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Acceptance of Intelligent Ticketing Systems in Developing Countries

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Information communication technologies bring the revolution into all business sectors, and transportation sector is not an exception. Ticketing system has changed from traditional to intelligent, which provides information and service to the consumer. In developed countries such systems are implemented and operate successfully, while in the developing countries electronic ticketing and other similar innovative solutions face specific challenges. These challenges are related to information era and changes in consumer behaviour, caused by the development of information and communication technologies. In these new conditions the motives of consumers to choose electronic ticketing has become an extremely important factor of success. Lack of integrity of consumer behaviour and technology acceptance (electronic ticketing in particular) was identified in previous scientific research, especially taking into consideration recent conditions of developing countries. The aim of this article is to evaluate the consumers' behaviour and acceptance of intelligent systems, such as electronic ticketing, in order to identify factors, influencing and encouraging the customers to use electronic ticketing systems. In this study extended technology acceptance model with trust element was used to measure the consumer behaviour. The sample for this research has been taken from China and Pakistan populations and consists of 432 participants from both countries.

Keywords: *Intelligence Ticketing System; Electronic Ticketing; Technology Acceptance Model; Trust; Consumer Behaviour.*

Introduction

Information communication technologies (ICT) have a vital role for companies, because ICT enable organizations to enhance their efficiency at strategic and operational levels. The popularity of the internet and e-commerce makes the processes more comfortable and smoother (Davidaviciene *et al.,* 2017; Elkhani, Soltani, & Jamshidi, 2014; Raudeliuniene *et al.,* 2018). Nowadays, both organizations and customers can directly exchange information and knowledge with each other in real time to create uniqueness (Abdi *et al.,* 2018; Raudeliuniene & Davidavicius, 2017) and customer loyalty (Skackauskiene *et al.,* 2016; Bruneau *et al.,* 2018). ICT allow organizations to bypass intermediaries, which facilitate organizations to understand their customers' needs as well as create innovations and reduce operational costs (Ceicyte & Petraite, 2018; Davidaviciene *et al.,* 2017; Raudeliuniene *et al.,* 2018; Tsai, Huang, & Lin, 2005).

In transport and tourist industries ICT bring revolutionary changes. All processes changed from traditional to computerized systems, which is a more convenient and efficient method to save financial resources and time. This phenomenon is widely analysed by scientists (Disney *et al.,* 2018; Ghazizadeh *et al.,* 2012; Martens *et al.,* 2017; Roy *et al*., 2018; Skackauskiene *et al.,* 2016; Yang *et al.*, 2015), but attention to the developing countries and their acceptance of ICT innovation is missing, as well as a lack of integrity of aspects, such as consumer behaviour and technology acceptance (electronic ticketing in particular). Therefore, country and model level alternatives should be analysed.

International Air Transport Association (IATA) has adopted electronic ticketing (e-ticketing) in 2004, which was fully implemented in all air companies till 2008 (Payeras-Capella *et al.,* 2015). In Asia Pacific region, Air Asia company has introduced e-ticketing system to reduce the cost and give real-time information to their customers (Kiong *et al.,* 2014). In U.S. 55 % passengers directly purchase tickets from airline websites (Statista, 2018), because e-ticketing systems are more accessible and attractive for passengers (Kos-Labedowicz, 2014). The fast processing, good internet access, storage capacity and near field communication of smartphones are perfectly suitable features for e-ticketing (Ghiron *et al.,* 2009; Vives-Guasch *et al.,* 2014). E-ticketing is easier, immediate, secure, informative and systematic in order to sharpen the behaviour intention of the customer. Organizations improve their information systems and service quality for e-ticketing to facilitate and motivate their customers to buy e-tickets.

However, part of consumers resists to choose these solutions and prefers to use the old style services because of various different reasons. Due to this issue, an analysis of the new approach is necessary to solve problem easier. Therefore, the aim of this article is to evaluate the consumers' behaviour and acceptance of intelligent systems, such as e-ticketing, in order to identify the factors, influencing and encouraging the customers to use e-ticketing systems.

