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Behavior Intention to Adopt IRCTC Application for Railway Ticket Reservation Service: A Case study of Goan Consumers

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ABSTRACT

Last decade witnessed an increase in usage of internet which led to increase in smartphone usage with various applications developed for making the life of people easy, resulting in dynamic change in the lifestyle of people. One such dynamic change taken place in India is in the area of transport, especially rail travel application started by Indian Railways, namely, Indian Railway Catering and Tourism Corporation (IRCTC) portal. Present paper tries to identify the reason why people consider the IRCTC application as the most reliable application. Model was proposed by adopting the factors from Unified Theory of Acceptance and Use of Technology (UTAUT2) along with an addition of perceived trust as an influencing factor. Data from 193 usable questionnaires was collected from Goa and were tested against the research model. Result indicated that habit, hedonic motivation, performance expectancy, and perceived trust were the main predictors of behavior intention to adopt and use IRCTC application. The proposed model was able to explain 65% variance on behavior intention. The study also provides valuable insight for the management to improve the IRCTC application in order to motivate customers to adopt and continuously use the services of this application.

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1. Introduction

There has been increase in smartphone usage in our day to day life, where variety of applications are available for all purposes, making it an indispensable accessary as it helps in making calculated decisions with minimum time. India is currently the world's second largest telecommunication market with subscriber's base of 1.20 billion (IBEF, 2020). Usage of mobile internet is also growing rapidly, it reached to 687 million (IBEF, 2020). Advancement in Information and Communication Technology (ICT) has led to development of many mobile applications which in turn affected the management of many enterprise, as management has not only develop new applications but also keep on improving the functionality from time to time to retain the user and ensuring that continuous usage is happening. In India, 4.8 billion download of mobile applications were registered which comes to 165 percent growth in app download over the last two years (IBEF, 2020). Present study focused on identifying the determinants of mobile apps adoption of IRCTC for booking railway tickets and to avail the other services offered by Indian railways.

Indian railways have been popular and is a preferred mean of transports from its inception (Patel and Grover, 2010), mainly because there are no competitors, in a way complete monopoly is enjoyed by Indian railways. Due to technological advancements, from 2002 onwards Indian railways started online e-ticketing system through IRCTC portal, which helped in reducing the waiting time of people while booking railway tickets. Still the issue of network connectivity was faced by people who use internet from home and also the people waiting at the reservation counter. By 2014, development in technology as well as availability of high-speed network connectivity, IRCTC launched mobile ticket booking application, IRCTC Rail Connect, which was found to be more convenient, comfortable and also much easier while booking. The user base of IRCTC has increased manifold over the years, still there were no major problems

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or issues with respect to technical difficulties faced by users. This application not only helps customers to book the train tickets but also facilitates users to check train status, PNR enquiry, timing of trains, meal booking, etc. IRCTC claims that payment system is totally secured along with privacy protection of stored data, of course minor issues were identified and rectified on time (Business Line, 2016; Mithun, 2018; Live Mint, 2020; The Hindu, 2020). IRCTC also promotes tourism by offering attractive promotional schemes, tour packages, special-trains, coaches to domestic and foreign tourists.

The goal of this research is to identify the factors influencing the usage and adoption of IRCTC application using UTAUT2 model with an aim of providing valuable inputs to the management for improving the services offered. As far as the authors' knowledge, very few studies are carried out so far, which makes this paper different as it throws some light on an otherwise unexplored area which needs to be studied in detail and how best the management can improve the service quality offered to have complete customer satisfaction and improved brand loyalty and, therefore, the study fills the gap by adding valuable knowledge, new perspectives, and presents possibilities for consideration. The paper offers valuable inputs for academicians and researchers, developers of IRCTC applications, business entities using similar ICT applications, the governments, and other stakeholder groups.

2. Literature Review

In the field of Information System (IS) research, over the years, many theories and models have been developed to examine the customer's behavior intention to adopt and to use the technology. Researches in this field is being dominated by Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Williams et al., 2015), along with the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) (Castanha et al., 2021). The UTAUT2 has seven constructs as proposed by Venkatesh et al., 2012, namely, Performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value and habit, which influence the behaviour intention of customers to adopt and use particular technology. Studies shown that UTAUT2 has more predictive capacity in the consumer context over other technology adoption models (Venkatesh et al., 2012; Castanha et al., 2021). Hence it was decided to use UTAUT2 model for the study to predict behavior intention of customers towards adoption of IRCTC application.

From existing literature, it was identified that authors tried to study the consumer behaviour intention to purchase airline tickets from the website (Escobar-Rodríguez and Carvajal-Trujillo, 2013 and 2014). Similarly, factors leading to adoption of online railway ticket reservation services was studied in Indonesia by using UTAUT2 model (Indrawati and Yusliansyah, 2017). With the introduction of mobile application, there arises need to study behavior intention of customers towards the adoption of mobile application (Gupta et al., 2018; Alalwan et al., 2017; Baabdullah et al., 2019), due to which researcher started to explore the factors which influence the behaviour intention to adopt the technology in various fields such as Mobile usage (Trojanowski and Kulak, 2017); mobile wallets (Madan and Yadav, 2016); mobile banking (Alalwan et al, 2017; Baabdullah et al., 2019); mobile application (Gupta et al., 2018), using different technology adoption theories and models.

