



# A Rung Towards the Digitalization of Tourism Services in India: Assessment of Individual Perceptions Using Technology Acceptance Model

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#### Abstract

The world has seen a radical change through the digital revolution. Digital Technologies have facilitated various sectors and the Economy to run on the device, making all regular day-to-day activities easy, convenient, and more efficient. The aggressive and mass adoption of digital technologies by consumers, enterprises, and governments has accelerated the Economy's growth rate. It can play an essential role in spurring economic growth and employment. However, the research literature shows that the impact of digitalization by country and sectors is uneven (Sabbagh K et al., 2014). Digital initiatives have positive connotations and have created a digital divide among the demographics across the communities (Benda et al., 2011). The study employs the TAM (Davis, 1989) model to analyze the Behaviours and attitudes of the customers towards technology acceptance in tourism in India. The data is collected through questionnaires from regular travellers visiting tourist destinations across India using Snowball sampling techniques; the primary means is Google Forms. Data analysis is executed using SPSS software to find the R Square coefficient to test the influence of independent variables on dependent variables using a multiple regression model to analyze

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the TAM constructs to examine individual perceptions towards digital technologies in India's tourism sector.

**Key Words:** Tourism Marketing, TAM, Behavioural Intention, Technology Acceptance and Perceived Risk.

## 1. Introduction

The evolution of Internet development of information and technology has shown a phenomenological change in people's communication style and a shift towards traditional to online channels (Aspasia & Ourania, 2014). Witnessing the change in customers' behaviours, corporations and enterprises have started augmenting online technologies in marketing their products and services (E.I.-Gohary, 2012). Changes in social media also revolutionized marketing activity performance (Lamberton et al., 2016). Travel and tourism are two service sectors that have seen incredible leaps due to technological advancements. The tourism sector in India is one promising sector where the inbound tourist growth rate is marked to 10.5% after a sudden surge in the COVID-19 pandemic for the year 2021 (Indian Tourism Statistics, 2022). The Government of India is promoting the Tourism sector remarkably and strengthening it domestically and globally. The reports, according to World Travel and Tourism, revealed that the contribution of the travel and tourism sector to the world GDP was 10.3% in 2019.

The exclusive contribution of the tourism sector in India is around 4.7% of its GDP and creates approximately 31.8 million employment opportunities for its citizens (Ministry of Tourism, 2022). Strengthen further enhancing Infrastructure and other infrastructure soft facilities to strengthen. These infrastructure developments and initiatives serve as arteries for the industry's growth. Conversely, the research reveals a substantial digital divide in accessing internet facilities in India (NITI Aayog report, 2022). The socioeconomic conditions and lack of infrastructure facilities among rural communities are significant dimensions for restraining opt-in technologies across the sectors in India (Kumar B et al., 2018). The research also reveals that customer involvement is essential for successfully implementing and leveraging the benefits of digital technology and effectively developing services and products. (Alam, 2006; Cooper, 2001). Technological innovations

from enterprises in the tourism sector also require an understanding of customers, and the Individual needs to evaluate the perceptions and behavioural intentions towards new technologies and innovations in India to fit better the Use and customization of these technologies in the industry.

# 2. Objectives of the Study

Given the above discussion, it is observed that more than the development of Infrastructure and initiations by the enterprises and Government alone is needed to yield the fruits of Technological innovation in the present situation. As literature showcases the evidence of a digital divide among individuals in adopting the technologies, the study aims to find individuals' perceptions and behavioural intentions towards adopting emerging technology.

Hence, the present study focuses on testing the attitudes and behavioural intentions through TAM constructs among the customers' perceptions in the tourism sector. To emphasize the essential elements, the study focuses on Subjective Norms (S.N.), Perceived Risk (P.R.), Perceived Ease of Use (PEU), Perceived Usefulness (P.U.) on the Attitudes (ATT) of the Individual and Attitude reflecting on Behavioural Intention to adopt emerging Technologies in the Tourism Sector.