This study investigates, how technology affects the behavioural intentions of the consumers to use e-ticketing. In this research extended technology acceptance model was used to find the technological effect on the customers' behavioural intentions. Extended technology acceptance model is based on the perceived ease of use, usefulness and trust of the technology and behavioural intention to use it. Intelligent ticketing system has been measured through information quality, system quality and service quality as the antecedents of technology acceptance model.

In this research structural equation modelling, i.e. partial least square (SEM – PLS) method, was used to analyse the data. This study developed the relationship between intelligent ticketing system and extended technology acceptance model with trust in the exploratory stage. Data have been collected from China and Pakistan populations to analyse the trends, reasoning, and customers' behavioural intentions to use e-ticketing. Behavioural intentions of both countries' customers were separately and the overall model has been empirically tested by combining the data from both countries. Country level as well as model level analyses were conducted for investigating customer behaviours of people from both countries.

Literature Review

The intelligent ticketing system is a systematic process to get information on tickets, book and pay for them by using ICT. In this research intelligent ticketing system has been measured through three different dimensions: information quality, system quality, and service quality. These three qualities have a positive effect on perceived ease of use and perceived usefulness (Ahn, Ryu & Han, 2007; Hassn *et al.,* 2016). Scientists suggest a strong relationship between information quality, system quality, service quality, and technology acceptance model. Furthermore, this study has extended the technology acceptance model with trust, because trust is an essential factor in the relationship of three qualities and technology acceptance model (Ghazizadeh *et al.,* 2012; Yang *et al.,* 2015), taking in to account recent studies in consumer behaviour (Ahmed, Vveinhardt, & Streimikiene, 2017; Cachero-Martinez & Vazquez-Casielles, 2017; Debkowska, 2017).

As the system quality depends on the system needs, it can be evaluated during the system analysis and system design stage. Some essential features of the system quality, such as security, privacy, appearance, user-familiarity, user-customization, customer support, virtual reality and technical adequacy, fulfil the customers' needs better (Ahn *et al.,* 2007; Hassn *et al.,* 2016). These features attract the customers psychologically attached to e-shopping. Customer involvement in the system can engage customers and increase repetitive sales (Ahn *et al.,* 2007; Hassn *et al.,* 2016).

The system-oriented approach focuses on improving customer satisfaction about the technology. For this reason, organizations have to develop a high-quality system, based on convenience, privacy, and fast response, which are three primary functions of the system (Ahn *et al*., 2007; Hassn *et al.,* 2016). In previous studies, the positive impact of system quality on the perceived ease of use and perceived usefulness has been established. Both qualities are primary factors of the technology acceptance model (Hassn *et al.,* 2016; Lederer *et al.,* 2000; Liao & Cheung, 2001). The apps and websites using the qualitative system provide the customers with value-added search features, which make the system more enjoyable and convenient (Ahn *et al.,* 2007; Davidaviciene *et al.,* 2017; Hassn *et al.,* 2016; Koufaris, 2002; Raudeliuniene *et al.,* 2018).

Information quality is related to the information type, level of detail, variety of information, and the quality of the sharing process (how the customers can get information from the company, and vice versa). (Ahn *et al.,* 2007; Raudeliuniene & Davidavicius, 2017).

System operation is the second phase of the information quality. There are three main components of system operation: accuracy, timeliness, and reliability of the information (Ahn *et al.,* 2007; Hassn *et al.,* 2016). Both organizations and customers' need accurate information in real time to make rational decisions. For instance, if organizations get consistent and reliable information in real-time, then they can form strategies to create uniqueness and sustainability, and to propose different kind of promotions. If customers get relevant and accurate information without delay, they can make convenient decision, so their chances to buy e-tickets increases (Ahn *et al.,* 2007; Hassn *et al.,* 2016; Raudeliuniene & Davidavicius, 2017).

The information quality has been measured through report content and form. The report content consists of accuracy, relevancy, adequacy, and clarity of the information (Srinivasan, 1985). Therefore, the relevancy and accuracy of the material can be measured through report content. In contrast, a form includes the timeliness, sequence, report presentation and format of the information (Srinivasan, 1985). The most frequent use of information quality is content or report content rather than a form (Ranganathan & Ganapathy, 2002).