In Indian context, few studies are done with respect to railway ticket reservation service. Sahney et al., (2013) tried to explore the determinants of trust in online buying of railway tickets using IRCTC website, wherein transaction security, consumer data safety, guaranteed return policies and perceived image of website were used as determinants of online trust creation. Similarly, Kapoor et al., (2013) examined the adoption factors of IRCTC by using innovation of diffusion theory as a theoretical base. Sahney et al., (2014) also tried to study the motivational factors that influence the online buying decision of people in online reservation of railway tickets. The identified motivational factors were convenience, time and effort, information search, attributes if online ticket booking, economic motivational factors, service excellence, situational factors and social motivational factors.

Since the introduction of IRCTC rail connect application few studies were reported to examine the customer intention to adopt the same. Kapoor et al., (2013, 2015) tried to explore the behavior intention for adopting IRCTC mobile ticketing service by using three innovation attributes, namely, attribute set one (relative advantage, compatibility, complexity, trial ability, and observability); attribute set two (cost, communicability, riskiness, social approval); and attribute set three (Voluntariness, image, result

demonstrability, visibility, behavioral intention). Ghosh et al., (2017) tried to measure the satisfaction of passengers traveling by railways. Sahu and Singh (2017) tried to study the factors influencing consumer behaviour intention to adopt IRCTC connect mobile application using UTAUT2 model in Allahabad city, India. Even Ahmed and Kranthi, (2019) studied various mobile ticketing application adoption using smartphone in Bengaluru, India.

This being the present scenario of literature, arises a need to investigate the factors influencing behavioral intention to adopt and use IRCTC application services. This study adds to the existing literature, as per authors knowledge no study has been done in state of Goa to understand the consumer behaviour intention to adopt and use IRCTC application. Secondly, studies are done to understand the purchasing of railway tickets using website and using UTAUT2 model only one study was done on IRCTC mobile application. Although it studies adoption of IRCTC mobile application but trust factor has been added as it plays a very important role in online transaction. Hence the present study fills the gap providing valuable insight to stakeholders, academicians, researchers, government and to general public at large.

3. Proposed Research Model

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al., (2003) by combining eight theories and models of technology adoption which includes Diffusion of Innovation Theory (IDT) by Roger in 1960, Theory of Reasoned Action (TRA) by Martin Fishbein and Ajzen in 1975, Social Cognitive Theory (SCT) by Bandurra in 1986, Technology Adoption Model (TAM) by Davis in 1989, Theory of Planned Behaviour (TPB) by Ajzen in 1991, Model of Personal Computer Utilization (MPCU) by Thompson and Higgins in 1991, Motivation Model (MM) by Davis, Bagozzi and Waeshaw in 1992, Extended Technology Adoption Model (TAM2) by Venkatesh and Davis in the year 2000 (Sharma and Mishra, 2014; Castanha et al., 2021). Thus, UTAUT consists of four major constructs, namely; (1) performance expectancy, (2) effort expectancy, (3) social influence and (4) facilitating condition which influence the behavior intention and use of technology. Latter, in 2012, UTAUT model was extended with the inclusion of three more construct, namely: (5) hedonic motivation, (6) price value and (7) habit (Venkatesh et al., 2012) which are the determinants of behaviour intention and this model being commonly known as UTAUT2.

In this study the seven constructs of UTAUT2 model were adopted along with the addition of one more construct: (8) perceived trust. These constructs were performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), hedonic motivation (HM), price value (PV), habits (HB), and perceived trust (PT), which influence the consumer behaviour intention (BI) to adopt and use IRCTC application. The study proposed the research model as shown in Figure 1 which was empirically tested in the result section.

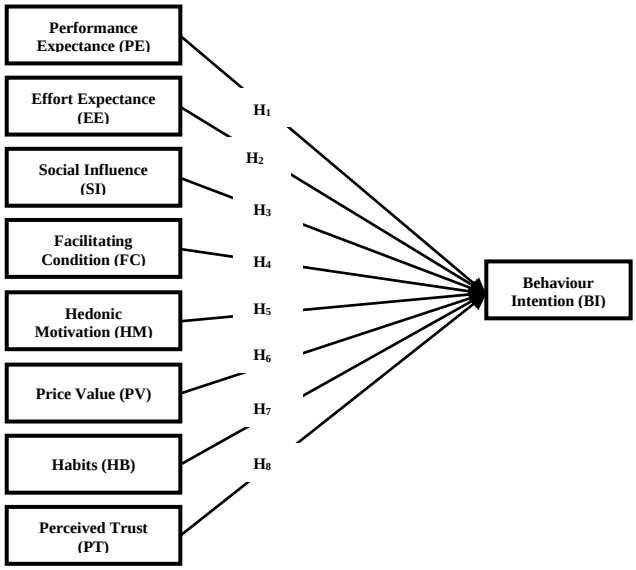

Figure 1: Research Model and its hypothesis
***Source**: Authors own compilation*