#### 3. Review of Literature

Based on the study objectives, the present literature investigates TAM constructs across the sectors and their influence on the behavioural Intention for accepting digital technologies in their field of study with varied interest. These shreds of evidence establish thrust areas to examine the influence of constructs on each other to test the level of impact and spotlights to test tourists' behaviour towards digital technologies.

Various ideas have been created and verified across disciplines to explain consumer adoption of technology (E. M. Rogers., 1962) innovation diffusion theory as a forerunner (Zhong et al. 2020). The literature also postulates (E. M. Rogers ,1995) that innovative ideas spread through five stages: information, persuasion, implementation, and confirmation within communities. Critiques of the theory have revealed flaws (Elster, 1993), paving the door for its reconstruction.

In this context, TAM was deemed the most extensively utilized technology adoption model in the existing literature (Castillo S & Bigne, 2021). The core constructs of TAM in blend with V.R. and A.R. were examined (Han J et al., 2021) to test visitors' experience at theme parks personalising to tourism and entertainment sector. The study revealed that P.U. and PEU of VR/AR projects at theme parks had positively affected the visitors' Attitudes. However, the Usefulness has an indirect effect, and the construct of Perceived Risk has shown no significant influence on the visitor's Attitude. Similarly, the behaviour of tourists was examined (Hamidet al., 2021) to test intentions during post-COVID using the theory of planned behaviour and perceived Risk in India. The perceived risk construct has negatively influenced tourists' Intention to adopt digital technologies.

The construct of Perceived Risk has shown a negative influence. The present study needs to include more in examining the expected behaviour of individuals in tourism and focuses on banking as the sector mainly focuses on financial elements as internal part of travel and tourism involving online booking and making financial transactions. The Internet banking system's primary concern is customers' perceived risk and trust. The broader concept of TAM (Barkhordari M et al., 2017) emphasized Internet technology's influence on enhancing the operational performance of Banking Sector capabilities.

However, the studies (Bailey et al., 2020) delve into factors that influence the Use of tap-and-go payment technology by U.S. millennial consumers and found that the Use of mobile phones has increased tremendously and that perceived risk, socio-cultural influence and System risk may be affecting mobile payment adoptions among U.S. millennial customers. Recently, when examining exogenous and endogenous variables of TAM (Johnpaul.M & Ravi, 2022) in FinTech services in India, a negative influence on behavioural Intention was found.

The initial studies on TAM (Davis et al., 1989) predicted user acceptance of information and communication Technology with the help of Perceived Usefulness and Perceived Ease of Use as a core construct. The Perceived Usefulness (P.U.) helps to understand the

customer's belief that the usage of technology benefits the progress of his/her job performance. The perceived ease of Use is the belief that a particular technology is free of effort to utilize and how other external factors influence P.U. and PEU, leading to the actual usage of Technologies.

Further reviewing TAM in the tourism sector, many studies were theoretical and measured (Li & Chen, 2019) the tourists' Motivation or perception. The findings reveal Acceptance or rejection of using Technologies. The focus of a mere rejection or acceptance experiment led to additional research (Malecki et al., 2003) across domains connected to digital development in rural areas, which discovered that improving communication technologies in most rural communities is not feasible.

Expanding on the views of various research on the TAM model, opinions (Shenglin. B. et al., 2017) deliberated on a study to evaluate the digital divide in China and the European Union in order to address the problems in supporting Digital Infrastructure. The study mainly considered two aspects of the Digital Divide. The first is the supply side's access to ICT for delivering digital infrastructure and services, while the second is concerned with the use of the Internet, as well as customers' motivations and capacities to use digital or ICT-related internet services.

Digital literacy (Sheokand et al., 2017) is also an important component influencing digitalisation in the Indian economy through the Digital India Programme. According to the survey, people who are digitally literate and empowered can help improve the economy. According to Thomson (1967), organizational context pertains to internal and external technologies, as well as their usefulness and availability. The emphasis is on the skills and knowledge needed to implement social media marketing.

