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## Article

# Impact of self-service technology (SST) service quality on customer loyalty and behavioral intention: The mediating role of customer satisfaction

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## MARKETING | MARKETING

# Impact of self-service technology (SST) service quality on customer loyalty and behavioral intention: The mediating role of customer satisfaction

Muhammad Shahid Iqbal<sup>1\*</sup>, Masood Ul Hassan<sup>1</sup> and Ume Habibah<sup>2</sup>

**Abstract:** Service quality has been a topic of extensive inquiry for decades that has emerged now in form of self-service technology (SST) which has profound effects on the way customers interact with firms to create positive service outcomes i.e. customer satisfaction, loyalty, and behavioral Intentions. Therefore, the main objective of this study is to examine that how the technology based Services i.e. SSTs impact the customer satisfaction, loyalty, and Behavioral Intentions in service sector of Pakistan. The data have been collected from the 238 SST's users through the online survey. In order to test the model, Structural Equation Modeling is applied by using the LISREL program. The results of this study reveal positive and significant relationship between SSTs service quality, loyalty, and behavioral Intentions directly and indirectly via customer satisfaction. These results provide insights for the service sector of the Pakistan to invest in the new technology in order to enhance the consumer experience, satisfaction, loyalty, and Intentions.

## ABOUT THE AUTHORS

Muhammad Shahid Iqbal is a PhD Scholar at Department of Commerce, Bahauddin Zakariya University, Multan. He has working experience as a visiting lecturer at Bahauddin Zakariya University, Multan. His research interest includes service marketing, retail marketing, relationship marketing, consumer behavior, Entrepreneurship, and Organizational Behavior.

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## PUBLIC INTEREST STATEMENT

This study is an attempt to explain the impact of service quality of self-service technologies (SSTs) on customer loyalty and behavioral intention by adding the mediating role of customer satisfaction. The SSTs are technological interfaces through which customer can attain services without direct involvement of service firm employee. SSTs include ATM, online banking, mobile banking, self-check-in machines at air ports, online shopping, and online bill payment etc. The proposed model is applied in service sector of Pakistan and results reveal that firms can enhance satisfaction, loyalty, and intention of their customers by improving the SSTs service quality. Study also provides the insights for the service firms that they must pay intensive attention to improve their customer loyalty and drive positive intentions using advance technological interface.

**Subjects:** Relationship Marketing; Retail Marketing; Services Marketing

**Keywords:** service quality; self service technology; customer satisfaction; loyalty; behavioral intentions; LISERL; Pakistan

## 1. Introduction

The advancement in Information and Communication Technology (ICT) has transformed the facets of interaction between the service firms and their customers, resulting in improved service standards (Barrett, Davidson, Prabhu, & Vargo, 2015; Lovelock & Gummesson, 2004). Service providers introduced technology enabled mechanism (i.e. Self-Service Technologies (SSTs)) to provide convenient services to their customers in attaining better productivity and satisfaction (Gounaris, Dimitriadis, & Stathakopoulos, 2010; Hien, 2014; Tsou & Hsu, 2017). During the past decade, SST adoption was emerging business phenomena of service sector industry (Leung & Matanda, 2013; Verhoef et al., 2009). SSTs have replaced the direct contact between buyer and supplier of services (Meuter, Ostrom, Roundtree, & Bitner, 2000). It allows buyers to generate and utilize the services without direct interaction with employees of service organization (Eastlick, Ratto, Lotz, & Mishra, 2012; Ju Rebecca Yen & Gwinner, 2003; Martins, Oliveira, & Popovič, 2014).

To get services from service firms, consumer's practices range from services delivered by employees to services that are co-produced by customer itself (Hilton, Hughes, Little, & Marandi, 2013; Turner & Shockley, 2014). Service firms have launched SSTs to enhance productivity, proficiency, and effectiveness in service process (Curran & Meuter, 2005; Kelly, Lawlor, & Mulvey, 2017; Kokkinou & Cranage, 2013; Walker, Craig-Lees, Hecker, & Francis, 2002; Zeithaml & Gilly, 1987). Moreover, the purpose was to put forward the customer to access services by means of modern and convenient channels (McGrath & Astell, 2017; Meuter, Ostrom, Bitner, & Roundtree, 2003; Reinders, Dabholkar, & Frambach, 2008). In doing so, they are able to better address the customer's demand as well as their satisfaction (Bitner, Ostrom, & Meuter, 2002; Ganguli & Roy, 2011; Johnson, Bardhi, & Dunn, 2008). Some SSTs, such as ATM, online banking, mobile banking, and self-check-in machines at airports, online shopping, online bill payment etc. are popular amongst the customers.

Meuter et al. (2000) defined SSTs as "technological interfaces which allow customers to get services free from the direct involvement of service firm's employees". With growth of multi-channel marketing (Grewal & Levy, 2009; Musso, 2010), combinations of SSTs interfaces are provided by the companies for flawless delivery of customer services. Examples include that customer of airline services do not only reserve but can pay for tickets by using online check-in by means of the Internet and mobile phones. They can pick up boarding passes at airport kiosks, and obtain flight information on their mobile devices. Numerous services have been offered by Banks through Internet, hotline or through "interactive phone systems", ATMs, and mobile phones.

Further, SSTs could be more beneficial to the businesses, helping them to serve more customers with fewer resources resulting in cost reduction as employees can be substituted by SSTs (Curran & Meuter, 2005; Yang & Klassen, 2008). SSTs also help businesses to decrease costs of staff training, equipment, and communication (Leung & Matanda, 2013). SSTs also put forward more consistent and steady services unaffected by variations of service demand or worker's frame of mind (Liljander, Gillberg, Gummerus, & van Riel, 2006; Weijters, Rangarajan, Falk, & Schillewaert, 2007). The literature points out that SSTs enhance customer's satisfaction and loyalty, hence facilitate effectively to approach new customer divisions (Bitner et al., 2002; Meuter, Bitner, Ostrom, & Brown, 2005). In addition to efficiency improvement, SSTs give power to both employees and customers (Hsieh, 2005) through value addition by increasing time and place convenience (Yang & Klassen, 2008).