Organizations can achieve uniqueness and sustainability through service quality. It is the overall quality associated with services, like to give timely and right information to their customers. Furthermore, it is also associated with assisting their customers: to solve their problems, suggest them suitable marketing mix, communicate with them for finding the best solutions how to satisfy their needs. According the scientists, sources, empathy, responsiveness, and assurance are considered as the most critical factors. Also, service quality can be measured through the SERVQUAL model for service quality (Ahn *et al.,* 2007; Myers, Kappelman, & Prybutok, 1997; Parasuraman, Zeithaml, & Berry, 1985; Pitt, Watson, & Kavan, 1995).

Websites enable external users to develop a connection with the organization, so that both organizations and users can share updated information through their official sites. In the previous study, WEBQUAL has been measured through

SERVQUAL model, based on the following dimensions: responsiveness, navigation, security, aesthetics, reliability, credibility, competence, access and understanding of users (Ahn *et al.,* 2007; Barnes & Vidgen, 2001). The web quality also improves the service quality of the organization. In online purchasing, service quality is significant factor. As the result, the relationship between service quality and technology acceptance model has been established (Ahn *et al.,* 2007).

In previous studies, trust has been described as perceived trustworthiness (ability, benevolence, integrity), defined as trusting beliefs. The trusting belief has been considered as a consumer attitude (Mayer *et al.,* 1995; McKnight & Chervany, 2001). Furthermore, trust can be also divided into two different terminologies of trusting attitudes and trusting beliefs to measure the consumer attitudes (Li, Hess, & Valacich, 2008). Trust has a positive relationship with behavioural control factors, especially with the perceived ease of use, and an uncertain directional relationship has been found between perceived usefulness and trust. In e-commerce, trust has the positive impact on perceived ease of use and perceived usefulness. Trust can influence consumer behaviour in e-shopping, because the consumer can monitor and control transactions (Chircu, Davis, & Kauffman, 2000; Gefen & Straub, 2000; Yang *et al.,* 2015). In contrast, perceived ease of use has been considered as the antecedent of trust in e-commerce (Malhotra, Kim, & Agarwal, 2004; Pennington, Wilcox, & Grover, 2003). Trust can be taken as the mediator between perceived ease of use, perceived usefulness, and consumers' behavioural intention to use.

Technology acceptance model has focused on the explanation of individual perceptions towards the use of ICT and has derived from the Theory of Reasoned Action suggested by Fishbein and Ajzen (1975). This theory suggests that individuals will behave as they intended to perform in specific time and context. This model adopts a theory to explain the individual behaviour to use ICT because the perceived ease of use and perceived usefulness are the primary determinants to identify the behaviour intention to use ICT. Davis (1989) defined perceived usefulness as the degree of which a person believes that using a particular system would enhance his or her job performance and perceived ease of use as the degree of which a person believes that using a particular system would be free of effort. The Theory of Reasoned Action has determined the intention to use ICT and validate technology acceptance model.

Technology acceptance model has been based on three primary factors, such as perceived ease of use, perceived usefulness, and behavioural intentions to use ICT. In the previous studies technology acceptance model has validated and perceived ease of use and perceived usefulness has the positive effect of the consumer's intentions to use a technology (Ahn et al., 2007; Hassn et al., 2016). In this research technology acceptance model includes trust. In the transportation sector companies have developed their ticketing system on websites. Organizations provide their customers with a web-based interface for sharing and updating information, booking tickets, securing payments, maintaining and storing records, issuing tickets, checking-in facility, and other purposes. As result, extended technology acceptance model can be used to measure the behavioural intentions to use e-ticketing.

Based on scientific literature analysis, eleven hypotheses were formulated: H1: System quality has positive impact on perceived ease of use; H2: System quality has positive impact on perceived usefulness; H3: Information quality has positive impact on perceived ease of use; H4: Information quality has positive impact on perceived usefulness; H5: Service quality has positive impact on perceived ease of use; H6: Service quality has positive impact on perceived usefulness; H7: Perceived ease of use has positive impact on perceived usefulness; H8: Perceived ease of use has positive impact on trust; H9: perceived usefulness has positive impact on trust; H10: perceived usefulness has positive impact on behavioural intention to use; H11: Trust has positive impact on behavioural intention to use.