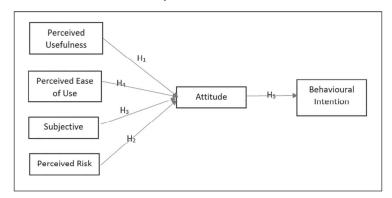
This evidence from the literature showcases the varied dimensions of the concerned study to investigate and focus on critical areas. The central part of the literature focuses on establishing evidence from the point of financial, infrastructural and individual personal perspectives as digital technologies in Tourism majorly focus on ticketing, lodging and booking various tourist products through

digital apps and portals. This intern will help better address and concentrate the gap areas to find the optimum solutions in achieving the goals and purpose of the study concern.

## 4. Development of Conceptual Framework of the Study

Davis developed the first model of Technological Acceptance in 1989 (Davis, 1989). This model is developed from the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and explains how external factors or variables influence the behavioural Intention and Attitude of the Individual in adopting the Technologies. TAM reflects the User's Attitude towards the new technologies based on the perceived Usefulness and perceived ease of Use of the technology initially. Later, the model also examines the external variables and their influence on Attitude (Wu et al., 2011). The Individual's behavioural Intention towards the technology is predicted and based on which actual system usage is reflected in the acceptance model. Over time, the TAM model across the sectors disposed that when individuals perceive that using new technologies improves their performance or brings a benefit, they exhibit a positive attitude towards the technology. Based on the Davis Model, the following conceptual model is developed to Study Technology Acceptance and the factors influencing the adoption of digital technologies or digital apps in Tourism-related services in India.

Figure 1
Proposed Conceptual framework based on Davis TAM 1989 and hypothesis formulation



## 4.1. Hypothesis Formulation Statements

The following are the hypotheses statements framed based on the objectives and conceptual framework developed under the study.

- **H<sub>1</sub>:** The perceived Usefulness of technologies in tourism positively affects customers' attitudes toward adopting the Technologies.
- **H<sub>2</sub>:** Perceived Risks of technologies in tourism have a positive effect on the Attitude of the customers to adopt the Technologies.
- H<sub>3</sub>: Perceived Ease of Use technologies in tourism positively affect customers' attitudes to adopt the Technologies.
- **H**<sub>4</sub>: Social Norms positively influence the Attitude of the customers to adopt the Technologies.
- **H**<sub>5</sub>: Customers' Attitudes towards Technology usage positively influence Behavioural Intention to use digital platforms and apps in tourism services operations.

# 4.2. Reliability Test

The internal consistency test for the individual constructs and the total items of the questionnaire under the study are tested by measuring Cronbach's alpha test using SPSS analysis. The table shows that individual construct-wise and total items are tested.

 Table 1

 The internal consistency reliability test for constructs under the study.

Variable	Number of Indicators	Cronbach's alpha
Perceived Usefulness	5	0.938
Perceived Ease of Use	5	0.929
Perceived Risk	3	0.821
Subjective Norms	3	0.872
Behavioural Intention	3	0.891
Attitude	3	0.928
Total Items	22	0.956

From Table 1 above, the reliability statistics of the data and the standard threshold, the acceptable value of Cronbach's Alpha is more significant when the value is 0.9 and above, is excellent; between 0.8

to 0.9, 0.7 to 0.8 is considered good and Acceptable. In this case, a value less than 0.7 is questionable for the scale, indicating the internal consistency of the questionnaire. The study shows that the value of Cronbach's Alpha is 0.956 for 22 items studied in the questionnaire, which is excellent. When testing individual constructs, the values are above 0.8 and 0.9. Hence, the consistency of the questionnaire is good for the study.

# 5. Research Methodology

The study mainly focused on testing Tourists' behavioural Intentions and Attitudes towards the Technology and Usage of online platforms and digital apps while travelling to Tourist Destinations. The respondents are regular travellers to tourist destinations. Among these, 202 responses were collected using the snowball sampling method. The questionnaire is served through Google Forms to obtain the responses from the respondents. The Likert five-point rating scale is used to obtain the responses, varying from Strongly Agree to Disagree Strongly. It has two parts: the first part of the questionnaire focuses on the demographic factors, and the second part is designed to obtain perceptions and opinions of the respondents towards technology usage in the Tourism Sector. The data is filtered using SPSS software, and missing value analysis is done by replacing the median near-by value method to correct missing data. The study engages multiple regression models to test the hypothesis significance, finding R Square/coefficient value to measure the influence of the independent variable on the dependent variable based on the TAM construct, which widely focuses on testing behavioural intentions and their impact on individual attitudes towards technologies.