4. Research Hypothesis

- *Performance Expectancy (PE)*

PE can be conceptualized as the benefits that users could attain by using IRCTC application that is expected by them (Compeaub and Higgins, 1995; Venkatesh et al., 2003). It was developed using five constructs from earlier models which includes perceived usefulness (TAM/TAM2), extrinsic motivation (MM), job fit (MPCU), relative advantage (IDT) and outcome expectation (SCT) (Venkatesh et al., 2003). Existing research proved that PE has significant and positive relationship with BI in several context, especially in ticket booking (Indrawati and Yusliansyah, 2017; Ahmed and Kranthi, 2019; Escobar-Rodríguez and Carvajal-Trujillo (2013; 2014); Mobile usage (Trojanowski and Kulak, 2017); mobile wallets (Madan and Yadav, 2016); mobile banking (Alalwan et al, 2017; Baabdullah et al., 2019); mobile application (Gupta et al., 2018). Thus, this study assumes following hypothesis:

H1: PE will positively influence customers BI to adopt IRCTC application.

- *Effort Expectancy (EE)*

EE is defined as the extent to which technology is easy to use (Venkatesh et al., 2003). The concept of EE has been captured from three construct of the previous models perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT) (Venkatesh et al., 2003). EE has proved to be significant predictor of BI in many contexts; online ticket booking Escobar-Rodríguez and Carvajal-Trujillo (2014), mobile banking (Alalwan et al, 2017; Tan and Lau, 2016; Martins et al., 2014); mobile application (Hew et al., 2015). Hence, following hypothesis was formulated:

H2: EE will positively influence customer BI to adopt IRCTC application

- *Social Influence (SI)*

In accordance with Venkatesh et al., 2003, SI is the degree to which an individual perceives that important others believe he or she should use the new system". Such people include family, friends, relatives, co-workers, media and social media (Cudjoe et al., 2015; Merhi et al., 2019). SI is represented as subjective norm in TRA, TAM2, TPB, social factors in MPCU and image in IDT (Venkatesh et al., 2003) which act as direct determinant of behaviour intention proved in various studies, namely, ticket booking applications (Escobar-Rodríguez and Carvajal-Trujillo 2014; Indrawati and Yusliansyah, 2017; Sahu and Singh, 2017); Mobile Banking (Baabdullah et al., 2019), Mobile application (Hew et al., 2015; Gupta et al., 2018). Thus, we hypothesize:

H3: SI will positively influence customer BI to adopt IRCTC application

- *Facilitating Condition (FC)*

FC is characterized as the degree to which an individual believes that organization and technical infrastructure exits to support the use of the system (Venkatesh et al., 2003). FC was theoretical conceptualized from three different construct namely, perceived behavioral control (TPB), facilitating condition (MPCU) and compatibility (IDT) (Venkatesh et al, 2003). It was found from the studies that FC positively influence BI in many context; ticket booking (Escobar-Rodríguez and Carvajal-Trujillo, 2013; 2014; Indrawati and Yusliansyah, 2017); Mobile usage (Trojanowski and Kulak, 2017); mobile banking (Baabdullah et al., 2019); mobile wallets (Madan and Yadav, 2016). Thus, we hypothesize:

H4: FC will positively influence customer BI to adopt IRCTC application

- *Hedonic Motivation (HM)*

HM is conceptualized as the feeling of joy, cheerfulness, pleasure and enjoyment derived from using the technology (Venkatesh et al., 2012). It was conceptualized as perceived enjoyment (Venkatesh et al., 2012) having significant relationship on BI across various contexts, including ticket booking application (Escobar-Rodríguez and Carvajal-Trujillo 2014; Indrawati and Yusliansyah, 2017); Mobile usage (Trojanowski and Kulak, 2017); mobile banking (Alalwan et al, 2017; Baabdullah et al., 2019); Mobile application (Hew et al., 2015); mobile commerce (Shaw and Sergueeva, 2019). Thus, we hypothesize:

H5: HM will positively influence customer BI to adopt IRCTC application

- *Price Value (PV)*

PV represent "consumer cognitive trade-off between the perceived benefits of the application and monetary cost involved for using it" (Venkatesh et al., 2012). Customers always look for cost saving (Jensen, 2012), hence it is considered to be a significant predictor of BI, especially in context of ticket booking applications (Escobar-Rodríguez and Carvajal-Trujillo 2013; 2014; Sahu and Singh, 2017; Ahmed and Kranthi, 2019); mobile banking (Alalwan et al, 2017; Baabdullah et al., 2019); mobile application (Gupta et al., 2018). Thus, we hypothesize:

H6: PV will positively influence customer BI to adopt IRCTC application

- *Habit (HB)*

HB is conceptualized as the extent to which customers automatically perform a behavior because of learning (Venkatesh et al., 2012). Existing research have highlighted the significant effect of HB on BI in context of ticket booking applications (Escobar-Rodríguez and Carvajal-Trujillo, 2013: 2014; Sahu and Singh, 2017; Ahmed and Kranthi, 2019), Mobile usage (Trojanowski and Kulak, 2017), mobile banking (Baabdullah et al., 2019), mobile application (Gupta et al., 2018). Thus, we hypothesize:

H7: HB will positively influence customer BI to adopt IRCTC application

- *Perceived Trust (PT)*

PT can be defined as set of specific beliefs dealing directly with the integrity, benevolence and ability of another party (Gefen et al., 2003). It is consumer beliefs on the service provider and feeling secure while making any transaction (Komiak and

Benbasat, 2004). Trust was found to be a crucial predictor of BI to adopt technology which has been proved in many context; mobile application (Gupta et al., 2018); ticket booking (Escobar-Rodríguez and Carvajal-Trujillo, 2014; Ahmed and Kranthi, 2019); mobile banking (Alalwan et al., 2017; Merhi et al., 2019); Mobile social network games (Baabdullah, 2018). Thus, we hypothesize:

H8: PT will positively influence customer BI to adopt IRCTC application

5. Methodology

In order to validate the proposed model and to examine the research hypothesis, 200 structured questionnaires were distributed using convenience sampling method to the respondents through Google forms to understand the behavior intention and adoption of IRCTC web/mobile applications. The study was conducted in the state of Goa during the period from January 2020 to March 2020. After screening for missing data, 193 valid responses were considered for data analysis with the response rate of 96.5 percent, during the period from January to March 2020. The structured questionnaire was divided into two parts, first deals with the demographic characteristics of the respondents: Gender, age, education, income, occupation, location, and experience; and second part deals with the 45 scale items to measure the fundamental construct mentioned in proposed model. As it can be seen from Figure 1, the proposed model having 9 constructs and to measure each construct 5 statements were used. The main construct of the UTAUT2 (PE, EE, SI, FC, HM, PV, HB, and BI) were measured by items used by Venkatesh et al., 2012; Alalwan et al. (2017), (Indrawati et al, 2020a; 2020b). Perceived Trust (PT) was also measured using 5 items which were adopted from Alalwan et al. (2017), (Indrawati et al, 2020a; 2020b). Trust was incorporated in the study as it is very important when it comes to online transaction (Sahney et al., 2014; Alalwan et al., 2017). The 45 scale items were modified to cater the need of the current study. A 5-point Likert's scale, ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the items used in the questionnaire.

The statistical software package used for data analysis was Smart PLS. The data was analyzed in four stages. In first stage, demographic characteristics were analysed using descriptive statistics. In the second stage, measurement model was estimated as suggested by Hair et al., (1998), to check the reliability and validity of the model, which is done by using cronbach alpha, composite reliability, average variance extracted and discriminant validity. In the third stage, Path Coefficient and their significance were calculated using structural equation model (Gefen et al., 2000).

6. Results

Descriptive Statistics

One hundred and ninety-three valid questionnaires were received from the respondents. It can be seen from Table. 1, 57.5% of the respondents were male whereas 42.5% were female of the total respondents. With respect to age, largest part of the sample was in age group of Up to 29 years (83.4%). It was noted that most of the respondents were having Bachelor degree (62.2%). With reference to income level, majority of the respondents was less than 1 Lakh (50.8%). About 58% of the respondents belongs to non-working class whereas 42% of the respondents were employed. Around 66.3 % respondents were from North Goa and others were from South Goa (33.7%). With respect to experience of using IRCTC application, it was found that majority of respondents (71%) were having experience of more than 6 months.

Table 1: Result of Descriptive Statistics

Demographic Characteristics		#	%
Gender	Male	111	57.5
	Female	82	42.5
Age	Up to 29 years	161	83.4
	Above 29 years	32	16.6
Education	Up to Graduation	120	62.2
	PG and Above	73	37.8
Income	Less than 1 Lakh	98	50.8
	More than 1 Lakh	95	49.2
Occupation	Working Class	81	42.0
	Non-Working Class	112	58.0
Location	North Goa	128	66.3
	South Goa	65	33.7
Experience	Less than 6 Months	56	29.0
	More than 6 Months	137	71.0