Research Methodology

Data were collected from university students from Pakistan (Preston University, Federal Urdu University of Arts, Science and Technology, University of Buner, Pakistan) and China (Dongbei University of Finance and Economics, Dalian University of Technology, Shandong University), who were educated and had experience to buy e-tickets. A structured questionnaire was used from October 2017 till January 2018.

Simple random sampling technique was applied. A sample size of 300 per country was surveyed for this research. The response rate from China was 220 (73.3 %) and 212 (70.6 %) from Pakistan, which in total constitutes a response rate of 432 (72 %).

Previous studies have country-level limitations, as they analysed the results of each country separately instead of considering the overall empirical effect and comparing the countries. These results neither provided empirical differences, nor strengthened the model or theory, if tested in both nations simultaneously. For this reason, data in this research were analysed at the country level, model level and combined, using Partial Least Square – Structural Equation Modelling (PLS-SEM) technique for data analysis.

Information about the survey respondents was collected and analysed using descriptive statistics (Table 1).

Table 1

Profile of the Respondents

Demographic Factor	Frequency (C/P/T)	Percentage (C/P/T)
	Country	
China	220/432 (C /T)	50.92 (C /T)
Pakistan	212/432 (P /T)	49.07 (P /T)
	Gender	
Female	172/53/225	78.2/25.0/52.1
Male	48/159/207	21.8/75.0/47.9
	Education	
Bachelor's	104/113/217	47.3/53.3/50.2
Master's	113/98/211	51.4/46.2/48.8
PhD	3/1/4	1.4/.50/0.9
	Age in Years	
18–25	163/120/283	74.1/56.6/65.5
26–35	31/70/101	14.1/33.0/23.4
Above 35	26/22/48	11.8/10.4/11.1

C – China, P – Pakistan, T – Total (China + Pakistan)

Smart PLS 3 was used for SEM analysis, because this tool can be used for theory testing in early stages (Hair, Ringle, & Sarstedt, 2011; Henseler, Ringle, & Sinkovics, 2009; Petter, Straub, & Rai, 2007). PLS also can be used on small sample size, because this method does not consider distribution assumptions (Astrachan, Patel, & Wanzenried, 2014).

All research variables have been measured using a structured questionnaire with Likert scales. Intelligent ticketing system has been measured through three dimensions: system quality, information quality, and service quality. In addition, technology acceptance model was based on perceived usefulness, perceived ease of use, and behavioural intentions to use e-ticketing. Trust has been added in technology acceptance model for augmentation.

Based on a scientific literature analysis, system quality, information quality, service quality, perceived ease of use, perceived usefulness, behavioural intention to use e-ticketing and trust has measured using questionnaire items. Confirmatory factor analysis was performed on each item through, PLS Algorithm, Smart PLS 3. Initially, items having a factor loading less than 0.7 have been removed. The results of confirmatory factor analysis and factor loading are presented in Table 3.

Common method bias can occur if both independent and dependent variables data have been collected from the same respondents at once. The reason for using this method is the variance in measurement method instead of variance in constructs (Podsakoff *et al.,* 2003). There are three methods, to measure common method bias. First, Harman method is used in AMOS, which is not applicable in this study. Second, Lindell & Whitney method can be used in PLS. Third, Bagozzi et al. (1991) method is the simplest method. These methods suggest seeing the correlation between variables. If they have less than 0.9 correlation, then there is no common method bias issue (Bagozzi, Yi & Phillips, 1991). In this research, Bagozzi et al. (1991) method was used to measure common method bias. The correlation results show that only perceived usefulness and perceived ease of use has common method bias. Correlational matrix is presented in Table 2.