A substantial amount of prior research (e.g. Arts, Frambach, & Bijmolt, 2011; Asiah Omar, Aniza Che Wel, Abd Aziz, & Shah Alam, 2013; Bitner, 1995; Boon-itt, 2015; Carman, 1990; Chang & Wang, 2016; Cronin & Taylor, 1992; Deng, Lu, Wei, & Zhang, 2010; Fernandes & Pedrosa, 2017; Furrer, Liu, &

Sudharshan, 2000; Grönroos, 2001; Lehtinen & Lehtinen, 1991; Parasuraman, Zeithaml, & Berry, 1985, 1988; Teas, 1993; Wilson, Zeithaml, Bitner, & Gremler, 2012) has focused upon the significance of service quality on customer satisfaction, and loyalty by means of recognized measurement scales i.e. SERVQUAL (Parasuraman et al., 1988). However, a little amount of research efforts has been made to examine the dimensions of SSTs service quality and its impact on customer satisfaction, loyalty, and behavior intentions in Pakistani service sector context. This study attempts to examine the role of SSTs in service delivery process and to investigate and understand its influence on consumer's satisfaction, loyalty, and behavior intentions in emerging Pakistani service sector. In order to examine the impact of SST's service quality, this study employs SSTQUAL scale developed by Lin and Hsieh (2011). Current study is divided into five major sections. Section 2 provides relevant literature on SSTs service quality, customer satisfaction, loyalty, and behavioral intentions. Section 3 explains data and methodology, Section 4 explains data analysis and results of the study, and Section 5 presents the discussion and conclusions. The study limitations and future research directions have also been discussed in Section 5.

## 2. Literature review

### 2.1. SST service quality

Service quality conceptualization incorporates procedure related to service delivery (Parasuraman et al., 1985) and service outcome (Lehtinen & Lehtinen, 1991). The discussion related to service quality dimensions and its measurement was emerging phenomena in past decades (Jain & Gupta, 2004; Lehtinen & Lehtinen, 1991). A number of researches have been perused in order to inspect the paradigm of service quality (Cronin, Brady, & Hult, 2000; Cronin & Taylor, 1992; Parasuraman et al., 1985). Parasuraman et al. (1988) conceptualized service quality as a five dimensions construct in term of its concept and structure. These dimensions include (1) Reliability, (2) Responsiveness, (3) Assurance, (4) Empathy, and (5) Tangibility.

Moreover, to determine service quality, a scale named as "SERVQUAL" was introduced regarding face-to-face environment of service process. A three-dimensional model of service quality was presented by Grönroos (1984) named "technical quality, functional quality, and corporate image". Similarly, another model was offered by Lehtinen and Lehtinen (1991) with three dimensions named as (1) Physical Quality, (2) Interactive Quality, and (3) Corporate Quality. According to them, physical quality is related to physical products that are included in service production process in term of service delivery as well as service consumption. So, in the customary service circumstances, measurements of service quality have paid attention largely on the interactions of clients with the organization's staff (human-human encounters) as well as by some marketing mix variables.

Further, to improve the customer experience, to decrease the expenses which directly or indirectly relate to their employees, to attain customer retention, and to bring technological advancements in their business, SST service quality is being offered by organization (Ryu, Lee, & Gon Kim, 2012; Tsou & Hsu, 2017; Wu, 2013). As defined by Meuter et al. (2000), SST is a technological interface which allows customers to get services free from the involvement of service firm's employee. A variety of interfaces includes Automated Teller Machines (ATMs), Internet banking, automated hotel check-outs, self-service kiosks (i.e. digital photo kiosks, information kiosks, interactive music and movie samplers, and electronic kiosks for gifts) grocery self-checkout lanes, and pay-at-pump gas stations.

The significant research areas associated with technology empowered services include SSTs and call centers to attain customer related services (Batt, Holman, & Holtgrewe, 2009; Collier, Moore, Horky, & Moore, 2015; Considine & Cormican, 2017; Curran & Meuter, 2005; Eastlick et al., 2012). According to Meuter et al. (2000) based upon technology based interface, SSTs are classified depending on types of "telephone, internet, interactive kiosks" (i.e. ATM, video and CD etc.). Consumer's perceptions concerning the service quality differ subject to particular nature of self-service

employed (Curran & Meuter, 2005). SSTs lead to perception of enhanced service as customers can complete the transaction more quickly and conveniently (Anitsal & Flint, 2006; Collier et al., 2015; Dabholkar, Michelle Bobbitt, & Lee, 2003; Hsieh, 2005; Oh, Jeong, Lee, & Warnick, 2016). Service suppliers like hotels, banks, and restaurants etc. are gradually employing SSTs to replace their customary means of service delivery. SSTs provide wide array of choice to their customers in term of when and how to get services. SSTs for example online retail setting and ATMs have improved the accessibility of service beyond customary store hours. Weijters et al. (2007) argued that “SSTs provide inexpensive transactions, opportunities for co-creation, customization, and reduction of heterogeneous service encounters”. It is expected that SSTs help service firms to increase the efficiency and minimize the cost related to their operations (Anitsal & Schumann, 2007; Karwan & Markland, 2006; Lovelock & Young, 1979). Consequently, to reduce unnecessary delays in services, more progressively SSTs are considered as ways to effectively manage cost and therefore enhance satisfaction (Davis & Vollmann, 1990; Weijters et al., 2007).

Further, Technology Readiness (TR) model was introduced by Parasuraman (2000) to reflect the tendency of users to incorporate the new technology. Technology Readiness influences the SSTs usages reflecting the mental readiness of consumer to adopt the new technology (Liljander et al., 2006; Tsikriktsis, 2004). Technology Acceptance Model (TAM) was developed by Davis (1989) in order to anticipate the user’s technology adoption behavior. In accordance with TAM, technology acceptance is exhibited by extent of strength in attitude and intention towards the use of technology enabled services which is influenced principally by perceived ease of use (PEOU) and perceived usefulness (PU) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). Lin, Shih, and Sher (2007) integrated the construct of Technology Readiness (TR) and TAM into one model called TRAM model to better explain the customer’s intentions while using electronic services.

Venkatesh, Morris, Davis, and Davis (2003) anticipated the Unified Theory of Acceptance and Use of Technology (UTAUT) to explain the user’s intentions towards the technology system usage behavior. The UTAUT explains that people engage themselves in technology system usage and form subsequent intentions and behavior that is governed through four major constructs including (1) Performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. Similarly, the “Innovation Diffusion Theory (IDT)” (Rogers (1995a, 2010) describes the procedure through which ideas and innovations turn out to be in the diffusion process and are adopted by the larger social networks of individuals. Diffusion is described as a process through which an innovation i.e. product or service, is communicated by the means of different channels amongst the participants of a social system (Rogers, 2003). According to Rogers (1995a), the process of innovation diffusion goes through six stages: awareness, investigation, evaluation, trial, repeated use, and commitment. As the process of innovation diffusion moves from initial trial, users’ perceptions change over time as they gain more experiences of the technology (Karahanna, Straub, & Chervany, 1999; Lee, Hsieh, & Hsu, 2011).