Source: *Authors own compilation*

The two stage Structural Equation Modeling (SEM) has been applied in the current study, where in first step is to assess measurement model validity and next step is to test the hypothesis. In the first stage, testing of the measurement model for reliability, convergence and discriminate validity is must as suggested by Hair et al., (2016) and Shaw and Sergueeva (2019) as shown in Table 2 and 3. Using PLS algorithm, outer loading for each of the items of the nine constructs were calculated and all loading were above 0.7, which is clear indication that items are strongly related to their associated construct and are one indication of construct validity (Hair et al, 2010; Henseler et al., 2009; Shaw and Sergueeva, 2019). As all items

Table 2: Loadings, Cronbach Alpha, Construct Reliability, and Average Variance Extracted

	Loading	CA	CR	AVE
Performance Expectancy (PE)		**0.930**	**0.947**	**0.781**
PE1: I find IRCTC useful for booking the tickets	0.883			
PE2: Using of IRCTC helps in getting faster services	0.880			
PE3: IRCTC increases chances of booking services	0.884			
PE4: IRCTC is useful when I want to book tickets/services	0.896			
PE5: IRCTC helps in getting services more effectively	0.873			
Effort Expectancy (EE)		**0.921**	**0.941**	**0.760**
EE1: IRCTC is easy to learn and operate	0.893			
EE2: Interaction with IRCTC is understandable	0.858			
EE3: Learning of IRCTC usage is less time consuming	0.881			
EE4: IRCTC is easy to use	0.877			
EE5: It is easy to become skillful in using IRCTC	0.849			
Social Influence (SI)		**0.912**	**0.934**	**0.740**
SI1: People who are important to me advised me to use IRCTC	0.873			
SI2: People who influences my behavior advised me to use IRCTC	0.857			
SI3: People who are close to me are using IRCTC	0.812			
SI4: People whose opinion I value prefer using IRCTC	0.891			
SI5: People who are close to me recommends using of this app	0.864			
Facilitating Condition (FC)		**0.868**	**0.903**	**0.651**
FC1: I have the resources necessary to use IRCTC	0.760			
FC2: I have necessary knowledge to use the IRCTC	0.840			
FC3: I get help when I am having difficulties while using IRCTC	0.755			
FC4: I have the required gadgets needed to use IRCTC	0.834			
FC5: It is very easy to get information needed to use this app	0.841			
Hedonic Motivation (HM)		**0.910**	**0.933**	**0.736**
HM1: It's fun to use the features of IRCTC app	0.856			
HM2: Using of IRCTC is enjoyable	0.888			
HM3: I feel excited using IRCTC	0.901			
HM4: I like to reserve hospitality services through IRCTC	0.792			
HM5: IRCTC travel packages features entertains me	0.849			
Price Value (PV)		**0.933**	**0.949**	**0.789**
PV1: Services offered by IRCTC are inexpensive	0.850			
PV2: IRCTC offers better value for money	0.887			
PV3: I like to search for cheap deals in IRCTC	0.887			
PV4: Money is saved with the usage of IRCTC for bookings	0.924			
PV5: IRCTC provides reasonable prices on ticket bookings	0.892			
Habit (HB)		**0.914**	**0.936**	**0.745**
HB1: It became a habit of using IRCTC for booking tickets	0.789			
HB2: IRCTC became habit when think about rail travel	0.874			
HB3: I must use IRCTC for all my tickets bookings	0.848			
HB4: I am addicted to use IRCTC for my bookings	0.879			
HB5: Use of IRCTC became routine to book my tickets	0.921			
Perceived Trust (PT)		**0.955**	**0.965**	**0.846**
PT1: IRCTC is trustworthy	0.923			
PT2: I believe transaction done through IRCTC is secured	0.919			
PT3: IRCTC assures your transactions	0.924			
PT4: IRCTC is reliable	0.909			
PT5: IRCTC can be completely trusted	0.924			
Behavior Intention (BI)		**0.901**	**0.926**	**0.716**
BI1: I intent to use IRCTC in future for my bookings	0.805			
BI2: I will keep using IRCTC regularly	0.873			
B13: My intention is to continue using IRCTC over other	0.856			
BI4: I would strongly recommend others to use this app	0.832			
BI5: I plan to use IRCTC frequently	0.863			

CA= Cronbach Alpha, CR= Construct Reliability, AVE= Average Variance Explained
Source: *Authors own compilation*

were above .7, no items were removed hence have good validity content. Cronbach Alpha (CA), Composite Reliability (CR) and Average Variance Extracted (AVE) were used to test the construct reliability and validity. It was found that for all nine construct Cronbach alpha was greater than 0.8 (Cronbach and Meehl, 1955; Shaw and Sergueeva, 2019), ranging from 0.955 (PT) to 0.868 (FC). Similarly, for all construct Composite Reliability values were above 0.9, ranging from 0.903 for FC construct to 0.965 for PT construct. Acceptable value of AVE must be higher than 0.50 (Fornell and Larcker, 1981; Henseler et al., 2009; Hair et al., 2010, Baabdullah et al., 2019). The AVE values of the study are within the acceptable limits.

