dimensions. In some ways, this finding echoes Yang & Forney (2013).

Implications, Theoretical implications

The study validates the viability of the proposed integrated research model, which explains 70.2% of the variance in behavioral intention and 67.5% of the variance in use behavior regarding geotagging adoption among tourists. The empirical findings demonstrate several theoretical contributions. The study found a significant causal relationship between effort expectancy and performance expectancy, supporting the notion that a perceived ease of use can positively influence a user's belief in a technology's effectiveness. By integrating Technology Readiness (TR) drivers into the UTAUT model, this research empirically validates their utility in explaining tourist intention and usage of geotagging. This study also contributes a new layer to IS and tourism research by confirming the significant moderating role of technology anxiety. Specifically, the analysis reveals that perceived reliability, social influence, and performance expectancy on behavioral intention are significantly stronger among tourists with low anxiety. Conversely, while perceived risk generally deters adoption, its negative impact on behavioral intention is less pronounced for high-anxiety users due to the moderating effect of technology anxiety. Overall, this research offers detailed insights into tourists' geotagging service adoption and enhances the academic field by empirically validating the integrated use of TR drivers within the UTAUT framework.

Managerial Implications

The study's empirical findings have significant policy consequences for the tourism industry. The geographical distribution of similar websites may show how a given item is prevalent in certain areas but not in others (Amitay et al., 2004). Thus, this study will help tourism firms in their promotional planning on social networking sites (SNSs). The findings will also assist organizations, particularly tourism and hospitality businesses, in developing strategies to enhance geotagging uptake. For instance, the significant influence of performance expectancy suggests that providers should highlight the utility and effectiveness of their geotagging features. The strong negative effect of perceived risk and the positive effect of perceived reliability underscore the importance of building user trust. Organizations should adopt proper rules on privacy while employing this technology to enhance the dependability of this service. The findings can also help SNS service providers develop strategies to increase geotagging use on their platforms. As perceived reliability and perceived risk are key determinants, providers should implement rules that preserve the privacy of geotagged photos and location information, and not share this data without user consent. The significant effect of social influence suggests that providers could also create plug-ins or apps to facilitate group creation and electronic word-of-mouth (e-WOM).

CONCLUSION

Tourist geotagging activity is critical to the growth of any country's tourism business. This research investigated the behavior of tourists in Bangladesh to determine how they utilize geotagging services. The study developed an enhanced model of UTAUT to explain the adoption of geotagging technology among tourists. The empirical findings demonstrate that technological readiness determinants directly and indirectly influence geotagging technology adoption behavior, with a significant indirect effect through performance expectancy. Except for effort expectancy, all other UTAUT components positively increase intention to employ geotagging. Perceived risk and perceived reliability were found to have significant negative and positive effects on behavioral intention, respectively. The study also confirms positive interrelationships between explanatory factors, such as effort expectancy and performance expectancy. Furthermore, our analysis validates the moderating role of technology anxiety on several relationships within the model. This research concludes that the integration of UTAUT with TR drivers is important for explaining geotagging acceptance among SNS users in developing countries. The results provide valuable insights for the tourism, marketing, and social media literature, as well as for enterprises and SNS providers seeking to develop effective strategies. This research has limitations. The non-random sampling method (e.g., snowball tactics) may limit the generalization of the empirical results. This model indicated that the well-known UTAUT construct, effort expectancy, had no significant direct influence on behavioral intention, though it did have an indirect effect through performance expectancy. A proposed association between two explanatory variables (facilitating condition and performance expectation) was not empirically validated in this study. Future research may consider developing and validating suitable scales for these dimensions to re-validate the study's model.

This study focused only on geotagging adoption; however, this integrated model may be used for investigations in other contexts. Future research may also combine full technological readiness with UTAUT and hedonic motivation.

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Appendix 1. Summary of Measurement Items

Construct	Corresponding Items	Items Sources
Performance	PE1: Geotagging is very useful for publishing content in SNSs	Venkatesh et al.

expectancy (PE)	PE2: Using the geotagging services will enhance my effectiveness in SNSs use. PE3: Using the geotagging service of SNSs I can achieve the things that are important to me.	(2003)
Effort expectancy (EE)	EE1: The use of geotagging to publish content in SNSs is simple for me. EE2: The use of geotagging to publish content in SNSs is easy for me. EE3: It is easy for me to become skillful at using geotagging technology EE4: The use of geotagging to publish content in SNSs is clear and understandable.	Venkatesh et al. (2003)
Social influence (SI)	SI1: People who influence my behavior think that I should use geotagging service in SNSs. SI2: People who are important to me think I should use geotagging service in SNSs SI3: People whose opinions that I value prefer that I use geotagging service in SNSs	Venkatesh et al. (2003)
Facilitating conditions (FC)	FC1: I have the necessary resources to use geotagging technology in SNSs FC2: I have the knowledge necessary to use geotagging technology in SNSs FC3: I can get help from others when I have difficulties using geotagging in SNSs	Venkatesh et al. (2003)
Perceived Risk (PR)	PR1. The use of geotagging to publish information in SNSs implies a threat to my privacy. PR2: I feel uneasy psychologically if I use geotagging to publish things in SNSs PR3: I believe that there could be negative consequences by using geotagging service in SNSs	Malhotra et al. (2004), Herrero et al. (2017)
Perceived Reliability (PRe)	PRT 1: I believe that geotagging technology is trustworthy. PRT: Geotagging technology would provide access to sincere and genuine services in SNSs. PRT: Based on my experience with the geotagging service in the past, I know it provides good service.	Venkatesh et al. (2011) Gefen. (2003)
Technology Anxiety (TA)	TA1. Using geotagging services in SNSs would make me very nervous TA2. Using geotagging services in SNSs make me worried about the publishing information TA3. I have avoided geotagging technology because it is unfamiliar to me	Hwang & Kim (2007), Hoque & Sarwar, (2017)
Technology Readiness (TR) Driver	TRI1. In general, I am the first in my friend circle to acquire geotagging technology when it appears. TRI2. I can usually figure out high-tech gadgets and new services without help from others. TRI3.I find I have fewer problems than other people in using geotagging technology in SNSs TRO4. I prefer to use the most advanced geotagging technology available in SNSs. TRO5.Geotagging technology gives me more freedom of mobility.	Parasuraman & Colby, (2015), Lee et al., (2012)
Behavioral intention (BI)	BI1. I have high intention to use geotagging service during SNSs use. BI2 I would recommend the geotagging technology to my friend to publish content in SNSs BI3 I think I will use geotagging service to publish information in SNSs.	Davis et al (1989), Lin & Hsieh, (2006)
Use Behavior (UB)	UB1: Geotagging service is a pleasant experience to publish content in SNSs. UB2: I use geotagging service currently to publish information in SNSs. UB3: I spend a lot of time on geotagging service in SNSs	Taylor & Todd (1995), Davis & Venkatesh (2004

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