Table 2

Descriptive Statistics, Correlation and Square Root of Average Variance Extract

Constructs	Mean (C/P/T)	SD (C/P/T)	Correlational Matrix (C/P/T)						
			(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. System quality	3.37/3.28/ 3.33	.768/.820/ .795	**.836/ .849/ .843**						
2. Information quality	3.26/3.16/ 3.21	.795/.820/ .808	.751/ .791/ .772[a]	**.851/ .849/ .850**					
3. Service quality	2.97/3.12/ 3.04	.868/.919/ .896	.373/ .446/ .405[a]	.411/ .409/ .402[a]	**.814/ .816/ .815**				
4. Perceived ease of use	3.18/3.14/ 3.17	.749/.835/ .792	.667/ .809/ .443[a]	.743/ .817/ .781[a]	.329/ .401/ .364[a]	**.761/ .794/ .778**			
5. Perceived usefulness	3.20/3.13/ 3.17	.749/.833/ .791	.715/ .820/ .771[a]	.789/ .840/ .816[a]	.334/ .435/ .382[a]	.888/ .910/ .900[a]	**.760/ .786/ .773**		
6. Trust	3.18/3.06/ 3.12	.905/.914/ .910	.667/ .763/ .716[a]	.702/ .740/ .722[a]	.374/ .415/ .387[a]	.816/ .837/ .826[a]	.876/ .888/ .882[a]	**.870/ .845/ .857**	
7. Behavioural intention to use	3.23/3.18/ 3.21	.714/.765/ .739	.660/ .760/ .713[a]	.705/ .765/ .736[a]	.417/ .541/ .477[a]	.728/ .788/ .760[a]	.769/ .820/ .796[a]	.745/ .767/ .756[a]	**.751/ .794/ .773**

C – China, P – Pakistan, T – Total (China + Pakistan), a – all Sig. at p<0.01, Diagonal values in bold represent the square root of the Average variance extracted (AVE)

Measurement Model

Structure equation modelling (SEM) can be measured by measurement (outer) model and structural (inner) model (Barclay, Higgins, & Thompson, 1995). The measurement model can be calculated through reliability and validity. Cronbach's alpha (individual) and composite reliability can measure reliability. In addition, validity can be measured through content validity, convergent validity, and discriminant validity (Chin, 1998; Hair *et al.,* 2011).

Reliability is the internal consistency of items. If the items are consistent with each other, they have high-reliability values. In this research, both individual and composite reliability were measured. Cronbach's alpha test can be used for the individual reliability; the minimum acceptable value is 0.60 (Nunnally, 1967). All the values are greater than 0.60, which means that data are reliable for further analysis (Table 3).

Composite reliability is the internal consistency of all items of the specific construct (Henseler *et al.,* 2009). Two methods can be used for composite reliability. First, variance inflation factor (VIF) method is used if the construct is measured through formative items. Second, composite reliability (CR) can be used if the construct is measured through reflective items. In this research, all items are reflective and CR is a convenient method to find the composite reliability. The minimum acceptable value for CR is 0.60 (Fornell & Larcker, 1981). All constructs have values higher than 0.60, which means that they have composite reliability (Table 3).

Content validity is related to the content of items and can be measured through factor loading of each item. If the

items have more than 0.6-factor loading, then they have content validity (Fornell & Larcker, 1981; Hair *et al.,* 1998). Factor loading of all items has a greater than 0.6 value, which shows the content validity of each item (Table 3).

Table 3

Factor Loading, t – Statistics, Cronbach's Alpha, Composite Reliability, Average Variance Extract