Discriminant validity is the extent to which individual items represents one latent construct and each construct is distinct from other constructs

Table 3: Discriminant Validity

	PE	EE	SI	FC	HM	PV	HB	PT	BI
PE	0.884								
EE	0.709	0.872							
SI	0.534	0.538	0.860						
FC	0.588	0.574	0.471	0.807					
HM	0.512	0.533	0.678	0.521	0.858				
PV	0.551	0.528	0.336	0.515	0.500	0.888			
HB	0.528	0.522	0.650	0.496	0.684	0.495	0.863		
PT	0.599	0.581	0.297	0.535	0.502	0.776	0.561	0.920	
BI	0.608	0.482	0.559	0.489	0.681	0.468	0.720	0.575	0.846

Source: *Authors own compilation*

(Hair et al., 2010). In order to test discriminant validity, square root of AVE was done. Thumb rule applicable to Discriminant validity is values of each construct should be greater than any correlation between any other construct (Hair et al., 2014) as can be seen from Table 3.

The Structural Model

Having established adequate reliability and validity of the factors in the proposed model, the structural model was estimated using Structure Equation Modeling (SEM) by calculating path coefficient and variance explained in behaviour intention. The result obtained (Table 4) from the estimation of the structured model, the four construct namely, PE, HM, HB, PT were found to be having positive and significant relationship on BI, whereas other four construct namely, EE, SI, these results suggest that hypothesis, namely, H1, H5, H7 and H8 were supported, whereas H2, H3, H4 and H6 were not supported in this study. Moreover, Coefficient of determination (R2) was calculated which is the proportion of the dependent variables explained by the influencing variables. In the study R2 for Behavior Intention is 0.653.

Table 4: Results of Path Coefficient and Hypothesis Status

Relation	Path coefficient	t-statistics	p-values	Hypothesis status
PE → BI	0.293	2.978	0.003*	H_1 Supported
EE → BI	-0.151	1.78	0.076	H_2 Not Supported
SI → BI	0.019	0.244	0.807	H_3 Not Supported
FC → BI	0.003	0.041	0.967	H_4 Not Supported
HM → BI	0.300	3.911	0.000*	H_5 Supported
PV → BI	-0.122	1.597	0.111	H_6 Not Supported
HB → BI	0.361	4.248	0.000*	H_7 Supported
PT → BI	0.222	2.579	0.010*	H_8 Supported

**Significance at 0.05*
Source: *Authors own compilation*

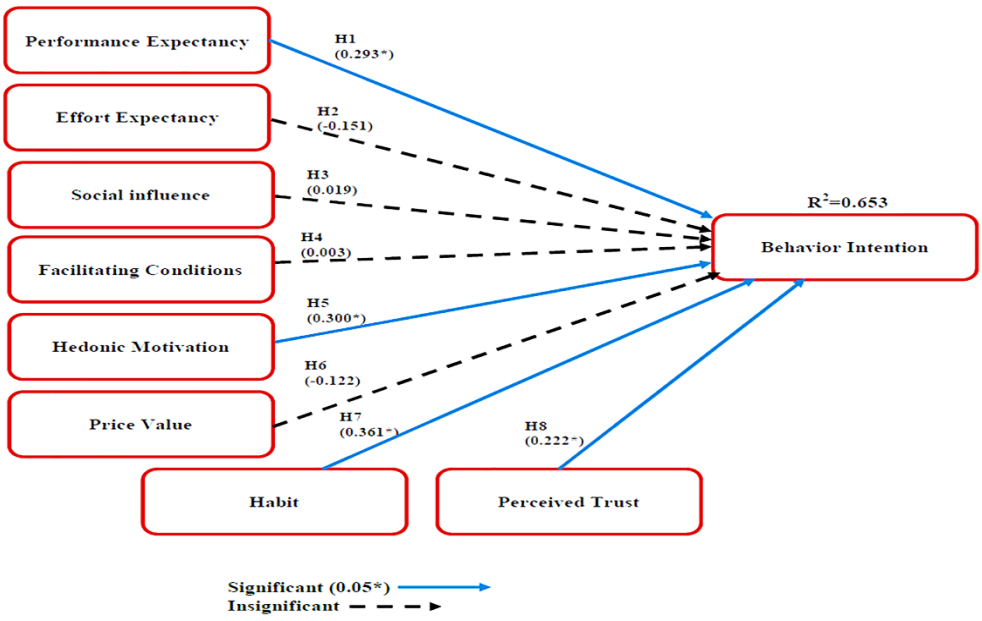

Figure 2: Result of testing the model

Source: *Authors own compilation*

7. Discussion

According to the statistical results presented above, proposed research model of modified UTAUT2 with inclusion of perceived trust is able to predict 65% of behavior intention of customer with respect to adoption of IRCTC web/mobile application service, which is in moderating range from 0.5 to 0.75 (Hair et al., 2011). About more than 50% of the studies formulating UTAUT2 accounted the variance in BI between 61% to 80% (Castanha et al., 2021). For instance, study on online-web railway ticket reservation service by Indrawati and Yusliansyah (2017) accounted 62% of the variance in BI.

