

## Research Article

# Understanding Mobile Tourism Shopping in Pakistan: An Integrating Framework of Innovation Diffusion Theory and Technology Acceptance Model

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Consumer adoption of mobile-based tourism shopping is an emerging but overlooked area in tourism research. Given the paybacks and potential scope of this new channel, this study attempts to bridge the gap by proposing a multimediation model investigating mobile tourism shopping (MTS) in a developing country, Pakistan. In particular, we applied structural equation modeling through partial-least-squares structural equation modeling (PLS-SEM) on 396 responses collected from mobile respondents who recently purchased tourism products using a mobile device(s). It was discovered that social presence, directly and indirectly, influences tourist intentions towards MTS. The results further show that the tourists' perception of compatibility and relative advantages of MTS have insignificant influence on their intention to accept a mobile device(s) for tourism shopping. The findings and implications of the study furnish new vistas to research discourse and managerial significance. Economically, this research contributes to knowledge that could increase income and create jobs in the host country.

## 1. Introduction

Mobile commerce is today one of the most critical and dynamic online businesses [1]. Over the past few decades, due to limited technological capabilities, mobile phones have been primarily used for texting and calling [2]. The sweeping advances in mobile networks, such as fourth generation networks (4G) and mobile communication (M-devices), have advanced the mobile phone platform from simple communication to a multifunction mechanism that supports collaborative communication [3]. Mobile apps have provided viable alternative for buying tourism-related products and that is why this channel presents a better choice for tourists [2]. The technology continues to advance, and numerous business opportunities arise from a mobile perspective based on mobile technology development such as online shopping [4, 5], m-banking usage [6, 7], mobile learning [8], mobile services [9], mobile advertising [10],

mobile healthcare [11], and mobile payments [12]. The m-internet technology can be used for mobile shopping and availing many other similar services [13]. Consumers can open/browse any website and purchase any product using a mobile device instantly, anytime and anywhere because it is the informal and convenient source [14].

Consumers can use a mobile device to perform various actions such as searching for online products, comparing the price of products, and purchasing products [15]. Werthner and Klein [16] clarified that, due to the benefit of saving time, consumers do not have to wait in queues while buying online products, an advantage compared to real-world shopping (i.e., at “bricks-and-mortar” stores). In recent years, as the world has been adopting mobile-oriented transactions, the rapid advancement in the mobile technology has affected the tourism industry and represents enormous potential for tourists, promoting tourism products from the mobile technology viewpoint

[2, 17]. Hew et al. [18] found that buying travel products was no longer limited to buying online, at real-world stores, or through personal computers but is also quickly moving to mobile devices. In the early 2016, Makki et al. [19] mentioned that the mobile technology would take over and make life more relaxed. Consumers will prefer to use their mobile device(s) for online shopping instead of going out to the physical market. Schaal [20] mentioned that over one-third of the Orbitz Hotel reservations worldwide made by using m-devices. According to Johnsen [21], 68% of users use their mobile devices to buy online and also search for store locations (62%), 58% use these devices to check and compare prices, and 50% of users use these devices to get product information. Mobile technology is more convenient and easier for purchasing tourist products as compared to the traditional methods of purchasing such products at physical stores. The Travelport Commerce platform has predicted that, in the coming next three years, more than 70% of travel transactions will arise because of mobile devices [22]. A report of the eMarketer (2017) declared that travel bookings using m-devices are estimated to reach a value of 108.75 billion US dollars by 2021, and thus, the m-devices will cover more than half of the entire amount of such sales (eMarketer, 2017). These predictions indicate the highly rising trend of tourists to use mobile devices to buy tourism products/services, and thus, it justifies research queries in tourism research [23]. Therefore, we believe that the importance of the mobile device in today's era of mobile tourism shopping (MTS) can have the potential to affect future practices and research endeavors.

Some studies have examined the use of mobile device(s) for buying tourism-related products, mainly using information technology (IT) or information systems (IS) [2, 24]. However, the use of mobile devices for shopping for tourism-related services/products in developing countries is poorly understood. Therefore, the present study adopts a unique way to examine the influencing factors affecting consumers/tourists' intentions to purchase online tourism products using a mobile device(s) by employing an integrative model. The proposed model was founded on the integration of two theoretical models: innovation diffusion theory introduced in [25] and the technology acceptance model in [26]. The integration of two models can provide richer explanation (higher  $R^2$  value) of the MTS adoption [27]. These theories have gained considerable empirical support in describing users' acceptance of technology in several research fields [28, 29], and such integrative models are more useful for practitioners in understanding the changing paradigms to promote technology adoption in the services sector [30]. Previous studies argued to integrate the TAM with other models to cope with the fast changes in technology adoption [31]. Moreover, the two models (TAM and IDT) are complimentary to each other as the TAM is considered as a subdivision of perceived innovation [32, 33]. After thoroughly scrutinizing the past literature, the authors believe that there is no prior study that includes both the perspective of innovation-based and technology-based adoption to investigate the use of MTS in developing economies.

*1.1. Status of Mobile Tourism Shopping in Pakistan.* Over the last few decades, the tourism sector has snowballed throughout the world. Tourism is still seen as an economic engine because it contributes to GDP, reduces poverty, and reduces inflation, as well as creating jobs and bringing other such benefits. Tourism is considered to be vital to sustain the economy in the path of growth as it increases per capita income, generates income taxes, creates jobs, improves national infrastructure, enhances business activity by promoting the private sector, encourages and creates foreign investment opportunities, and increases foreign reserves, as well people's living standard [34, 35].

The present study mainly focuses on a developing country, Pakistan, to examine the motivation of the consumers' acceptance of the mobile technology to access tourism products and services. There is little research work available to uncover the factors affecting mobile tourism acceptance in developing countries, especially in Pakistan. Research conducted in the tourism sector in Pakistan has so far been limited to certain point of views such as terrorism and tourism, tourism growth, archaeological and historical tourism, adventure tourism, and online shopping adoption [35–39], but no attention has been paid specifically to MTS [40]. The increasing usage and advancement of the mobile technology in tourism have shifted the emerging channel of mobile shopping from bricks-and-mortar to clicks-and-mortar. Mobile shopping was defined by Wong et al. [41] as “any monetary transaction(s) related to purchases of goods/services through internet-enabled mobile phones or over the wireless telecommunication network.” Mahrous and Hassan [40] discovered that, in emerging markets, consumers prefer to utilize the travel agent services for a particular phase, the payment and booking phase, whereas the m-device is used only for planning the travel. Hua [42] recapitulated that mobile dimension studies lag behind industrial practice in the field of hospitality and tourism. Given the importance of m-devices, MTS is defined as “the use of mobile devices to shop for tourism products and services.” Kim et al. [13] found that buying tourism-related products using a mobile device is entirely different and easy compared to purchasing through a traditional channel. According to Raun et al. [43], the use of mobile devices for buying tourism products has been accelerating among consumers.