Construct	Item loading (C/P/T)	t-statistics (C/P/T)	Cronbach's Alpha (C/P/T)	CR & AVE (C/P/T)
System quality				
SYSTEM QUALITY1	.816/.871/.846	32.46/53.87/60.16	0.893/0.903/0.898	CR = 0.921/ 0.928/0.925
SYSTEM QUALITY2	.845/.865/.857	37.31/47.93/61.41		AVE = 0.700/ 0.721/0.711
SYSTEM QUALITY3	.846/.823/.833	41.92/37.09/54.49		
SYSTEM QUALITY4	.833/.850/.842	45.79/48.32/66.12		
SYSTEM QUALITY5	.844/.835/.839	37.21/37.30/53.56		
Information quality				
INFORMATION QUALITY2	.848/.873/.861	40.77/58.12/68.93	0.873 /0.871 /0.872	CR = 0.913/ 0.912 /0.913
INFORMATION QUALITY3	.867/.836/.851	50.08/39.09/61.36		AVE = 0.721/ 0.723 /0.725
INFORMATION QUALITY4	.856/.842/.849	48.87/42.36/63.29		
INFORMATION QUALITY5	.833/.845/.839	34.97/42.40/55.80		
Service quality				
SERVICE QUALITY1	.834/.832/.832	32.38/29.22/43.37	0.899 /0.899 /0.899	CR = 0.922/ 0.922 / 0.922
SERVICE QUALITY2	.830/.854/.843	27.83/46.96/54.39		AVE = 0.663/ 0.666 / 0.665
SERVICE QUALITY3	.877/.902/.893	42.34/72.74/86.62		
SERVICE QUALITY4	.810/.846/.831	22.62/37.45/45.12		
SERVICE QUALITY5	.787/.766/.772	25.97/22.33/34.14		
SERVICE QUALITY6	.739/.678/.707	16.59/14.87/22.24		
Perceived ease of use				
PERCEIVED EASE OF USE3	.708/.775/.746	15.95/25.01/28.68	0.855 /0.883 /0.870	CR = 0.892/ 0.911/ 0.902
PERCEIVED EASE OF USE4	.781/.799/.788	27.63/28.40/38.16		AVE = 0.58/0.631 / 0.606
PERCEIVED EASE OF USE5	.818/.798/.806	38.33/28.84/46.78		
PERCEIVED EASE OF USE6	.771/.807/.790	23.31/28.02/35.36		
PERCEIVED EASE OF USE7	.732/.795/.765	18.55/25.65/31.13		
PERCEIVED EASE OF USE9	.756/.793/.774	21.22/26.48/32.57		
Perceived usefulness				
PU2	.764/.779/.769	26.05/21.71/33.27	0.896 /0.912 /0.904	CR = 0.916/ 0.928 / 0.923
PU3	.798/.792/.795	32.58/32.23/44.83		AVE = 0.579/ 0.619 / 0.599
PU4	.777/.777/.777	28.75/22.20/34.55		
PU5	.702/.810/.758	19.07/33.36/34.71		
PU6	.785/.771/.778	28.29/19.39/32/07		
PU7	.760/.768/.765	18.28/19.57/26.98		
PU8	.761/.789/.776	19.04/24.21/30.62		
PU9	.734/.806/.774	17.93/27.20/31.35		
Trust				
Trust1	.858/.817/.837	42.74/27.12/47.04	0.840/ 0.800 / 0.820	CR = 0.904/ 0.882 / 0.893
Trust2	.881/.833/.882	45.55/50.90/68.19		AVE = 0.758/ 0.715 /0.735
Trust3	.872/.835/.853	40.59/28.01/45.28		
Behavioural intention				
BEHAVIOURAL INTENTION TO USE1	.814/.839/.827	35.82/58.23/65.44	0.614/ 0.712/0.665	CR = 0.795/ 0.837 /0.816
BEHAVIOURAL INTENTION TO USE2	.670/781/.727	11.81/21.24/22.47		AVE = 0.565/ 0.632 / 0.598
BEHAVIOURAL INTENTION TO USE3	.765/.763/.762	18.72/22.02/28.76		

C – China, P – Pakistan, T – Total (China + Pakistan), CR – Composite reliability, AVE – Average variance extracted

Convergent validity is the relationship between two constructs and was calculated at items level to measure the relationship between each item among a specific construct. Convergent validity can be measured through factor loading and if the items have greater than 0.6 factor loading, then they have convergent validity (Fornell & Larcker, 1981; Hair *et al.,* 1998). Factor loading of all items have greater than 0.6 value, which shows convergent validity of each item (Table 3).

Discriminant validity is the difference between constructs and is the opposite from convergent validity, because it shows how much constructs are unrelated from each other. The purpose of discriminant validity is to distinguish between constructs. Discriminant validity can be measured through two methods. First, the square root of average variance extract (AVE): if the value of square root of AVE is greater than the correlation between latent variable, then the items have discriminant validity (Chin, 1998; Fornell & Larcker, 1981). Second method to measure discriminant validity is factor loading: if the items have a factor loading greater than 0.60, then they have discriminant validity (Chin, Marcolin, & Newsted, 2003). Factor loading of all items has greater than 0.6 value, which shows the discriminant validity of each item (Table 3).