# 6. Data Analysis and Discussion:

**Table 2** *Profile of the Respondents Under the Study* 

		Frequency	Per cent	Cumulative Percent
Gender	Male	134	66.3	66.3
	Female	68	33.7	100.0

	SSC	7	3.5	3.5
	Intermediate	16	7.9	11.4
Education	Degree	77	38.1	49.5
	Post-Graduation	77	38.1	87.6
	PhD.	25	12.4	100.0
	Under 20 Years	42	20.8	20.8
	21 to 30	121	59.9	80.7
1 4 5 6	31 to 40	21	10.4	91.1
Age	41 to 50	11	5.4	96.5
	51 to 60	7	3.5	100.0
	61+	42	20.8	20.8
	Agriculture	9	4.5	4.5
	Private Employee	18	8.9	13.4
Employment	Govt.Employee	46	22.8	36.1
Status	Self Employed	19	9.4	45.5
	Unemployed	110	54.5	100.0
	Retired	9	4.5	4.5

Table 2 comprises the complete demographic profile of the respondents under the study. The total number of respondents count for 202, from whom the primary data is collected by administering the questionnaire. Among the total respondents,134 are Male, and 68 respondents are Female, with 66.3% and 33.7%, respectively.

Educational qualification wise, seven respondents have studied SSC, 16 Intermediate, 77 with a degree, 77 with P.G. and 25 members have PhD as Qualifications with percentages of 3.5%,7.9%,38.1%,38.1% and 12.4%, respectively. Age-wise, the respondents are categorized as under 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years and above 61 years, with 12.4%,59.9%,10.4%,5.4%,3.5% and 20.8% respectively. The respondents were also categorized based on employment status, labelling different sectors. They are agriculture with 4.5%, 8.9%,22.8%, 9.4%,54.5% and 4.5%, respectively.

**Table 3** *The descriptive statistics of the constructs under the study.* 

Descriptive Statistics						
Mean Std. Deviation						
Perceived Risk	2.8746	.93970				
Subjective Norms	3.0941	1.06814				
Behavioural Intention	3.5479	.99427				
Attitude	3.6205	1.08615				
Perceived Usefulness	3.5861	1.07185				
Perceived Ease of Use	3.4089	.96306				
Valid N (listwise) 202						

The descriptive statistics above measure the Mean and Standard deviation for Constructs under the study. The table also shows the N, the valid count of the sample study, and the maximum and minimum values assigned for the scale used in the study. The mean value is the arithmetic mean calculated for each construct, symbolizing each construct's average score towards agreement and disagreement for the item under consideration. The standard deviation shows the deviation that exists among the responses given by the respondents. The table values the mean score of the constructs above three except for Perceived Risk. The standard deviation among the responses was also high, with values weighing 0.939, 1.06814, .99427, 1.08615, 1.07185 and .96306 for constructs P.R., S.N., ATT, PU and PEU constructs. There is a good spread of the observations from the respondents for the present study.

**Table 4**Analysis of Multiple Regression to measure each construct of TAM on the Attitude of the tourist customers towards usage

Coefficients						
		Unstandardized		Standardized		
		Coefficients		Coefficients		
	Model	В	Std. Error	Beta	t	Sig.
1	(Constant)	.548	.208		2.634	.009
	S.N.	.242	.056	.238	4.345	.000
	P.U.	.433	.068	.427	6.368	.000
	PEU	.362	.088	.321	4.097	.000
	P.R.	161	.069	139	-2.341	.020
	·	a. Deper	ndent Variab	le: ATT	·	_