Literature provides several measurement scales to measure service quality construct. However, scale like SERVQUAL (Parasuraman et al., 1988) and SERVEPREF (Cronin & Taylor, 1992) are basically designed to investigate the interaction of customer to employee (interactive person) during the service delivery process, while they do not address the interaction of customer to technological interface (interactive equipment). Barnes and Vidgen (2001) established a new measurement scale named WebQual Index for quality of Internet site. Yoo and Donthu (2001) suggested an instrument named as SITEQUAL, which was specifically developed in order to measure the customer experience of perceived service quality related to internet shopping sites. Parasuraman, Zeithaml, and Malhotra (2005) established E-S-QUAL for assessment of the service quality provided by online shopping suppliers. A transaction process based measure named as eTransQual was developed by Bauer, Falk, and Hammerschmidt (2006) in order to quantify service quality of electronic service encounters. e-SELFQUAL scale was offered by Ding, Hu, and Sheng (2011) in order to capture the online service quality. SSTQUAL presented by Lin and Hsieh (2011), was explicitly developed to quantify service quality provided by SSTs.

SSTQUAL (Lin & Hsieh, 2011) has been used in present study to capture the SSTs service quality. The validation of SSTQUAL has been confirmed by variety of reliability and validity tests in different contexts through the approach of scale duplication via numerous diverse samples across the industries and consumer behaviors (Considine & Cormican, 2016; Demirci Orel & Kara, 2014; Kumar & Mittal, 2015; Radomir & Nistor, 2012, 2014). The SSTQUAL (Lin & Hsieh, 2011) consists of 20 items and seven dimensions named as Functionality, Enjoyment, Security, Design, Assurance, Convenience, and Customization. As illustrated by Lin and Hsieh (2011),

- (1) Functionality leads to the SSTs features including “reliability, ease of use, and responsiveness”.
- (2) Enjoyment refers to the opinion of the customer with use of system.
- (3) Security/privacy is associated with personal concerns of the customers.
- (4) Design is concerned with overall layout of system.
- (5) Assurance portrays proficiency and reputé associated with service provider.
- (6) Convenience is associated to the ease with which a customer can access the services offered by firm.
- (7) Customization is articulated as capacity to be familiar with the wants and needs of customers and shape these services through the customer’s co-production.

## 2.2. SST service quality and loyalty

Lee, Lee, and Feick (2001) defined customer loyalty “concerning word-of-mouth endorsement, the increased probability of purchase, and frequent buying of firm’s offerings”. While Pearson (1994) defined customer loyalty as “mindset of customers who has favorable approaches concerning the company, promise to purchase the company’s product/service frequently, and endorse the product/service to others”. It can be discovered through past literature, service quality is vital component of customer loyalty (Boulding, Kalra, Staelin, & Zeithaml, 1993; Cronin & Taylor, 1992; Makanyeza, Makanyeza, Chikazhe, & Chikazhe, 2017; Prentice, 2013).

Theory of Planned Behavior (TPB) which is extension of Theory of Reasoned Action (Ajzen, 1985, 1991; Ajzen & Fishbein, 1975) postulates that behavior is the outcome of attitude, subjective norms, and perceived behavioral control. TPB provides foundation in order to study the user’s satisfaction, loyalty, and attitude towards SSTs service quality. Similarly, the Service Profit Chain (Heskett, Sasser, & Schlesinger, 1997; Heskett & Schlesinger, 1994) exhibits that it is important for the service firms to increase the satisfied and loyal customer base in order to attain growth and profitability. Further, TPB provides the link between satisfaction, loyalty, favorable attitude towards that SSTs service quality, influence repeat purchase, and positive intentions.

Parasuraman and Grewal (2000) anticipated that customer loyalty increases with service firm’s value by analyzing the service quality, value, and loyalty chain in context of electronic service delivery context. In online settings, Yang and Peterson (2004) exhibited that customer satisfaction and product value are the main drivers through which service firms could attain customer loyalty. Ganguli and Roy (2011) investigated the positive and significant impact of generic service quality dimensions on customer satisfaction and loyalty in technology-based banking sector. Xu, Thong, and Venkatesh (2014) investigated impact service innovation and brand equity on customer loyalty in the context of ICT sector and found the that brand equity significantly impacts affective and conative loyalty. So, the first hypothesis of the study is presented as:

H1: SSTs service quality has positive and significant relationship with customer loyalty.

## 2.2. SST service quality and behavioral intention

Consumer behavior literature have recourse towards Theory of Reasoned Action (Fishbein & Ajzen, 1975) in order to comprehend the link between behavioral intentions and actual behavior. TRA posits

that displayed behavior is result of intentions a person holds in order to perform the certain behavior (Fishbein & Ajzen, 1975). Theory Planned Behavior (Ajzen, 1991) derived from Theory of Reasoned Action (Fishbein & Ajzen, 1975), posits that customer attitude towards the novel technologies usage is extensively believed to have influence on the behavioral intention (Ajzen, 1991; Curran & Meuter, 2005; Fishbein & Ajzen, 1975).

In order to reveal the post purchase behavior, numerous prevailing models employ customer assessment of SSTs service quality in term of satisfaction and behavioral Intentions (Chen, Chen, & Chen, 2009; Lin & Hsieh, 2007). These are certain indications that clearly show whether a customer will leave or stay with firm, make positive remarks (Boulding et al., 1993), endorsing the firm's products (Parasuraman, Zeithaml, & Berry, 1994; Reichheld & Sasser, 1990), ready to pay high prices, and being committed towards firm in term of loyalty (LaBarbera & Mazursky, 1983; Rust & Zahorik, 1993). Cronin and Taylor (1992) & Gremler and Brown (1997) explain "satisfaction and service quality must be an antecedent requirement for the customer behavioral intentions". Furthermore, they entail distinct association among behavioral intentions and satisfaction (Dabholkar & Thorpe, 1994; Oliver & Swan, 1989).