According to path coefficient, four factors (PE, HM, HB, PT) were proved to have significant and positive relationship with the behaviour intention to adopt IRCTC application. Thus, adopting and using IRCTC application depends on consumer's habit of utilizing the application; the hedonic experience that customer enjoys when using the application; performance of the application; and consumer trust in online transaction. As presented in the results section, habit was observed to be among the strongest factor predicting the customer's behavior intention to adopt IRCTC applications with the coefficient value of 0.361. This could be due to fact that customers are more engaged in using their smartphones and accordingly they are more likely to form this kind of habit towards different kind of mobile application and IRCTC being one of them. Greater the habit of individual the more likely they are to have a greater intention to use the application. A study on UTAUT2 Literature review had found that highest number of studies reported a significant relationship between habit and behaviour intention (Castanha et al., 2021). These results are similar to prior literature on online ticket booking as reported by Escobar-Rodríguez and Carvajal-Trujillo (2013; 2014), Sahu and Singh (2017), Ahmed and Kranthi (2019).

Hedonic motivation also received particular attention from the customer using IRCTC application as it is second strongest predictor of behavior intention (0.300). The reason could be using this application will bring joy, enjoyment, entertainment in their life. Different studies have tested and proved the important role of hedonic motivation to influence consumer behavior intention such as Escobar-Rodríguez and Carvajal-Trujillo (2014); Hew et al., (2015); Indrawati and Yusliansyah, (2017); Alalwan et al., (2017); Baabdullah et al., (2019).

The third strongest predictor of behavior intention is performance expectancy having a coefficient value of 0.293. people prefer using IRCTC application as it is useful to them in their daily life and it increases their productivity. The functional utility of the application mainly attracts the customers to use this application. Theoretically, many studies tested performance expectancy and confirmed to be significant factor to influence behaviour intention, such as, Indrawati and Yusliansyah (2017); Ahmed and Kranthi (2019); Escobar-Rodríguez and Carvajal-Trujillo (2013; 2014); Alalwan et al., (2017); Gupta et al., (2018).

The last significant factor was perceived trust which is able to predict the behaviour intention to use IRCTC application having a weight of 0.222. This is consistent with the result of the previous studies Escobar-Rodríguez and Carvajal-Trujillo (2014); Ahmed and Kranthi (2019); Alalwan et al., (2017); Merhi et al., (2019). The greater the trust of individuals on IRCTC application, the more likely they are to have intention to purchase. Thus, the management must direct their marketing strategies towards creating and maintaining the customer trust towards online transaction, as customers are very sensitive when it comes to financial transaction using electronic platforms.

The result of effort expectancy has been noted in a different manner from what has been proposed in conceptual model of the current study. It can be seen that there exists no relationship between effort expectancy and behaviour intention to adopt and use IRCTC application service. This means that customers are little bit concern about the simplicity or difficulty in using IRCTC application service. A study on UTAUT2 Literature review had found that most studies reported an insignificant relationship between effort expectancy and behaviour intention (Castanha et al., 2021). The result of the study was in similar line with the works of Escobar-Rodríguez and Carvajal-Trujillo (2013); Indrawati and Yusliansyah (2017); Sahu and Singh (2017); Ahmed and Kranthi (2019).

In the study, social influence was conceptualized to have significant effect on behavior intention, but at the time of confirming the relationship, it was found to be statistically insignificant, which contradicts the results of earlier work done on online ticket booking (Escobar-Rodríguez and Carvajal-Trujillo, 2014; Indrawati and Yusliansyah, 2017; Sahu and Singh, 2017). It seems that customers are less interested to the recommendation given by friends, family and other references group to adopt and use IRCTC

application. The result of this study was in similar line with the previous work such as Escobar-Rodríguez and Carvajal-Trujillo (2013); Ahmed and Kranthi (2019); Trojanowski and Kulak (2017); Alalwan et al. (2017).

Facilitating condition was found to have no relationship between behaviour intention with respect to adoption and use of IRCTC application. This may be because of the application is not providing the particular resources and facilities which customers are expected. Venkatesh et al. (2003) stated that facilitating conditions could be confounded with the ease of use of application, this study also agree with the same. The result of the study is in line with Sahu and Singh (2017); Ahmed and Kranthi (2019); Gupta et al., (2018); Alalwan et al., (2017); Shaw and Sergueeva (2019).

The result of price value factor noted in a different manner from what has been proposed in conceptual model of the current study. It can be seen that there exists no relationship between price value and behaviour intention to adopt and use IRCTC application service. Most of the studies on UTAUT2 proved that there is relationship between price value and behaviour intention (Castanha et al., 2021) but the present study contradicts the same. This may be because of consumer access to the IRCTC application with limited cost or free use, hence no direct high cost to use. The result of this study is in similar line with the earlier works, Indrawati and Yusliansyah (2017); Trojanowski and Kulak (2017); Shaw and Sergueeva (2019); Merhi et al., (2019).