The table above specifies the slope of the line and how a predictor variable influences the dependent variable based on the linear regression analysis. In the table, the predictive variables are the social norms, perceived usefulness, perceived ease of Use, and perceived risk. The Attitude of the Individuals is measured as Dependent Variables to test the predictor's influence on the Attitude of the customers towards technology acceptance by using the Devis original Technology Acceptance Model (Davis, 1989). From the table, unstandardized  $\beta$  indicates the slope of the line. Every change in independent variables like Social Norm (S.N.) leads to a 0.242 change in the dependent variable Attitude (ATT) of the customers towards technology adoption in tourism-related productions. Similarly, other variables, Perceived Usefulness (P.U.), Perceived ease of Use (PEU) and perceived Risk (P.R.), are 0.433, 0.362 and -0.161, respectively. In the case of Perceived Risk, the slope indicates a negative influence from the study. Similarly, the table also presents standard error for Unstandardized  $\beta$ . It indicates that the larger the value, the greater the spread from the regression line. It is a sign of the lesser significance of the value if it is greater and similar to the mean value of standard deviation.

It is also evident that standardized beta ( $\beta$ ) measures the relationsh similarly to the correlation coefficient varying from 1 to 1. The direction towards value measures a stronger relationship between the Predictor and Dependent variables. The standardized beta ( $\beta$ ) values from the table show a weaker relationship among the variables. The p-value indicates the significance of the study where all the values are  $\leq 0.05$ , which means that all independent variables are predictors of the study.

**Table 5**Simple Regression Analysis to measure the effect of P.R., PU, S.N. and PEU towards Attitude in technology usage

	Model Summary					
Model	Model R R Square Adjusted R Std. Error of the Square Estimate Sig.					
1	.761ª	.579	.570	.71191	.000	
	a. Predictors: (Constant), PR, PU, S.N., PEU					

The Model summary data gives R and R square values. The measure indicates that predictor variables P.R., PU, S.N., and PEU have a 57.9% influence customers' attitudes towards using technologies or digital apps while utilizing tourism-related products during their tours.

**Table 6**Analysis of Multiple Regression to measure the Attitude of TAM on Behavioural Intention of the tourist customers towards usage.

	Coefficients						
	Unstandardized Standardized						
	Model	(	Coefficients	Coefficients			
		В	Std. Error	Beta	t	Sig.	
	(Constant)	.839	.141		5.952	.000	
2	ATT	.748	.037	.817	20.072	.000	
	a. Dependent Variable: BI						

The table above demonstrates that the second level of the prediction was measured using Davis' Technology Acceptance Model, 1989. In the table, the Attitude of the customers is the Predictor variable. The customers' Behavioural Intention is measured as dependent Variables to test the predictor's influence on the customers' Attitude towards technology acceptance (Davis, 1989). From the table, unstandardized  $\beta$  indicates the slope of the line 0.748 on the dependent variable. Every change in independent variable attitude influences behavioural Intention. Similarly, the table also presents the Standard error for Unstandardized  $\beta$ . It indicates that the larger the value, the greater the spread from the regression line. It is a sign of the lesser significance of the value if it is more significant and similar to the mean value of standard deviation. The construct Attitude of the customers has a lesser value of 0.037, indicating a low spread of the responses from the regression line.

From the table, it is also evident that the standardized coefficient beta ( $\beta$ ) measures 0.817. The direction towards value measures a stronger relationship between the Predictor and Dependent variables. The standardized beta ( $\beta$ ) values from the table show a stronger positive relationship among the variables. The p-value indicates the significance of the study where all the values are  $\leq$  0.05, which means that all independent variables are predictors of the study.

**Table 7**Simple Regression Analysis to Measure the Effect of P.R., PU, S.N. and PEU towards Behavioural Intention in technology usage.

	Model Summary					
Model	ModelRR SquareAdjusted R SquareStd. Error of the EstimateSig. F Change					
2	.817ª	.668	.667	.62714	.000	
a. Predictors: (Constant), BI						

The Model summary data above gives R and R square values. The measure indicates that the predictor variable Attitude has a 66.8% influence on individual customers' behavioural Intention towards using technologies or digital apps while utilizing tourism-related products during their tour operating services.

 Table 8

 Present Usage of Online Traveller Tourism Websites/Apps.