Consumer Behavior research has well established the link between behavior and behavioral intentions (De Cannière, De Pelsmacker, & Geuens, 2009; Webb & Sheeran, 2006). Technology adoption literature posits that actual behavior is generally outlined in terms of frequency or level of technology system usage (Demoulin & Djelassi, 2016; Venkatesh & Bala, 2008; Venkatesh & Davis, 2000; Venkatesh, Thong, & Xu, 2012). Several researches tried to explore the user's intentions to use SSTs (Venkatesh et al., 2012; Wang, Lin, & Luarn, 2006) and the results revealed the multiple factors and attitude effects drive the user's behavioral intentions towards SSTs (Curran, Meuter, & Surprenant, 2003; Weijters et al., 2007). Martins et al. (2014) combined the UTAUT and perceived risk to explain the behavioral intentions and internet banking usage behavior. They found behavioral intention as an important factor in order to explain internet banking usage behavior. Demoulin and Djelassi (2016) investigated the intention to use and actual use of SSTs considering individual, system, and situational factors as drivers for the customers. Their findings unveiled that past usage, situational factors, and perceived behavioral control are the important elements of behavioral intention towards SSTs. On the grounds of above discussion, the second hypothesis is designed as under;

H2: SSTs service quality has positive and significant relationship with behavior Intentions.

#### **2.4. SST service quality and customer satisfaction**

Satisfaction contemplates the extent to which a consumer emanates positive sentiments to a service encounter (Lin & Hsieh, 2006). Satisfaction is concerned with customer's situation of being effectively compensated in a purchasing circumstance in exchange of certain cost (Al-Alak, 2009; Jeong, Cha, & Jang, 2016). Satisfaction is viewed adequate when the comparison is made between past buying and consumption practices with that of expected benefit from a product or service brand regarding its expected potential to fulfill consumer's objectives (Bergman & Klefsjö, 2010; Cronin et al., 2000; Loudon & Della Bitta, 1993). In accordance with the views of Oliver (1997), satisfaction is regarded as the "customer's gratifying reaction". It is basically an assessment with respect to the characteristics of product or service providing a pleasant degree of consumption-related experience. As stated by value percept theory, satisfaction is regarded as emotional response which is initiated through the process of cognitive evaluation (Parker & Mathews, 2001). However, Swan and Combs (1976) were first to indicate that satisfaction is associated by means of performance fulfillment prospects. Conversely, dissatisfaction arises at that point when performance related to some product or service remains under the expectations.

Grounded on expectations disconfirmation theory in e-services settings, customer satisfaction is seen to be an affective reciprocation and satisfaction can only be attained when a customer is confident that their expectations are met from e-service encounter (Chang & Chen, 2009). In order to

enhance productivity and improve customers satisfaction, companies integrate SSTs based convenient and novel service channels while serving the customers (Demirci Orel & Kara, 2014; Demoulin & Djelassi, 2016; Meuter et al., 2003; Rhett, Margaret, Robert, & Heather, 2002; Rust & Espinoza, 2006). In a customer technology interface perspective, lots of studies have revealed significant association among customer satisfaction and service quality. Wolfinbarger and Gilly (2003) discovered strong relation among service quality and customer satisfaction in internet retailing context. Moreover, Ribbink, van Riel, Liljander, and Streukens (2004) in the context of e-commerce industry recognized positive relation among electronic service quality and customer satisfaction. Wu (2011) also investigated the relationship among electronic service quality and customer satisfaction and found electronic service quality is positively related to customer satisfaction. In the context of electronics e-retailers. Bogicevic, Bujisic, Bilgihan, Yang, and Cobanoglu (2017) captured the airport SSTs' perceptions and found a positive impact of air ports SSTs on traveler's satisfaction. The scholars found positive association SSTs user's satisfaction, loyalty, and behavioral intentions (Demirci Orel & Kara, 2014; Lin & Hsieh, 2007; Zhao, Mattila, & Eva Tao, 2008). Demirci Orel and Kara (2014), by employing SSTQUAL, investigated that self-checkout service quality positively impacts loyalty through the indirect effect of customer satisfaction. Iqbal, Hassan, Sharif, and Habibah (2017) found the partial mediation of customer satisfaction among the relationship of service quality, corporate image, and customer loyalty. Therefore, following hypotheses has been proposed.

H3: SSTs service quality has positive and significant relationship with Customer Satisfaction.

H4: Customer satisfaction mediates the relationship between SST service quality and Behavioral Intentions.

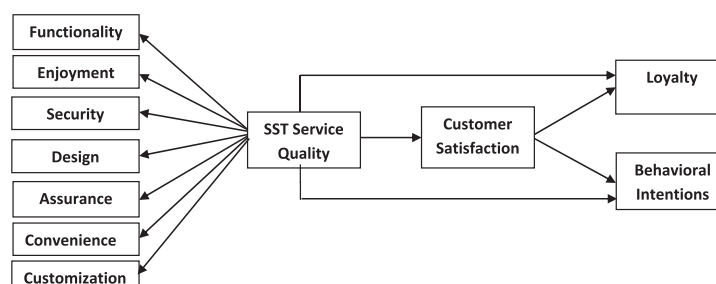
H5: Customer Satisfaction mediates the relationship between SST Service quality and Customer Loyalty.

The link between customer satisfaction and behavioral intention has been well established in prior literature (Burton, Sheather, & Roberts, 2003). Lin and Hsieh (2006) established that satisfaction and behavioral intentions are positively associated. Collier and Sherrell (2010) proved empirically that customer satisfaction form positive intentions towards SSTs experience regarding future use. Similarly, customer satisfaction has been found an important driver of customer loyalty. Deng et al. (2010) studied the customer satisfaction and loyalty determinants and found customer satisfaction along with trust and switching cost boost customer loyalty. Norizan and Nor (2010), in their empirical study, investigated the positive relationship between perceived service quality, satisfaction and loyalty in e-commerce settings. Anderson and Swaminathan (2011) through qualitative analysis identified the key factors driving satisfaction and customer loyalty in e-markets settings. Kasiri, Guan Cheng, Sambasivan, and Sidin (2017) analyzed the positive impact of customer satisfaction on loyalty in presence of technical and functional quality elements of service quality. Therefore, based on above discussion following hypotheses could be formulated (Figure 1).

H6: Customer Satisfaction has positive and significant relationship with Behavioral Intentions

H7: Customer Satisfaction has positive and significant relationship with Customer Loyalty.