Structural Model

The structural model is the inner model in structural equation modelling. Structural model can be measured through path coefficients (R2) values and significant values. PLS-SEM has been used for path analysis, because PLS do not need any distribution assumptions. Boots strapping method is used to find the significance (Chin, 2010; Sanchez, 2013). The default bootstrapping in PLS is

500 subsamples to gain significant results (Wetzels, Odekerken-Schroder, & Van Oppen, 2009). This study calculated 5000 subsamples in bootstrapping to gain more precise results and three path coefficient values of China, Pakistan, and difference between China and Pakistan samples. Results showed that students from both samples had almost the same opinion (Table 4).

The value of R^2 explains the variance between endogenous variables (Henseler *et al.,* 2009; Hulland, 1999). It is suggested that if the R^2 value is 0.02, 0.13 or 0.26, then it will be low, medium and high variance between variables (Cohen, 1988). Research results show that all paths coefficient values were accepted, only service quality to perceived ease of use in both countries has not been supported. In addition, service quality to perceived usefulness in China, perceived ease of use to trust in Pakistan, and trust to behavioural intention to use in Pakistan has not a significant effect. All other variables support the model. The overall (China and Pakistan) empirical research model of structural equation model, consisting of individual item factor loadings, path coefficients and R^2 values, is presented in Figure 1.

Model fit can be analysed through Standardized Root Mean Square Residual (SRMR), and Normed Fit Index (NFI) values in PLS under model fit, factor analysis in PLS algorithm. The minimum acceptable value for SRMR is less than 0.08 (Hu & Bentler, 1998). In this research, SRMR value for China, Pakistan and total (China + Pakistan) are 0.75, 0.68, and 0.64, respectively. All values are less than 0.8. In addition, NFI values are related to chi-square values and must be between 0 to 1. The higher values near to 1 constitute a better fit. The higher suggested values are 0.9 (Lohmoller, 2013). The NFI value of China, Pakistan and total (China + Pakistan) are 0.682, 0.695, and 0.731, respectively; all values are near to 1. It means that research model in China, Pakistan and in total (China + Pakistan) were accepted.

Table 4

Path Coefficients, t Values, Significance Values and Results

Hypotheses	Path coefficients (C/P/D)	t value (C/P/D)	Significance value (C/P/D)	Result (C/P/D)
H1: System quality->Perceived ease of use	.256/.425/.169	2.50/5.27/1.41	.01/.00/.15	a/a/a
H2: System quality->Perceived usefulness	.121/.138/.169	2.32/2.17/1.31	.02/.03/.18	a/a/a
H3: Information quality-> Perceived ease of use	.547/.473/.128	5.82/6.18/1.02	.00/.00/.30	a/a/a
H4: Information quality-> Perceived usefulness	.216/.230/.075	3.79/3.92/0.61	.00/.00/.53	a/a/a
H5: Service quality->Perceived ease of use	.013/.022/.066	0.24/0.68/0.81	.81/.49/.41	r/r/a
H6: Service quality->Perceived usefulness	-.022/.042/.062	0.70/1.64/1.59	.48/0.1/.11	r/a/a
H7: Perceived ease of use-> Perceived usefulness	.655/.590/.023	12.63/9.38/0.27	.00/.00/.78	a/a/a
H8: Perceived ease of use-> Trust	.178/.174/.012	2.37/1.56/0.21	.01/.11/.82	a/r/a
H9: Perceived usefulness -> Trust	.723/.732/.011	10.27/6.91/0.14	.00/.00/.88	a/a/a
H10: Perceived usefulness -> Behavioural intention to use	.531/.702/.008	6.51/7.93/0.06	.00/.00/.95	a/a/a
H11: Trust->Behavioural intention to use	.281/.150/.003	3.36/1.58/0.02	.00/.11/.98	a/r/a

C – China, P – Pakistan, D – Difference (China - Pakistan), a – accepted, r – rejected