		Frequency	Per cent
Usage of Technology	Yes	125	61.9
	No	77	38.1
	Total	202	100.0

When tested, the overall opinion of respondents posing the master question, are they using online technologies? The majority, 61.9%, have expressed that they are utilizing online platforms to avail themselves of the digital technologies/ apps related to Travel and tourism services. However, 38.1% have said they do not use any online digital platform as of date.

## 3. Discussion

It investigates different factors, systematically reviews the literature on people's behaviours and attitudes using TAM across the sectors, and applies the same to understand individuals' attitudes towards adopting technology in the tourism sector. Testing the TAM constructs, Perceived Usefulness, and exploring the customers' perception based on the construct's convenience, effectiveness, and availability of technologies in the tourism sector has shown its influence of 0.43 on people's attitudes towards adopting Technologies. Similarly, the tests on Perceived Ease of Use in which the flexibility, ease of Use, and

understanding of new technologies are estimated. It has a positive significance on the Attitude, but its influence is minimal, with a 0.36 value.

When analyzed, Subjective Norms, in which individuals tested the influence of their peer groups, relations and other dear and near ones in the society and their role in using and assisting in adopting the technologies, have 0.23 value on the Attitude of the respondents in adopting the technologies. However, it is significant but has less impact on individuals adopting new technologies in Travel and Tourism Related services. The construct of Perceived Risk is tested using separate areas like fraud in using digital technologies and Risk factors; the study resulted in a significant but negative influence on Attitude with a value of – 0.139 impacts on Individual Attitude. However, the R-square has shown a significant change, with a 57.9% change in the Attitude based on the four constructs used in the TAM analysis at the first level of study.

The second level of TAM analysis attempts to understand Attitude's impact on behavioural Intention. It is evident from the analysis where the regression value is 0.817, and the R-square value shows a 66.8% influence on the behavioural intentions of the individuals in adopting the technologies in travel- and tourism-related services in India. Hence, from the study, we can conclude that hypothesis statements  $H_{1,}$   $H_{2,}$   $H_{3,}$   $H_{4}$  and  $H_{5}$  are significant and are accepted as having the p-values  $\leq$  0.05. However, Perceived Risk has shown a negative impact with minus value.

### 4. Conclusion

The main personification is to test the customers' Attitudes and behavioural intentions towards Digital Technologies and Apps in utilizing Tourism and travel-related services in India. As literature reveals the digital divide in any other sector, the tourism sector also has no exception and witnesses the breach in acquiring the latest technologies. One can witness a visible fissure in the sector. However, the present study reveals a flattering trend in the tourism sector and cannot deny the initiatives and infrastructural developments that substantially strengthen the tourism sector. At the same time, the study also emphasizes that though tourism and travel potentiality

in India is paramount and full of explorations encompassing a vast diversity of tourism products, the tourism sector as a structured industry is at a nascent stage. From the study, It is evident that though the vast majority have shown their ability and Motivation to adopt Digital Technologies, there exists a lacuna in the sector. To further substantiate the arguments, the study applies the technique of inductive reasoning.

To elaborate logically, the sample data was collected using the snowball sampling technique and Google Forms, where most respondents are assumed to have some technical knowledge of digital technologies in the travel and tourism sector. Though the R square coefficient has shown positive indications and the hypothesis tested significant, the level of influence from the study is insignificant. Based on the present results, the study suggests that there is a lot more to bring about the availability of digital technologies, encouraging innovations to ease the processes in the tourism sector. To reap the fruits of digital technologies, the tourism ministry and private players in the industry should focus on awareness campaigns, the establishment of Technologies, building Networks and conducting training sessions towards adopting Digital technologies. The focus should be on various levels of customer touchpoints to yield optimum reach. The aversion towards technologies can be reduced by focusing on riskand fraud-related issues, delivering prompt services, and promptly addressing queries to build individuals' confidence to adopt new digital technologies. Due to its diversity, a country like India certainly requires guerrilla campaigns to sensitize the customers at the grassroots level to implement effective utilization and Acceptance of new technologies in the contemporary state of advancements like metaverse, Chat GPT, etc., are impending embodiments of Technologies.

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