**Figure 1. Hypothesized model.**



### 3. Data and methodology

#### 3.1. Sampling and data collection

The data were collected through the online survey by using emails and social media and purposive sampling technique was employed. The purposive sampling techniques is non-probability sampling technique considered as most effective when studying certain knowledgeable experts (Tongco, 2007). During the data collection process the ethical issues were well addressed by assuring the respondents about their response confidentiality. The users of the SSTs were respondents from the big cities of Pakistan. Big cities were targeted with the reason that technology advancement first comes to the big cities of any country. Table 1 provides all relevant information about the respondents' characteristics. The total number of respondents were 238 of which 167 (70%) were male and

**Table 1. Demographics characteristic**

Characteristics	Frequency	Percentage (%)
<i>Gender</i>		
Male	167	70
Female	71	30
<i>Age</i>		
18 – 25	130	54.6
26 – 35	90	37.8
36 – 55	18	7.5
<i>Marital status</i>		
Single	151	63
Married	87	37
<i>Education</i>		
School	7	3
Bachelor	94	39
Masters/MS	124	52
PhD	13	5
<i>Income level</i>		
Below 10,000	98	41
11,000–20,000	25	11
21,000–35,000	41	17
36,000–45,000	23	10
Above 45,000	51	21
<i>Level of computer knowledge</i>		
Basic	55	23
Average	153	64
Advance	30	13
<i>Self service technology users</i>		
ATM	233	23
Internet banking	170	17
Mobile banking	142	14
Self-check-In machine at Air Ports	31	3
Online bill payment	169	16
Online shopping	106	10
Online learning	166	16
Others	9	1

71(30%) were female. The majority of respondents were having Master's degree and the level of computer knowledge was 64% Average, 23% basic and 13% of the respondents were having advance computer knowledge. Moreover, marital status indicates that 63% of the respondents were single and 37% were married. After collecting the data, statistical analysis was performed to test the hypothesized relationship in the purposed model. The results of this study offer important practical and managerial implications to understand the customer attitude towards the use of SSTs.

### **3.2. Measurement scales (see Appendix A)**

The measurement scales were adapted from the previous studies. In order to measure the SST Service quality, we adapted the SSTQUAL (Lin & Hsieh, 2011) scale. In order to measure the Customer Satisfaction, scale has been adopted from three-item American Customer Satisfaction Index (ACSI) (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). To measure the Customer Loyalty and Behavioral Intention, we adopted the scale from Cronin et al. (2000). All items are measured by using the five-point Likert type scale.

## **4. Data analysis and results**

### **4.1. Factor analysis**

Table 2 shows the factor analysis of the independent variables named Functionality (FUN) which consists of 5 items (two items were removed due to high cross loading), Enjoyment (ENJ) which consists of 4 items (two items were removed due to high cross loading), Assurance (ASUR) which consists of 2 items, Convenience (CONVEN) which consists of 3 items, Design (DESGN) which consists of 2 items, Security (SEC) which consists of 2 items and Customization (CUSTOM) which consists of 3 items. The value of Kaiser-Meyer-Olkin (KMO) measure of sample adequacy is 0.922 and the value of total variance explained is 71.437% which is significant and acceptable.

Table 2 also shows the factor analysis of the mediating variable named customer satisfaction (CS) and the values of KMO measure of sample adequacy and total variance explained are 0.664 and 63.937%, respectively, which are significant and acceptable. The factor solution of dependent variables named loyalty (LOY) and Behavior Intentions (BI) is also shown in Table 2. The values of KMO measure of sample adequacy and total variance explained for loyalty (LOY) are 0.845 and 64.349%, respectively, and the values of KMO measure of sample adequacy and total variance explained for Behavioral Intentions (BI) are 0.665 and 64.469%, respectively, which are significant and acceptable.

### **4.2. Correlation and reliability analysis**

Table 3 provides the results of correlation analysis performed among the variables studies. Results reveal that the Independent variables SST Quality Dimensions—Functionality (FUN), Enjoyment (ENJ), Assurance (ASUR), Security (SEC), Design (DESGN), Convenience (CONVEN) and Customization (CUSTOM), Mediating variable named Customer satisfaction (SAT) and Dependent variable named Loyalty (CL), and Behavior Intentions (INTENTION) are positively and significantly correlated with each other. Moreover, the values of Cronbach's alpha are given in the Table 2. All the variables have reliable and acceptable Cronbach's alpha values i.e.  $\alpha = 0.747$  for Functionality (FUN),  $\alpha = 0.655$  for Enjoyment (ENJ),  $\alpha = 0.666$  for Security,  $\alpha = 0.65$  for Design (DESIGN).  $\alpha = 0.657$  for Assurance,  $\alpha = 0.757$  for Convenience,  $\alpha = 0.806$  for Customization,  $\alpha = 0.716$  for Customer Satisfaction,  $\alpha = 0.683$  for Loyalty, and  $\alpha = 0.723$  for Behavioral Intentions.

### **4.3. Structural model**

To test the relationships between SST Service Quality, customer satisfaction, loyalty and Behavior Intentions structure equation modeling is applied by using LISREL. Table 4 shows that structural model has degree of freedom 292. In order to access the model, first of all we have to look at the model fit indices (Hoyle, 1995). According to Hu, Bentler, and Kano (1992) "the  $\chi^2$  values evaluate the extent of divergence between the sample and fitted co-variances matrices". Barrett (2007) claims that "a good model fit would present an insignificant result at 0.05 threshold level". The table 4

**Table 2 Factor analysis**

	Independent variables							Dependent variables	
	Customization	Functionality	Assurance	Convenience	Enjoyment	Design	Security	Mediating variable	Loyalty
								Customer Satisfaction	Behavioral Intentions
								KMO = 0.664 TVE = 63.937	KMO = 0.845 TVE = 64.349
CUSTOM1	0.795								
CUSTOM2	0.770								
CUSTOM3	0.748								
FUN4		0.805							
FUN1		0.646							
FUN5		0.569							
ASUR1			0.783						
ASUR2			0.777						
CONVEN1				0.847					
CONVEN2				0.570					
CONVEN3				0.495					
ENJ2					0.763				
ENJ3					0.544				
SEC1						0.818			
SEC2						0.661			
DESIGN2							0.749		
DESIGN1							0.504		
CS2								0.839	
CS3								0.790	
CS1								0.768	
LOY3									0.837
LOY4									0.718
LOY5									0.632
BI1									0.838
BI2									0.735
BI3									0.629
	$\alpha = 0.806$	$\alpha = 0.747$	$\alpha = 0.657$	$\alpha = 0.746$	$\alpha = 0.655$	$\alpha = 0.666$	$\alpha = 0.653$	$\alpha = 0.716$	$\alpha = 0.683$ $\alpha = 0.723$