Addressing the abovementioned research gap, the current research puts forth various contributions to the extant literature. First of all, the study identifies the most critical factors that affect intentions to purchase tourism products using a mobile device. Second, the study employs an integrative model based on TAM and IDT, thereby providing a comprehensive view to better investigate the consumer adoption of MTS and the accompanying innovation and technology-driven dividends. TAM and IDT have received considerable empirical support in describing user's acceptance of technology in several fields, particularly information systems (IS) and information technology (IT) and specifically in online shopping and MTS [18, 29]. Hence, this unique approach will determine not only the significant variable effecting the acceptance of

mobile tourism shopping but also the ones that have the most substantial impact, enhancing our understanding of MTS. Therefore, the integration of the two theoretical models gives a unique and richer view that incorporates both the technology and innovation aspects of accepting m-devices in emerging tourism research. Third, the current study examines the mediation effect of perceived usefulness, perceived enjoyment, and perceived ease of use between social presence and tourist acceptance of MTS. The present research is the first that highlights MTS in developing Asian country's context, using Pakistan as a representative. Pakistan's tourism industry has excellent potential for growth, and the recent government with strong backing from the prime minister has developed the tourism industry and is adding to the proliferation of technology adoption in the tourism sector. This proposed theoretical model enriches the extant literature by advancing the understanding of MTS and the intention of users, through employing TAM and IDT. The following section presents the theoretical basis on which this study is based, combining TAM and IDT.

## 2. Theoretical Background

*2.1. Innovation Diffusion Theory and MTS.* The theoretical paradigm, innovation diffusion theory (IDT), determines why people are adopting new ideas/technology [44]. To date, the IDT received a higher support in exploring consumers' acceptance in many disciplines, predominantly, in online/E-shopping [28], tourist behavior [29], technology adoption by seniors [45, 46], and the acceptance of social network sites (SNS) [47]. Innovation is "an idea, practice, or object that is perceived as new by an individual or another unit of adoption" [25]. Diffusion, from another point of view is "the process by which an innovation is communicated through certain channels over time among the members of a social system". IDT is a way of a rational thinking that explains the questions (how, where, and why) of spreading the new ideas or new technology to individuals [44, 48]. The innovation in tourism conveys the message that the communication channel has been transformed to mobile devices and that can create a value for the tourism industry [49].

IDT is used to understand ethical propagation of tourists' behavior through the population, enlightening the relationship of relatively static tourism innovation and the spread of innovation [50]. IDT was concluded as an appropriate model for understanding consumers' intentions in the community of online travelling where its constructs were found valid in explaining consumers' behavior [29]. Therefore, IDT argues that "potential users make decisions to adopt or reject an innovation based on beliefs that they form about the innovation" [51]. In plain words, the IDT elucidates the factors that stimulate the intention to accept new technologies, considering complexity, compatibility, trialability, visibility, and relative advantage. Within the stated factors, a relative advantage has been widely studied and it has conveyed the most consistent interpretation of consumer desire to utilize the new technology [52].

*2.2. Technology Acceptance Technology and MTS.* The technology acceptance model is the most widely employed theory in information system research, exploring individual use of networks or adoption of any technology. The model introduces critical factors influencing users' intentions to adopt any new system or technology [53–56]. TAM is a modified form of the theory of reasoned action (TRA) that was initially established by Fishbein and Ajzen [57], explaining behavior related to the acceptance of computer usage. TAM defines the attitude of users and also identifies the role of ease of use and usefulness to clarify the acceptance of any information system [58, 59].

Although considerable research has adopted TAM, its nature has been criticized for not fully reflecting consumer adoption. In our study, TAM provides a connection between tourist behavior and the adoption of a specific technology. Some studies [60–62] have expanded the TAM framework with an additional antecedent to get the best explanatory power. The TAM theory is based on the idea that individual EOU and PU are two determining factors that define the adoption of any system/technology. Perceived usefulness (PU) describes "the extent to which a person believes that mobile shopping service is useful for improving online shopping performance" [63]. Perceived ease of use (PEOU) is referred to the degree that consumers can use technology or products easily and effortlessly [26]. In the context of tourism and hospitality, many researchers have applied and extended TAM to explore adoption of new technology, such as in hotel front office systems [64], consumer intention to purchase online travel [28], and biometric system adoption in hotels [65]. The results of these studies show that PU and PEOU both are the most dynamic and critical factors of consumer acceptance of new technology. Therefore, TAM was considered as a suitable model for achieving the objective of this research study. While applying to different contexts, the TAM got various extension and modifications, such as Venkatesh and Davis [59] added subjective norm as well as image to the existing constructs of TAM and this new version was called TAM-2. Similarly, the model (TAM-2) was more modified with addition of perceived enjoyment and known as TAM-3 [66]. These extensions helped cover the different limitations of TAM like lack of actual guidance [67] and unsuitability in certain situations [68].

## 3. Development of Hypotheses

*3.1. Perceived Relative Advantage.* Relative advantage (RA) is one of the essential elements introduced by IDT. RA is the "extent to which innovation is considered higher than its current practice" [69]. People tend to adopt innovation when they think that it is more useful and is likely to increase their performance and efficiency [70]. Perceived relative advantage may be thought of as a better choice of mobile tourism shopping as compared to physical shopping. In this study, relative advantage may be construed as the extent of using a mobile device for tourism products, an advantage that ultimately provides benefits to tourists such as convenience, time-saving, and ease. Previously published studies have shown that the relative advantages have a positive and

substantial relationship with the user's intent to accept any technology such as mobile commerce [71] and mobile payment [72]. Consumers who perceive the relative advantage of using a mobile device for purchasing tourism products are more likely to adopt the system. Therefore, this study suggests that consumers' perceived relative advantage and the attribute of IDT predict the consumers' intentions of MTS. Thus, this study proposes the following:

H1: perceived relative advantage has a positive and significant effect on consumer intentions to use a mobile device for purchasing tourism products

**3.2. Compatibility.** Rogers [25] explained that compatibility is "the degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters." Moreover, previously published studies have stated that compatibility is one of the active drivers for new technology acceptance [73, 74]. The previous research conducted in the setting of online shopping has supported the significant and positive relationship between attitude and online shopping behavior [28, 29, 75, 76]. The present study suggests that the attribute of ID, i.e., compatibility, predicts the tourist adoption of MTS. Therefore, the study posits the following:

H2: compatibility significantly influences consumer intentions to use MTS

**3.3. Social Presence.** Taking the explanation of Qiu and Li [77], social presence (SP) can be defined as "the extent to which a medium is perceived as sociable, warm, sensitive, personal, or intimate when it is used to interact with other people." Social presence is one of the vital concepts because the contemporary technologies (like social networking sites) offer and develop this role of being socially present [78]. Social presence is a significant construct in the area of computer-mediated communications [79]. Social presence is the extent to which communication channels facilitate the awareness of communication partners and interpersonal relationships during interactions [80]. According to the communication theory of social presence, the channel falls along one continuum "social presence" [81]. Previous studies have approached the social presence taking various viewpoints: (1) it was thought of as an inherent quality in the channels of communication [81]; (2) ability to send information on face expressions, postures, and nonverbal gestures [81]; and (3) relationships with wealth of information and interactivity [82, 83].