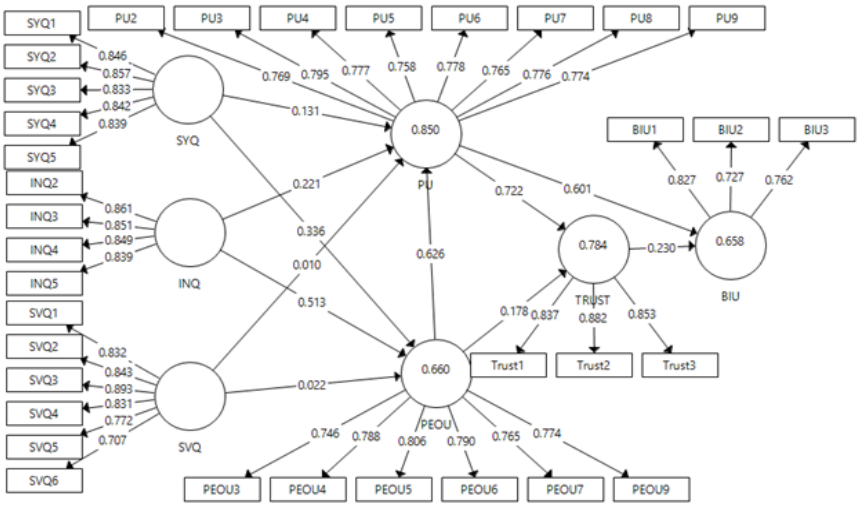

Figure 1. Research Model

Discussion

In this research, an extension of technology acceptance model with trust and intelligent ticketing system has been measured through perceived ease of use, perceived usefulness, and behavioural intention to use e-ticketing. In addition, trust was measured as taking a mediating role between perceived usefulness, perceived ease of use, and behavioural intention to use e-ticketing. In previous studies the mediating relationship of trust between perceived ease of use, perceived usefulness and behaviour intention to use have been established (Ghazizadeh *et al.,* 2012; Yang *et al.,* 2015). The result of this study has supported the previous study because trust played a mediating role between perceived ease of use, perceived usefulness and behavioural intention to use in the Chinese context, because it had a positive effect. The reason for this trust is the online buying behaviour of customers (Wu & Chen, 2005).

Chinese e-banking system is secure, especially the Alipay and WeChat payment systems have earned the trust of customers in China. In addition, Ctrip, Qunar, and China train are common mobile applications to buy tickets for airplane and train. Customers trust these applications and foreigners especially prefer these services to buy tickets.

In Pakistan, customers have less trust in e-ticketing. The main reason is the lack of information and skills. Young people prefer to buy online as compared to elders, because the latter group has less competence in the use of internet and online facilities. Customers trust in booking tickets online, but they have less trust in online payment and some of them do not have credit cards.

The relationship between SYSQ and perceived ease of use, sees and perceived usefulness, information quality and perceived ease of use, information quality and perceived usefulness, service quality and perceived ease of use, and service quality and perceived usefulness were established based on scientific literature analysis (Ahn *et al.,* 2007; Hassn *et al.,* 2016). The results of this study were also supported by the previous study in terms of SYSQ and perceived ease of use, SYSQ and perceived usefulness, information quality and perceived ease of use, and information quality and perceived usefulness, because customers in China and Pakistan believed in SYSQ and information quality of intelligent ticketing system. Customers can get real-time and authentic information about ticket price, compare the rates, alternatives, and other information, which encourages them to take rational decisions when buying tickets.

The relationship between service quality and perceived ease of use was not significant in both countries. In China sample the language barrier is very common, because most Chinese cannot understand and communicate in English and most foreigners cannot understand and communicate in Chinese. Even if customers have an e-ticket, they need to take the hard copy of the ticket from railway station and airport. This is a significant issue in the whole implementation of e-ticketing services.

In Pakistan, the biggest problem lies in that customers cannot buy through their debit card, because in this country only credit card is allowed to buy tickets. Therefore, people need to have a third-party service, which can provide flexible and secure payment options to encourage their customers to get cheaper price tickets. Furthermore, they guide their customers about other alternative options for decision rationale.

The relationship between service quality and perceived usefulness has been demonstrated in the Pakistan sample but was not significant in the China sample. In Pakistan sample, trust in online purchasing has not been fully established until now. For this reason, the relationship between perceived ease of use and trust, and trust and behaviour intention to use were not significant. Trust can be developed through the knowledge, improvement of the e-banking system and payment process, the application of different communication tools to develop the customers' trust in the e-payment system.

Integrity of consumer behaviour and technology acceptance by providing research results allowed to present insights and solutions in different cases (different level of development in technology acceptance). Further research could be extended and the model for consumer behaviour and technologies acceptance level evaluation could be developed.

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