**Table 3. Correlation analysis**

	FUN <sup>a</sup>	ENJ <sup>b</sup>	SEC <sup>c</sup>	ASUR <sup>d</sup>	DESIGN <sup>e</sup>	CONVEN <sup>f</sup>	CUSTOM <sup>g</sup>	SAT <sup>h</sup>	CL <sup>i</sup>	INTENTION <sup>j</sup>
FUN	1									
ENJ	0.562**	1								
SEC	0.553**	0.492**	1							
ASUR	0.453**	0.514**	0.405**	1						
DESIGN	0.563**	0.524**	0.552**	0.498**	1					
CONVEN	0.558**	0.491**	0.371**	0.384**	0.544**	1				
CUSTOM	0.550**	0.507**	0.493**	0.384**	0.531**	0.542**	1			
SAT	0.534**	0.482**	0.486**	0.375**	0.527**	0.467**	0.641**	1		
CL	0.435**	0.382**	0.356**	0.273**	0.426**	0.465**	0.501**	0.493**	1	
INTENTION	0.468**	0.439**	0.311**	0.309**	0.401**	0.431**	0.508**	0.548**	0.609**	1

<sup>a</sup>Functionality.

<sup>b</sup>Enjoyment.

<sup>c</sup>Security.

<sup>d</sup>Assurance.

<sup>e</sup>Design.

<sup>f</sup>Convenience.

<sup>g</sup>Customization.

<sup>h</sup>Customer satisfaction.

<sup>i</sup>Loyalty.

<sup>j</sup>Behavioral intentions.

\*\*Refers to significance at 5%.

**Table 4. Fit indices**

$\chi^2$	Df	$\chi^2/df$	RMSEA	NFI	NNFI	CFI	GFI	AGFI	p-value
436.60	292	1.495	0.046	0.95	0.98	0.98	0.88	0.85	0.0000

provides the  $\chi^2$  value (436.60) which is significant. To adjust the sample size outcome, as  $\chi^2$  value is responsive towards sample size,  $\chi^2/df$  is used to adjust the sample size effect. After the adjustment,  $\chi^2/df$  specified that model has good fit for SST Service Quality, customer satisfaction, loyalty and Behavior Intentions.

Most of the model's Incremental fit indices i.e. Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI), do not use  $\chi^2$  in its unrefined structure but compare the  $\chi^2$  values to its base line model. The NFI provides "a sign of how the target model compares with the baseline model". It can be seen from the table 4 that values of NFI (0.95), NNFI (0.98), and CFI (0.98) exceed the standard 0.90 (Medsker, Williams, & Holahan, 1994). A major drawback to NFI index as stated by Mulaik et al. (1989) and Bentler (1990) is that "it is sensitive to sample size, underestimating fit for samples less than 200", and "it is therefore not recommended to be exclusively relied on" (Kline, 2005). This problem was remedied by the Non-Normed Fit Index (NNFI, also recognized as the Tucker-Lewis index), an index that chooses simpler models. The model's GFI values demonstrate the variance and covariance anticipated by model matrix.

Moreover, GFI and AGFI values (0.88, 0.85) signify a good model fit. "In addition to those incremental model fit indices, RMSEA is also used to assess model fit. The Root Mean Square Error of Estimation (RMSEA) tells us that "how well the model, with unknown but optimally chosen parameter estimates would fit the population's covariance matrix" (Byrne, 2013). "A cut-off value close to 0.06 (Hu & Bentler, 1999) or a stringent upper limit of 0.07 (Steiger, 2007) seems to be the general

consensus amongst authorities in this area". Therefore, the model RMSEA value (0.046) shows a good fit. So, taking all these measures into consideration, this study concludes that SST Service Quality, customer satisfaction, loyalty and Behavior Intentions model has good fit with data.

The second step in assessing the hypothesized model is to access the adequacy of parameter estimates (Hoyle, 1995). The most important parameters in this regard are standardized factor loadings (SL), Standard Error (S.E), corresponding *t*-value and *R*<sup>2</sup>. The path parameters of Standardized coefficients ( $\beta$ ) are estimated by using the Maximum Likelihood Method (MLE). Table 5 and fig. 2 & 3 shows the parameters of Maximum Likelihood estimation (MLE) that are significant ( $p < 0.001$ ) and moderate in scale.

As shown in Table 5, positive and significant relationship exists between SST service quality and customer satisfaction ( $\beta = 0.86$ ,  $t = 8.65$ ,  $R^2 = 0.74$ ). The relationship between SST service quality and loyalty is positive and significant ( $\beta = 0.83$ ,  $t$ -value = 8.34,  $R^2 = 0.69$ ). Similarly, SST service quality and behavioral intention is also found positive and significant having ( $\beta = 0.69$ ,  $t$ -value = 7.64, and  $R^2 = 0.48$ ). The customer satisfaction and behavioral intention link is also found positive and significant ( $\beta = 0.78$ ,  $t = 7.63$ ,  $R^2 = 0.56$ ). The results also support the positive and significant relationship between customer satisfaction and loyalty ( $\beta = 0.75$ ,  $t = 6.37$ , and  $R^2 = 0.60$ ). Based on the results presented in Table 5 the hypotheses 1, 2, 3, 4, and 5 are supported hence proved that SST service quality positively and significantly influence customer satisfaction, loyalty and behavioral Intentions.

#### 4.4. Mediation analysis

To observe the extent of influence of independent variable (i.e. SST Service quality) in presence of mediator (i.e. Customer Satisfaction) on dependent variable (i.e. Loyalty and Behavioral Intentions), mediation analysis was performed. To test the mediation of customer satisfaction, Baron and Kenny (1986) method was followed and path analysis was carried out in this regard. Baron and Kenny (1986) suggested a three-step process to test the mediation which states (1) independent and mediating variables must be significant with each other, (2) independent and dependent variables must have significant relationship, (3) when mediator is introduced, the impact of independent variable on dependent variable must be significantly reduced. On mediator introduction, if independent and dependent variables have significant relationship than mediation is partial otherwise it is full mediation.