Social presence is a significant concept because of its magnificent role in the development of technology and its effectiveness in online selling that carries the idea of a human touch [84–86]. The theory of social presence [81] gave birth to the construct of social presence, which is rightly construed as a primary element in the field of online social networking. According to Wei et al. [87], the theory of social presence advocates that if an intermediary has a socially suitable level of job attendance, the connection will be more effective. Recently, social presence has been

developed as a remarkable concept in mobile technology and online networks [78, 88]. Apart from the increasing use of online social networks [89–91], the social presence factor has been found to be one of the positive determinants affecting PEOU, perceived enjoyment, and PU in the electronic environment and in electronic shopping [92–96]. The current paper conceptualizes that social presence motivates consumers towards MTS intention, which is represented by PEOU, PU, and perceived enjoyment. Consistent with the above arguments, we propose the following hypotheses:

H3: there is a positive relationship between social presence and perceived enjoyment

H4: there is a positive relationship between social presence and perceived ease of use

H5: there is a positive relationship between social presence and perceived usefulness

H6: social presence has a significant influence on consumer intention to use MTS

**3.4. Perceived Enjoyment (PEJ).** Davis et al. [97] explained PEJ as "the extent to which the activity of using a system is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated." Davis et al. [97] elucidated that PEJ is the intrinsic stimuli coming from a particular activity. Enjoyment empowers users who perceive difficulty to focus on the use of any technology, which further leads to a comprehensive enjoyment process [59]. In previous studies, PEJ was endorsed as a significant precursor of behavioral intention in different mobile studies [98, 99]. Jeng [100] found that consumers remain happy when they are searching for online tourism products. Young Im and Hancer [101] found that consumers using mobile devices while looking for information on travel sites are often concurrently connected with friends, connections which potentially give them pleasure and enjoyment.

Additionally, Scholl-Grissemann and Schnurr [102] found that customizing travel products leads to pleasant consumer experiences. Ramification strategies have been further proposed by Ozturk et al. [103], and PEJ was considered an essential factor in the development of mobile bookings for a hotel. Thus, the following hypothesis is suggested:

H7: there is a positive relationship between perceived enjoyment and tourist intention to use a mobile device for shopping tourism products

**3.5. Perceived Ease of Use (PEOU).** Davis [104] defined PEOU as "the degree to which a person believes that using a particular system would be free of effort." In this research, we define PEOU as the degree to which tourists/consumers believe that the MTS will be an effortless and easy job for them. When using the system takes little effort and it is easy to learn and understand, consumers are more likely to accept the system [105]. Several previous studies have used the construct of PEOU to research the adoption of information

technology and found a positive relationship between PEOU and adoption of technology such as online shopping [106, 107], mobile technologies [108–110], e-learning [111], and online games [112]. Therefore, it can be concluded that purchasing tourism products using a mobile device will be more beneficial if it is perceived to be easy in use. Hence, we posit the hypothesis:

H8: perceived ease of use positively impacts consumer intention to use MTS

**3.6. Perceived Usefulness (PU).** By the definition of Davis [104], PU is “the degree to which a person believes that using a particular system would enhance his or her job performance.” In the current study, perceived usefulness refers to the extent where the consumer believes that using a mobile device for tourism shopping will improve his/her performance. Adams et al. [113] found that PU is one of the crucial factors identified by TAM that predicts consumer intentions and performance. Liao et al. [114] suggested in motivation theory that people will be more influential and accept new technology if they realize that the activity leads to positive performance. Previous research extensively considered PU in different contexts such as social networking [115–118]. There is a lack of literature clarifying the consumers’ beliefs that using MTS could result in a positive outcome and how those beliefs affect intentions. Therefore, we suggest the following hypothesis:

H9: perceived usefulness positively affects tourist intention to use MTS

**3.7. Mediating Role of PEOU, PU, and PEJ.** According to TAM, PEOU, and PU, envisage the actual acceptance of individuals to use a system, with behavioral intentions as a mediator between the given predictors and the actual use of the system [104]. Jiang and Xu [119] confirmed a substantial effect of satisfaction and perceived usefulness on the continuation intention of e-government in China. Similarly, a study conducted (Hu et al. [120]) revealed that PU is an essential indicator of the continued usage of e-tax service in Hong Kong. Similarly, Hsu and Lu [112] conducted a study on online games where they determined the positive impact of PEOU on generating the experience with immersion. Moreover, Chitungo and Munongo [121] found a positive relationship between PEOU and usage intention in m-mobile usage. With the increasing importance of hedonistic features of the cellular system, information system research has verified the significant role of PEJ [122]. In simple words, the predictor value and mediating role of PEJ have been suggested in extensive literature while explaining the adoption of new technologies [123]. According to Kawaf and Tagg [124], using the stimulus-organism-response paradigm, both PU and PEOU, as well as the response (PEJ), are presumed as mediators between external stimuli (i.e., social presence, perceived mobility, and the system) and the provision of quality services. Based on the different studies (e.g., [125–128]), the current study supposes that PEJ, PU, and PEOU will mediate the relationships between social

presence and consumers’ actual usage of MTS. Based on vast literature search, the authors believe that no prior study has tested the mediation in the relationship between social presence and actual usage in the perspective of mobile tourism shopping. Thus, we hypothesize the following:

H10: perceived enjoyment significantly mediates the relationship between social presence and tourist MTS intention

H11: perceived ease of use positively mediates the relationship between social presence and tourist MTS intention

H12: perceived usefulness positively mediates the relationship between social presence and tourist usage of MTS

To sum up, it is expected that the exogenous variables can directly and positively influence the consumers’ intentions toward mobile tourism shopping. Also, it is likely that the relationship between social presence and usage intention toward MTS is mediated by PEJ, PEOU, and PU. To this end, based on rigorous literature on the relative advantages, compatibility, and social presence in the context of MTS, we propose a multimediation model, as demonstrated in Figure 1.