Theoretical Contribution

This study contributes to the existing knowledge in many ways. First, the study identified the most important factors influencing customers behavior intention to adopt and use IRCTC application in the state of Goa. Second, this study tested the UTAUT2 model by adding perceived trust factor. Trust is considered as very important factor when it comes to online transaction. Customers are always doubly careful while providing their sensitive financial information, hence contributing to the theoretical knowledge.

Practical Implication

In order to create the habit of using IRCTC application, the management must develop and implement marketing communication strategies. Once it reaches to wide range of customers, it will influence them to use the application to avail all the services provided by IRCTC. Also, the management can motivate customers to continuously use this application by providing offers and incentives along with discounts during different occasions such as vacations, summer holidays, weekend trips, etc.

It is also suggested that railway department must create and maintain the customer trust with respect to online transaction they do. As customers are very sensitive, they should be guaranteed that the transaction what they do are fully secured. Customers confidential personal information must be protected and should not be misused. Thus, the management need to ensure that the privacy policies are clearly explained to the customers. Once customers are satisfied about the same and have the trust, they will start using the application without any second thought.

The management must develop the application which is simple to use, convenient, enjoyable, quick and easy and which will provide accurate information about the services it offered. They should also see that the application gives the notification to the customers in case of delay of trains, weather report and other updates. This will improve the application utility among the customers and will ultimately increase the adoption of IRCTC application to avail all kinds of services as provided by them.

Limitation and Further Research Direction

Even though this study represents a productive attempt over the adoption and use of IRCTC application by the consumer, it is bound to have some limitations. First, sample size used in the study was limited to 193 respondents, hence large sample size would have been appropriate to generalized the results as suggested by Hair et al., (2019), the more, the merrier. Second, the data was obtained, for the study, by using convenience sampling. Using probability sampling would have provided better insight. Third limitation of the study was with respect to data distribution, the sample description showed that the largest sample of the respondents in the current study were youngsters, having graduation degree, belonging to non-working class residing mostly in North Goa. Hence having normal distribution of data over different characteristics would have generalized the results.

The proposed model predicts only 65% of behaviour intention. Thus, it is suggested that further research can focus on adding more variables such as self-efficiency, attitude, perceived risk in order to increase the prediction level. The proposed model could be further validated in different

cultural setting, in developed and developing country as it will provide better insight on how customers behave with respect to technology adoption. One may also conduct comparative study on customer adoption of technology towards different transportation application available within the country. Thus, further studies can explore the possible variation in consumer needs across different cultures.

8. Conclusion

The study tries to identify the factors influencing customers behaviour intention to adopt and use IRCTC application. For which conceptual model was proposed based on UTAUT2 (Venkatesh et al., 2012), which was extended by including perceived trust. This external factor has been considered to be very important and extensively used in many studies of UTAUT2 (Castanha et al., 2021). The statistical result supported the validity of the conceptual model as variance explained was about 65% of the behaviour intention to adopt and use the IRCTC application. Three factors of the UTAUT2 model namely, habit, hedonic motivation and performance expectancy along with the external added factor, namely, perceived trust were proved to be significant predictors of behaviour intention to adopt the application.

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Behavior intention to adopt IRCTC application for railway ticket reservation service: A case study of Goan consumers

Abstract

Last decade witnessed an increase in usage of internet which led to increase in smartphone usage with various applications developed for making the life of people easy, resulting in dynamic change in the lifestyle of people. One such dynamic change taken place in India is in the area of transport, especially rail travel application started by Indian Railways, namely, Indian Railway Catering and Tourism Corporation (IRCTC) portal. Present paper tries to identify the reason why people consider the IRCTC application as the most reliable application. Model was proposed by adopting the factors from Unified Theory of Acceptance and Use of Technology (UTAUT2) along with an addition of perceived trust as an influencing factor. Data from 193 usable questionnaires was collected from Goa and were tested against the research model. Result indicated that habit, hedonic motivation, performance expectancy, and perceived trust were the main predictors of behavior intention to adopt and use IRCTC application. The proposed model was able to explain 65% variance on behavior intention. The study also provides valuable insight for the management to improve the IRCTC application in order to motivate customers to adopt and continuously use the services of this application.

Keywords: *IRCTC application, UTAUT2, Behaviour intention, Technology adoption, Indian railways*

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Full Name	Author contribution roles	Contribution rate
Jick Castanha:	*Conceptualism, Methodology, Software, Validation, Resources, Writing - Original Draft, Writing - Review & Editing, Visualization*	*20%*
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Author statement: *Author(s) declare(s) that All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.* ***Declaration of Conflicting Interests:*** *The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article*

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