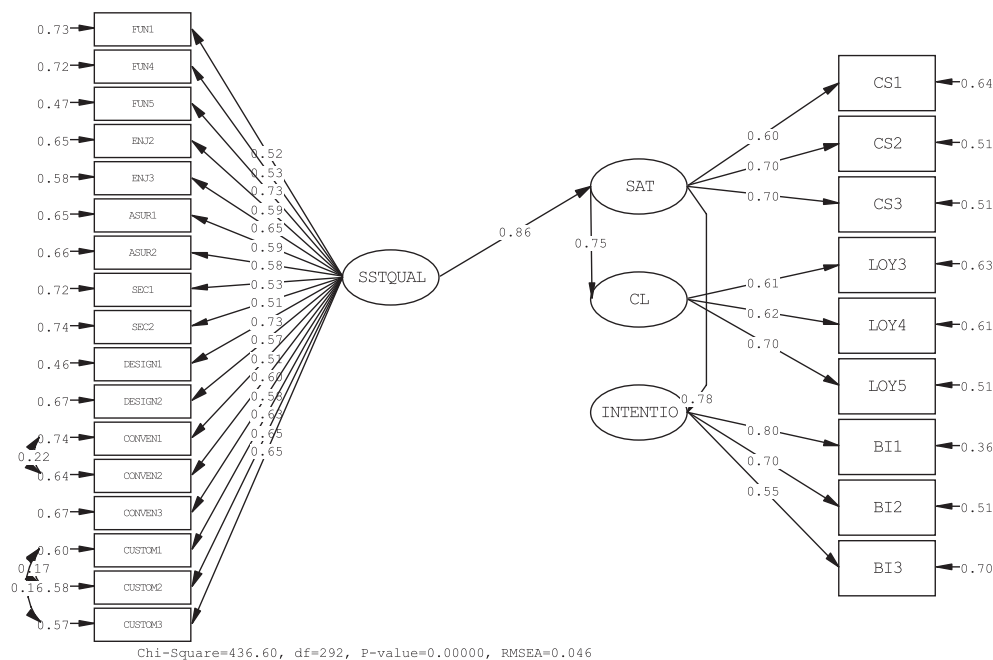
It can be observed from results reported in Panel A of table 6 that independent variable SST Service Quality have positive and significant relationship with dependent variable Behavioral Intentions ( $\beta = 0.69$ ,  $t = 7.64$ ). Similarly, independent variable SST Service Quality has positive and significant relationship with mediating variable; customer satisfaction ( $\beta = 0.86$ ,  $t = 8.65$ ). In third step, when mediating variable customer satisfaction is introduced, the impact of independent variable (SST Service Quality) on dependent variable (Behavioral Intentions) reduces in magnitude but remains significant ( $\beta = 0.40$ , 0.36,  $t = 1.99$ ), hence partial mediation of customer satisfaction is proved and therefore H6 is supported (Figures 2 and 3).

Panel B of Table 6 shows that independent variable SST service quality have positive and significant relationship with dependent variable Loyalty ( $\beta = 0.83$ ,  $t = 8.34$ ). Similarly, independent variable SST Service Quality has positive and significant relationship with mediation variable customer

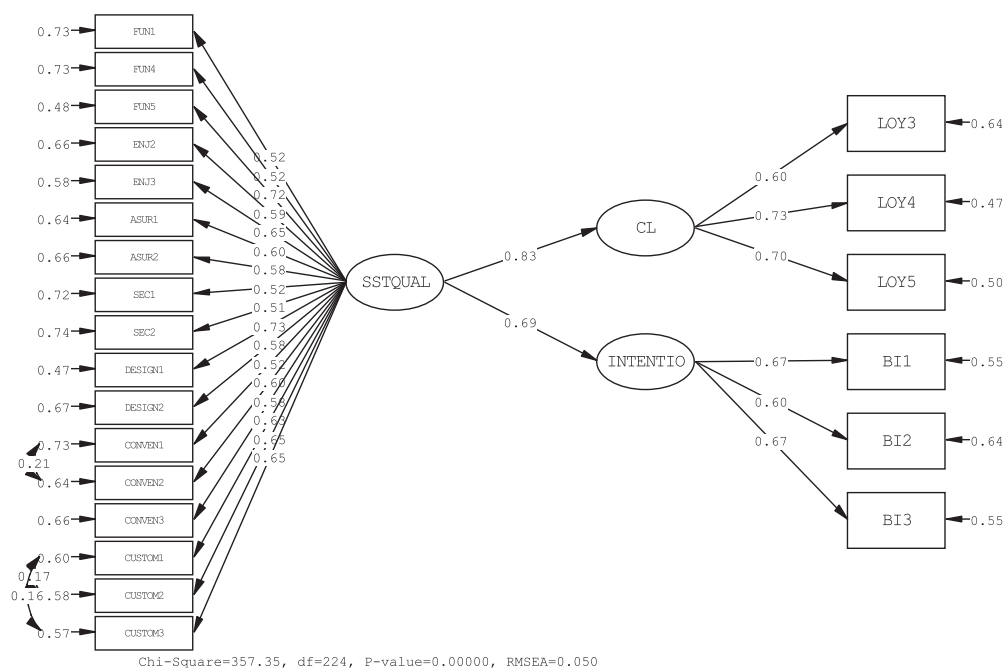
**Table 5. Structural model results**

Structural paths	<i>B</i>	<i>t</i> -value	<i>p</i> -value	<i>R</i> <sup>2</sup>
SSTQUAL → INTENTON	0.69	7.64	<0.001	0.48
SSTQUAL → CL	0.83	8.34	<0.001	0.69
SSTQUAL → CS	0.86	8.65	<0.001	0.74
SAT → INTENTON	0.78	7.63	<0.001	0.56
SAT → CL	0.75	6.37	<0.001	0.60

**Figure 2. Structural model Tested.** Note: SAT = Customer Satisfaction, CL = Loyalty, INTENTION = Behavioral Intentions, SSTQUAL = seven dimensions measure of self-service technology.



**Figure 3. Structural model tested.**



satisfaction ( $\beta = 0.86$ ,  $t = 8.65$ ). In the third step, when mediating variable customer satisfaction is introduced, the impact of independent variable (SST Service Quality) on dependent variable (Loyalty) reduces in magnitude but remains significant ( $\beta = 0.48$ ,  $0.39$ ,  $t = 2.17$ ), hence partial mediation of customer satisfaction is proved. Therefore, H7 of this study is supported.