## 4. Methodology and Measurement Development

**4.1. Data Collection and Sampling Method.** The data collection process was carried out from August to October 2018 in Karachi, Pakistan. Hard copies of the questionnaire were distributed among the participants, and the questionnaire was filled out through face-to-face interaction with the respondents [129]. The research survey was conducted in four different malls in Karachi, namely, Dolman Mall Clifton, LuckyOne Mall Karachi, Dolmen Mall Tariq Road, and Port Grand. According to Kasim and Alfandi [130], the shopping centers approach for data collection is the best way to collect data from marketers/buyers. Other researchers also elaborated that the mall-intercept method is a more unbiased and fair data collection method because of the anonymity and random educated responses [131, 132]. Also, the approach constitutes an appropriate sampling [133]. In the context of mobile tourism, the same approach has been recommended by various researchers in Malaysia [2, 134]. Therefore, the authors decided to choose Karachi, a metropolitan city of Pakistan, as an ideal city for potential tourists and MTS. Four research assistants were also hired to assist in the data collection, and thus a total of 450 survey questionnaires were distributed among the consumers during the different time intervals. The consumers were contacted and were politely asked if they were using a mobile device for purchasing tourism products or have had experience with MTS shopping; their responses were welcomed, and they were thanked for their willingness to complete the survey. The data collection process was carried out in three consecutive months. A total of 422 completed questionnaires were received. Subsequent analyses revealed that only 396 responses were

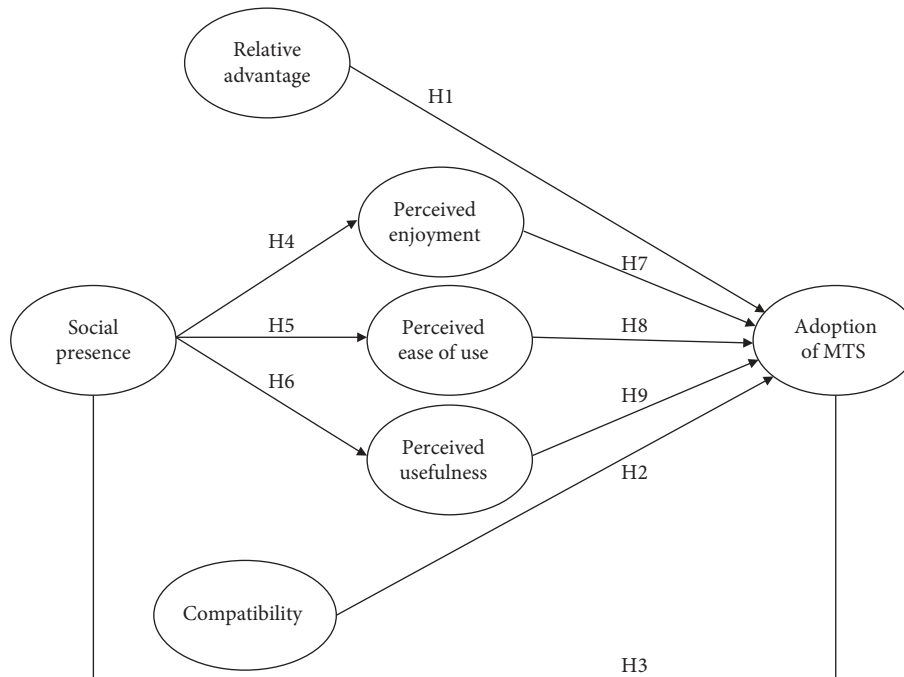


FIGURE 1: Conceptual model.

useable for statistical analysis after removing outliers and responses with missing items.

**4.2. Demographic Characteristics of the Sample.** The demographic features of respondents are presented in Table 1. Male respondents accounted for 230 (58.08%) responses in the sample, while 166 were from females (41.92%). A large majority of respondents (70.4%) were aged between 20 and 39 years (17.6%, aged 20 to 24 years; 25.2%, aged 25 to 29 years; 16.5%, aged 30 to 34 years; and 11.2%, aged 35 to 39 years). In terms of education, the largest group of respondents was those with at most a high school education, numbering 166 (41.91%). Moreover, in terms of experience using a mobile device, 36.4% had less than three years' experience, 32.8% had 3 to 5 years' experience, and 30.8% had more than five years' experience using a mobile device to shop for tourism products. Table 1 presents the demographic profile of the final sample.

**4.3. Survey Instrument.** The measurement items of the current study were adapted from previous studies and modified according to the perspective of MTS. All the indicators were measured on a seven-point Likert scale ranging from "1, strongly disagree" to "7, strongly agree."

**4.4. Common Method Bias (CMB).** The study collected the data using a single source for both dependent and independent factors, and so to check for problems of the possible common method bias, we used Harman's single-factor test [135]. Statistically, if the result of Harman's single-factor test accounts 40% or above, then there may be a CMB problem in the data. In the present study, all factors were

TABLE 1: Demographic profile of respondents

Demographic profile ( $n = 396$ )	Frequency	Counts	Percentage (%)
Gender	Male	230	58.08
	Female	166	41.92
Age	15–19	35	8.8
	20–24	70	17.6
	25–29	100	25.2
	30–34	65	16.4
	35–39	44	11.2
	40–44	38	9.5
	45–49	25	6.3
	50 and above	20	5.0
Highest education	High school	166	41.91
	Undergraduate	90	22.72
	Graduate	88	22.23
	Doctorate	52	13.14
Experience using m-devices to shop for tourism products	≤3 years	144	36.4
	3–5 years	130	32.8
	More than 5 years	122	30.8

uploaded with a single factor. The study found 37.2% variance in data, which is below the cut-off value of 40%. Moreover, the construct correlation matrix (Table 2) also indicates that each value of interconstruct correlations is less than 0.76 as CMB may be an issue when correlations are greater than 0.9 [136, 137]. Therefore, it is concluded that no issue of CMB exists in the data.

## 5. Results and Discussion

For testing the different paths in the proposed model, we applied partial-least-squares structural equation modeling

TABLE 2: Correlations and interconstruct reliability.

Variables	AVE	CA	1	2	3	4	5	6	7
MTS adoption	0.808	0.88	<b>0.899</b>						
Compatibility	0.621	0.693	0.549	<b>0.788</b>					
Perceived enjoyment	0.677	0.862	0.577	0.673	<b>0.823</b>				
Perceived ease of use	0.623	0.70	0.514	0.448	0.494	<b>0.789</b>			
Perceived usefulness	0.791	0.868	0.685	0.315	0.382	0.35	<b>0.889</b>		
Relative advantage	0.564	0.753	0.202	0.17	0.227	0.264	0.24	<b>0.751</b>	
Social presence	0.666	0.753	0.646	0.602	0.506	0.44	0.364	0.208	<b>0.816</b>

Note: AVE and CA refer to average variance extracted and Cronbach's alpha. The bold items represent square root of the constructs' AVE.

(PLS-SEM). PLS-SEM is a comprehensive modeling approach that helps researchers measure the relationships between constructs as well the reliability and validity of any research model [138]. In the context of tourism literature, the PLS-SEM has received important recognition among researchers [139]. Moreover, PLS-SEM is a powerful technique and can predict a complicated model without any need of distribution assumptions, and it can also handle nonnormal distributions of data [140]. Given the advantages of PLS, the current research examined the factors that affect the consumer's acceptance of mobile tourism shopping through PLS, which is considered suitable to evaluate the relationships in any structure model, specifically in the IS context [141]. We used the software Smart PLS 3 to do so.

*5.1. Measurement Model.* We examined the measurement model by using CFA [138]. Notably, we checked content validity, convergent validity, and discriminant validity. After a critical review of past literature and pilot testing, we measured content validity. Assessing convergent validity, we evaluated the values of factor loadings, Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE). The CFA results show that the factor loadings of all items were more significant than 0.70 except for SP3.5, PU 6.1, and PEOU which had 7.3; these three items were removed subsequently from the final analysis [142]. As indicated in Table 3, the CFA results fulfill the recommended standard levels of CA, CR, and AVE which were higher than 0.7, 0.7, and 0.5, respectively, thus showing good convergent validity [138, 142, 143].

Discriminant validity, which indicates that the measures of one variable are different from the others, is evaluated by three methods [144]. As argued by Fornell and Larcker [143], first we compared the associations among the correlations between variables and AVE of all the hypotheses. Table 2 shows that, for all constructs, the AVE square root is above the correlation values, showing acceptable discriminant validity. Second, we compared items loadings and cross loadings, and as indicated in Table 4, we find that the items loadings are higher than the cross loadings of other latent variables, which show good discriminant validity [145]. Third, using the heterotrait-monotrait ratio (HTMT) method with the complete bootstrapping technique of 2000 samples, we assessed discriminant validity. Table 5 indicates

that the maximum value in the table is 0.83, which is below the cut-off value of 0.85 and the confidence interval ratio of all variables is below 1, thus showing sound discriminant validity.

*5.2. Structural Model Results.* The hypothesized relationships among the constructs were examined using standardized path examination. The direct and indirect effects of dependent variables on the independent construct were examined and provide practitioners with possible results concerning cause and effect relationships. The results are presented in Table 6. We estimated the path significance levels by a bootstrap method with resampling 2000 times [146], with zero change selection, which achieves the most conventional results [147]. All the 12 hypotheses were tested; two hypotheses were found to be insignificant, and the remaining hypotheses are significant at the  $p < 0.001$  level. The results indicated in Table 6 show that social presence positively influences consumer PEJ ( $\beta = 0.506$ ,  $p < 0.001$ ), PU ( $\beta = 0.371$ ,  $p < 0.001$ ), PEOU ( $\beta = 0.441$ ,  $p < 0.001$ ), and the MTS intention ( $\beta = 0.341$ ,  $p < 0.001$ ). These findings indicate that H3, H4, H5, and H6 all hold for MTS adoption, so these four hypotheses are supported. Similarly, PEJ ( $\beta = 0.148$ ,  $p < 0.001$ ), PEOU ( $\beta = 0.124$ ,  $p < 0.001$ ), and PU ( $\beta = 0.456$ ,  $p < 0.001$ ) did significantly affect MTS shopping intention; therefore, these results provide statistical support for hypotheses H7, H8, and H9. Moreover, we found insignificant correlations of RA ( $\beta = -0.052$ ,  $p = 0.092$ ) and COM ( $\beta = -0.045$ ,  $p = 0.323$ ) with MTS intention; hence, H1 and H2 are unsupported.

Second, the main goal of PLS-PM is to evaluate the predictive power of a proposed model as well the key constructs; therefore, it is important to assess the structure model by evaluating the coefficient value,  $R^2$ , of the constructs as reported by Hair et al. [147], indicating the variance in the constructs of the proposed research model. As shown in Figure 2, the results state that PEJ ( $R^2 = 0.193$ ), PEOU ( $R^2 = 0.202$ ), and PU ( $R^2 = 0.144$ ) meet the requirements, thereby proving an acceptable level of predictability. Overall variance in the multimediatio model was measured at 69% in MTS shopping ( $R^2 = 0.694$ ), showing that the variance explained by the independent variables represents an excellent explanatory power. Lastly, we used the blindfolding procedure as suggested by Hair et al. [147], to generate the cross-validated redundancy measure  $Q^2$ . Hair et al. [140]

TABLE 3: Results of the measurement model.

Variables	Items	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted
Relative advantage (RA)	RA1.1	0.729	0.753	0.838	0.564
	RA1.2	0.703			
	RA1.3	0.824			
	RA1.4	0.744			
Compatibility (COM)	COM2.1	0.713	0.693	0.83	0.621
	COM2.2	0.826			
	COM2.3	0.82			
Social presence (SP)	SP3.1	0.794	0.834	0.889	0.666
	SP3.2	0.811			
	SP3.3	0.817			
	SP3.5	0.84			
Perceived enjoyment (PEJ)	PE4.2	0.873	0.765	0.862	0.677
	PE4.3	0.841			
	PE4.4	0.75			
Perceived usefulness (PU)	PU5.2	0.881	0.868	0.919	0.791
	PU5.3	0.908			
	PU5.4	0.877			
Perceived ease of use (PEOU)	PEOU6.1	0.782	0.70	0.832	0.623
	PEOU6.2	0.789			
	PEOU6.4	0.796			
MTS adoption	AI7.1	0.894	0.881	0.927	0.808
	AI7.2	0.917			
	AI7.3	0.886			

TABLE 4: s Cross loadings.

	COM	PE	PEU	PU	RA	SP	Usage
COM2.1	<b>0.713</b>	0.294	0.344	0.262	0.055	0.388	0.409
COM2.2	<b>0.826</b>	0.49	0.384	0.256	0.199	0.541	0.481
COM2.3	<b>0.82</b>	0.692	0.327	0.226	0.137	0.489	0.399
PE5.3	0.662	<b>0.906</b>	0.372	0.281	0.123	0.424	0.446
PE5.4	0.384	<b>0.827</b>	0.329	0.266	0.179	0.283	0.369
PEU7.1	0.255	0.275	<b>0.781</b>	0.276	0.266	0.263	0.394
PEU7.2	0.343	0.279	<b>0.789</b>	0.246	0.164	0.348	0.373
PEU7.4	0.441	0.39	<b>0.797</b>	0.302	0.201	0.414	0.442
PU6.2	0.281	0.248	0.325	<b>0.882</b>	0.211	0.371	0.608
PU6.3	0.307	0.335	0.364	<b>0.908</b>	0.22	0.333	0.63
PU6.4	0.251	0.256	0.24	<b>0.877</b>	0.209	0.285	0.587
RA1.1	0.122	0.091	0.148	0.094	<b>0.730</b>	0.151	0.113
RA1.2	0.074	0.107	0.195	0.103	<b>0.703</b>	0.121	0.098
RA1.3	0.137	0.16	0.199	0.208	<b>0.823</b>	0.161	0.195
RA1.4	0.159	0.13	0.243	0.261	<b>0.744</b>	0.178	0.166
SP3.1	0.466	0.392	0.34	0.205	0.17	<b>0.777</b>	0.38
SP3.2	0.44	0.294	0.363	0.19	0.203	<b>0.797</b>	0.393
SP3.3	0.495	0.363	0.32	0.331	0.124	<b>0.829</b>	0.584
SP3.4	0.552	0.32	0.409	0.425	0.185	<b>0.854</b>	0.703
Usage8.1	0.499	0.392	0.477	0.614	0.204	0.642	<b>0.897</b>
Usage8.2	0.51	0.475	0.522	0.641	0.197	0.577	<b>0.914</b>
Usage8.3	0.469	0.409	0.38	0.59	0.14	0.551	<b>0.886</b>

advocated using  $Q^2$  to ensure the predictive capability of any research model. If the value of  $Q^2$  for endogenous construct is positive (more than zero), it demonstrates that the model predictability is relevant and acceptable [148]. The value of  $Q^2 > 0$  represents the model's predictive relevance for the respective relationships of PEJ, PEOU, and PU with MTS intention.

**5.3. Mediation Analysis.** To test the multiple mediation effect, we followed the method suggested by Hair et al. [147] and Zhao et al. [149] instead of using the proposal of Baron and Kenny [150]. The later papers described three types of the mediation process and two types of nonmediation procedures. If both the direct and indirect mediation effects on the relationships between dependent and independent variables are insignificant, then the specific path has a nonmediation effect. If, however, the direct effect on the dependent variable is significant, then the path has only one nonmediation effect, but if the direct effect is insignificant, then the researcher will have to evaluate the significance of indirect effects to further differentiate between complementary partial, full, and competitive partial mediation. Similarly, complementary partial mediation takes place when both the direct effect and indirect effects are moving in the similar direction. Second, competitive partial mediation takes place when there is a positive direct effect, but the movement is at the opposite track. Finally, full mediation will occur if there is an insignificant direct effect. Hypotheses H11 and H13 posit that PEOU and PU partially mediate between the social presence and MTS adoption, and H12 posits that PEJ has no mediation impact on the connection between social presence and MTS adoption. Following Ringle et al. [146], we adopted the bootstrapping method for testing mediation effects. The results suggest that social presence has significant indirect effects ( $\beta = 0.299$ ,  $p < 0.001$ ) on MTS adoption, while the direct effect of social presence is also significant. Thus, we conclude that PEOU and PU have a partial mediating role in the current study, thus supporting H11 and H12, and that PEJ has no mediation effect, so H10 is unsupported (Table 7).



TABLE 5: HTMT results.

	CI ratio		COM	PE	PEU	PU	RA	SP	Us
PE→COM	0.953	COM							
PEU→COM	0.737	PE	0.838						
PEU→PE	0.697	PEU	0.626	0.576					
PU→COM	0.532	PU	0.405	0.41	0.444				
PU→PE	0.533	RA	0.218	0.231	0.36	0.272			
PU→PEU	0.561	SP	0.781	0.546	0.564	0.413	0.257		
RA→COM	0.374	Us	0.697	0.607	0.646	0.782	0.23	0.734	
RA→PE	0.38								
RA→PEU	0.503								
RA→PU	0.404								
SP→COM	0.868								
SP→PE	0.664								
SP→PEU	0.662								
SP→PU	0.536								
SP→RA	0.394								
Us→COM	0.783								
Us→PE	0.711								
Us→PEU	0.73								
Us→PU	0.885								
Us→RA	0.372								
Us→SP	0.799								

CI = confidence interval.

TABLE 6: Results of the hypothesized structural model.

Hypotheses (H1 to H9)	Path coefficient	Standard error	T value	p value	Study results
H1: RA→MTS adoption	-0.052	0.031	1.685	0.092	Not supported
H2: COM→MTS adoption	0.045	0.046	0.989	0.323	Not supported
H3: SP→MTS adoption	0.341	0.045	7.635	$p < 0.001^{***}$	Supported
H4: SP→PEJ	0.506	0.045	11.178	$p < 0.001^{***}$	Supported
H5: SP→PEOU	0.441	0.042	10.474	$p < 0.001^{***}$	Supported
H6: SP→PU	0.371	0.056	6.686	$p < 0.001^{***}$	Supported
H7: PE→MTS adoption	0.148	0.045	3.294	$p < 0.001^{***}$	Supported
H8: PEOU→MTS adoption	0.124	0.035	3.54	$p < 0.001^{***}$	Supported
H9: PU→MTS adoption	0.456	0.049	9.303	$p < 0.001^{***}$	Supported

Note:  $N = 395$ ;  $*** p < 0.001$ .

**5.4. Discussion.** This study presents a novel and integrated model examining key factors that influence tourists' intention to use mobile device(s) for online shopping of tourism products and services. In the proposed model, social presence, relative advantage, and compatibility act as antecedents of consumer intentions towards mobile tourism shopping. Also, perceived enjoyment, perceived ease of use, and perceived usefulness are mediators between the relationship of social presence and adoption of MTS. In this respect, as foreseen by hypotheses associated with the direct effect of relative advantage, the results show that the relationship between relative advantage and consumer intention toward MTS is insignificant, consistent with the results of the previous studies (e.g., [151, 152]). Our results are contrary to Ainin et al. [153] who found a significant association between social media and relative advantage among Malaysian SMEs. One of the possible reasons for the insignificant relationship between relative advantage and mobile tourism shopping adoption is that the mobile tourism technology is new in Pakistan and hence the respondents are relatively unfamiliar with this new

technology. This may enhance their ability to use effectively, eliminating its significance of relative advantages in decisive behavioral intentions. Therefore, this inconsistency does not mean that the technology provider thinks accepting MTS has no technical advantage over other alternatives. Amaro and Duarte [28] found a significant relationship between consumers attitude toward participating in the online travel community. Hung et al. [154] studied the adoption of the CRM system in hospital and found a significant relationship between relative advantage and CRM adoption system. Mallat and Tuunainen [155] explored a positive relationship relative advantage and adopter view on the new payment technology system. Lin [156] found that relative advantage had a positive and significant influence on consumer adoption of mobile banking. Prior research also found a significant association between relative advantage and (B2B) e-commerce adoption by Egyptian manufacturer in SMEs [157]. Hussein et al. [158] investigated and successfully identified that relative advantage plays a significant role in using B-to-B e-commerce among the Jordanian manufacturing SMEs.

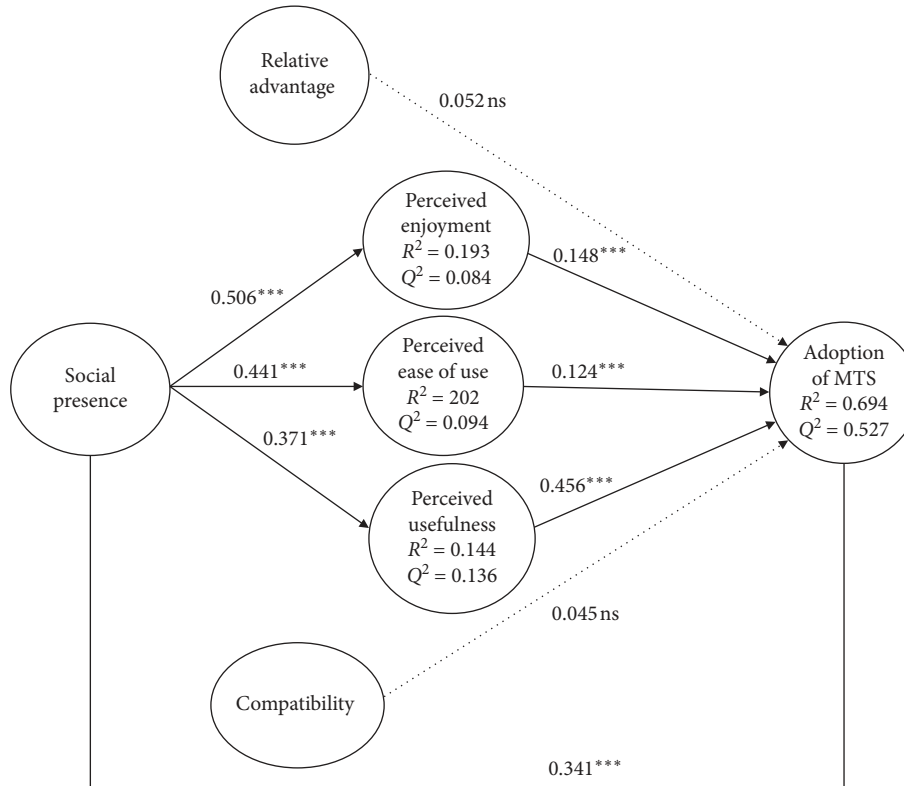


FIGURE 2: Model with results. \*\*\*Relationships are highly significant. ns: hypotheses are not significant.

TABLE 7: Multiple mediation analysis.

Hypotheses and path (H11, H10, and H12)	Specific indirect effect	Direct effect	Total effect	Type of mediation	Remarks
H11: SP→PEOU→MTS	0.07***	0.449***	0.27***	Complementary partial mediation	Partially supported
H12: SP→PEJ→MTS	0.028	0.44***	0.27***	Direct-only nonmediation	Unsupported
H13: SP→PU→MTS	0.172***	0.379***	0.27***	Complementary partial mediation	Partially supported

Note:  $N = 395$ ; \*\*\*  $p < 0.001$ .

Our results indicate that relative advantage is not necessary when it comes to using innovation. It may be due to the specific characteristics of the respondents that they prefer face-to-face shopping and do not consider the advantages of mobile shopping or the respondents lack familiarity with the mobile-based tourism as a viable alternative to the physical store shopping. Another hypothesis about the effect of compatibility with the consumer using m-devices is also unsupported, showing an insignificant relationship with MTS. Insignificant result of compatibility was also reported in [157] in the context of e-commerce adoption. The result is also in line with the results of Ahmad et al. [159], who found an insignificant relationship between compatibility and social media acceptance. Meanwhile, the effect of compatibility on MTS acceptance is not significant. This insignificance can be explained by noting that most consumers do not use mobile device(s) to do online shopping in Pakistan or it may relate to the specificity of the data collected. Agag and El-Masry [29] found a significant

association of consumers' attitude and online (tourism) shopping. Qazi et al. [151] studied the acceptance of e-book reading among higher education students and found that compatibility does influence consumers' (students') intentions and has a significant impact on consumer's attitudes toward adopting e-books. Previous research also found a significant association between compatibility and consumer's acceptance and adoption of mobile ticketing services [160]. Lu et al. [52] found that relative advantage and compatibility had a significant and positive impact on consumer adoption of innovation. Thus, relative advantage and compatibility of mobile tourism shopping loses its effect in such cases.

As predicted by H3, H4, H5, and H6, our findings regarding social presence express the significant influence of perceived usefulness, perceived ease of use, and perceived enjoyment, on tourists' intention toward MTS. The results reveal that the social connectivity or being socially present is an important feature of mobile-based tourism shopping.

Additionally, the users' ability to connect through mobile devices and shop online adds to the significance of social presence. Therefore, hypotheses H3, H4, H5, and H6 are supported. These results of our study also correspond to those in the previous literature (i.e., [161, 162]). Also, perceived ease of use directly affects MTS intention and mediates the effect of social presence on MTS adoption. These findings are in line with the study of mobile social network sites by Leong et al. [163] who found that perceived ease of use has a considerable influence on consumer intention and argued that the result is due to the favorable experience of mobile usage for social networking among consumers, which guides them to use SNS easily for learning and shopping activities. Similarly, Nunkoo and Ramkissoon [164] acknowledged that whenever a tourist has a comprehensive knowledge of online tourism shopping, they are more focused on utilizing the usefulness of online tourism shopping. Our result explains and supports the significant role of perceived usefulness in MTS adoption. In our study, perceived enjoyment was another predictor of tourist intention to use a mobile device to purchase tourism products, which agree with past studies which describe the significant role of PEJ in technology acceptance [123, 165]. Ha and Stoel [166] found that perceived enjoyment (PEJ) has a substantial and direct effect on consumer intention toward MTS intention. Our study's conclusion about PEJ is similar and supports the predictive ability of PEJ. Hence, it is concluded that as long as users think that the MTS involves fun and pleasure, they intend to accept MTS.

Our results confirm the applicability of TAM in predicting tourists' intention towards MTS [26]. Ye et al. [162] found that the impacts of social presence on perceived usefulness, perceived ease of use, and perceived enjoyment are positive, and they concluded that the more the website is enjoyed, the more it is valuable and easy to use. Our results support the multiple mediation analysis, showing that PU, PEOU, and PEJ each mediates in the association between social presence and MTS adoption. These results are also consistent with previous studies [126, 162, 167, 168]. Overall, the adoption of the multimediation model has been well established in the perspective of MTS.

## 6. Implications and Conclusion

*6.1. Theoretical Implications.* Given the increasing importance of mobile technology in tourism and hospitality, this research contributes to academic research in the context of developing countries. In the current research work, we employed two theories (TAM and IDT) to examine consumer intention towards the adoption of MTS. This study has rich theoretical contributions to tourism research and mobile applications in the services sectors. The research combines two known theories to understand the adoption more comprehensively. The first, IDT, elucidates how innovation spreads among people [169], while TAM has been extensively used in tourism and hospitality industry to examine that how consumers adopt new technology [60, 61]. Past studies show that integrated theoretical models are more applicable and representative in tourism research.

Also, this research has contributed to the development of tourism, marketing, and hospitality literature in developing economies. The use of the integrated model represents a new avenue for further research in the IT/IS domain in many other contexts. We used PLS-SEM, a comprehensive statistical technique, which adds to the theoretical contribution in the area of tourism.

Moreover, our results complement previous studies which tested the mediating roles of PEJ, PU, and PEOU in online technology acceptance as well as studies investigating the consumer behavioral intention and actual usages. The relationship of social presence and the adoption of MTS with the mediation of PU, PEOU, and PEJ is a new addition in the MTS perspective. This will have substantial theoretical implications for the IDT and TAM models, just as the mediation results in the new context add to the existing literature on tourism, IDT, and TAM research. Theoretically, this research opens new ways to investigate the use of mobile technology in tourism industry, and the integrative model helps academician in forming their future research models in more solid ways.

*6.2. Managerial Implications.* This study is based on the premise of a research gap that previous research ignored the factors that cause tourists to accept MTS, especially in developing countries. Hence, we aimed for a robust empirical investigation to analyze the determinants of tourist intentions to participate in MTS. Besides the theoretical implications, the findings of the current research provide a set of important implications for practitioners, managers, tourists, and regulators. With a sound understanding of the intention of mobile shoppers and the mediating effects of PU, PEOU, and PEJ, various stakeholders (airlines, mobile device designers, software developers, travel organizations, and tourism-related organizations) can further strengthen their marketing and financing policies for tourism products by considering the significant factors identified in this paper. The results might be helpful to design strategies to motivate more consumers for MTS, and thus, it can add value to the tourism industry as well as other relevant organizations. The government, especially the Pakistan Tourism Development Corporation, can utilize the findings in a better way to promote mobile tourism shopping in Pakistan. This will not only create job opportunities but also help the government in documenting the shopping channel. Moreover, the focus of this study is restricted to Pakistan tourism shopping through mobile use; further research can work on the crosscultural study to confirm and validate our findings. We recommend testing the research model in different phases of shopping like before and after as well as during the travel to determine how well such relationships exist in other economies. It can also be a worthy pursuit in the future to focus on shopping places and time (like office, home, travelling sites, or working day or weekend). The prospective researchers can concentrate on multifactor analysis groups that can be helpful in exploring the differences among various tourism services/products, like hotels, airline companies, restaurants, and rental-car services. The

heterogeneous nature of MTS adoption across different industries can help the marketing managers to devise their strategies according to the nature of various segments, like airlines and hotels. This segmentation will be highly promising to the consumers' wellbeing and satisfaction.

**6.3. Social Implications.** This study also grants social implications by exploring the tourists' intentions and highlighting the dynamics of using mobile phones for tourism shopping. The mobile usage for such purposes can be thought of as a social value, which might influence society in this regard. Such usage also affects other individuals, as it promotes the social judgment of other individuals towards the MTS adoption. Thus, the increased understanding can also spur the arrival of tourists to Pakistan, which is timely since Pakistan has a great potential for tourism, and the present government has initiated moves to develop the tourism industry. This knowledge will also add to the proliferation of technology adoption in the tourism sector. Indirectly, MTS can be proved to be an economic engine and an agent of social change because of its contribution to GDP, decreasing of unemployment, increasing of country income, and creation of opportunities for tourism-related jobs.

## 7. Conclusion, Limitations, and Future Research Directions

Mobile tourism shopping is not only considered to be a revolutionary movement in the tourism perspective but also a fashionable pattern where the tourists use mobile devices for buying tourism-related products. Because accepting the m-gadgets for tourism is the trending research area, the current research proposed an integrated framework to examine the tourists' intention to accept MTS. The present research contributes theoretically, managerially, and also has social implications, thereby benefiting both the literature and practice.

While the proposed model has been developed on a rich theoretical basis, the current research has various inescapable limitations that need to be covered and focused in future research. First of all, this study used a convenience sampling method; therefore, future studies may use random sampling from general other users or groups of users. Second, the scope of our study is restricted to Pakistan; therefore, the findings, though likely generalizable to some other developing countries, may not be applicable in settings with significantly different social, religious, or political features. Addressing the problem in other countries and contexts is worthwhile. Third, this study does not consider crosscultural issues because the use of ICT usage behavior is more credible in a single national culture [170], so it is advisable to focus on multicultural backgrounds or using cultural dimensions such as those as suggested in [171]. Fourth, data were collected cross-sectionally and were analyzed through PLS-equation modeling. Scholars assume that the data are homogenous, and this assumption can be unrealistic [172]. Therefore, the authors suggest that future research may consider longitudinal data with multigroup analysis. In

smart PLS, this can be handled through the FIMIX-PLS tool. Fifth, the current study aimed to research MTS from the tourists' perspective. The spread of any technological innovation also depends on organizations, merchants, and other sellers; this aspect could be covered in follow-up research studies. The extended models of TAM (like TAM-2 and TAM-3) are also worth investigating in different contexts. Finally, new variables relevant to mobile tourism, such as social, religious, or political factors, can be included, which will be helpful to researchers in their future research endeavors.

## Data Availability

This research is part of a series of research studies conducted by a group of researchers, and few parallel studies are still in progress; the data used to support the findings of this study are currently under embargo, while the research findings are commercialized. Requests for data after 12 months of publication of this article will be considered by the corresponding author with mutual consultation of related group members and researchers.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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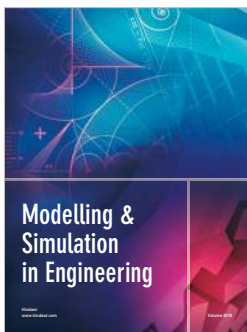
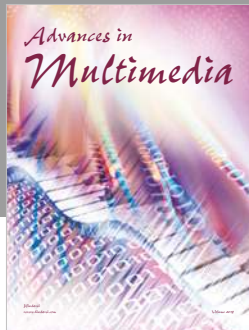
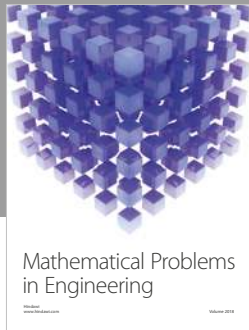
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