**Table 6. Mediation analysis**

Steps	Variables	B	t-value	p-value
<i>Panel A: SSTs service quality-customer satisfaction-behavioral intention</i>				
1	IV: SST Service quality	0.69	7.64	<0.01
	DV: Behavioral intentions			
2	IV: SST Service quality	0.86	8.65	<0.01
	MV: Customer satisfaction			
3	IV: SST Service quality	0.40	1.99	<0.05
	MV: Customer satisfaction	0.36		
	DV: Behavioral intentions			
<i>Panel B: SSTs service quality-customer satisfaction-loyalty</i>				
1	IV: SST Service quality	0.83	8.34	<0.01
	DV: Loyalty			
2	IV: SST Service quality	0.86	8.65	<0.01
	MV: Customer satisfaction			
3	IV: SST Service quality	0.48	2.17	<0.05
	MV: Customer satisfaction	0.39		
	DV: Loyalty			

## 5. Discussion and conclusion

SSTs have developed into a vital aspect in consumer's day to day lives. SSTs have been widely accepted by the people around the world and this trend is at an ever-increasing rate. As SSTs grow to be an important trend in service deliverance, it has become crucial to investigate the effects of SST service quality on the customer satisfaction, loyalty, and behavioral intentions.

As this study is based in a region (Pakistan) where the technology acceptance rate is high, and the country itself has experienced a huge penetration of Personal Computers (PCs), Laptops, Smart phones, and tablets etc. Moreover, the Internet penetration rate is high in Pakistan as compared to last five years. The introduction of high speed mobile networks i.e. 3G and 4G LTE have also played a vital role in the adoption of technology mediated services. So, the consumers have higher intention to use the technology mediated encounters. They have high degree to adopt change, so they always prefer to get their services done through new and exciting ways. In this regards they always want to be served through the way in which they feel excitement, confront, and enjoyment. In doing so, they prefer to use SST as a mean to get their services done. This research provides the practical insights for the service firms to employee technology mediated interfaces to better serve their customers.

In current study, data were collected from the users of the SST and target respondents were selected from big cities of Pakistan. The current study utilizes the SSTQUAL scale (Lin & Hsieh, 2011) to determine the service quality of SSTs in emerging Pakistani service sector context. The results of this study confirm that the younger customers have higher tendencies to utilize the SSTs. Confirmatory Factor Analysis (CFA), Reliability Analysis, and structural equation modeling were used to validate the conceptual model among the constructs. Factor analysis confirms the presence of seven dimensions of the SSTs service quality. The reliability analysis reveal that all constructs have acceptable level of reliability scores.

Further, structural equation modeling results show the positive and significant relationship between SSTs service quality and customer loyalty. The results elaborate that higher the service quality offered by SSTs, more it would enhance the customer loyalty towards the SSTs. The findings are in accordance with Ju Rebecca Yen and Gwinner (2003) who suggested a conceptual frame work and proposed the positive link between Internet SSTs, customer satisfaction, and loyalty. Similarly,

Ganguli and Roy (2011) examined the effects of generic service quality dimensions in technology based banking context and found positive impact of service quality dimensions on customer satisfaction and customer loyalty.

Results also confirm the positive and significant relationship between SSTs service quality and behavioral intentions. These results are consistent with previous empirical studies presenting the positive link between SSTs service quality and behavioral intentions (Curran et al., 2003; Kim & Qu, 2014; Vlachos & Vrechopoulos, 2008; Yeo, Goh, & Rezaei, 2017). The findings are consistent with Lin and Hsieh (2007) who found the influence of technology readiness on SSTs users' satisfaction and behavioral intention. The findings are also consistent with Spiros, Sergios, and Vlasis (2010) who found that e-service quality positively influences the behavioral intention through indirect effect of satisfaction. The results are also positive and significant in the relationship between SSTs service quality and customer satisfaction. The results elaborate that high quality of SSTs service quality leads to the higher level of customer satisfaction. (Ganguli & Roy, 2011; Johnson et al., 2008; Yen, 2005). Weijters et al. (2007) explored the SST usage antecedents and consequences and found their impact on customer satisfaction. The findings are comparable with Wang, So, and Sparks (2017) who determine technology readiness as personality trait in a cross-country investigation and proved the relationship of satisfaction and future behavior with travel technologies.

From the Structural path analysis, it can be observed that customer satisfaction partially mediates the relationship between SST service quality and customer behavioral intentions. Moreover, results also provide evidence that customer satisfaction partially mediates the relationship between SSTs service quality and customer loyalty. These results are in accordance with Demirci Orel and Kara (2014), who find that self-check-out systems (SCS) at retail grocery store's service quality has positive effects on customer loyalty through the mediating impact of customer satisfaction. Moreover, Homburg and Giering (2001) also investigated the relationship between customer satisfaction and customer loyalty and find that customer satisfaction and customer loyalty are positively and significantly related in the presence of some other moderating variables.

From the structural model, results also showed that, customer satisfaction is positively and significantly associated with SSTs users' behavioral intentions. Finally, customer satisfaction is positively and significantly associated with SSTs users' Loyalty. Prior researches have also investigated the link between consumer satisfaction by means of SSTs and behavioral intentions and have stated comparable findings (Collier & Sherrell, 2010; Hsu, Chang, & Chen, 2012; Lin & Hsieh, 2006; Zhao et al., 2008). Gounaris, Tzempelikos, and Chatzipanagiotou (2007) found the positive link between customer perceive value, satisfaction, loyalty, and behavioral intentions in their empirical investigation. Iqbal et al. (2017) also found the positive association between service quality and loyalty through customer satisfaction. Gounaris et al. (2010) found positive impact of e-service quality, satisfaction, and behavioral intentions.

Now in this digital environment, service firms are increasingly using the new technologies to provide fast and easy service interface for their customers. In this way banks are providing the internet and mobile banking services to their customers where they can handle their financial transactions by themselves while sitting anywhere i.e. in their home or offices. Moreover, the Automated Teller machines are installed by banks to conveniently serve their customers. By using ATM, customers feel greater sense of independence to carry out the transactions i.e. funds transfer, online bill payment and cash disbursement etc. In this regard they don't have to wait for the long time for the service personnel of that organization as the services are now provided by the technological interface rather than the employees of the firm. Now the customers are not supposed to visit the firm during its operating hours rather they can access these services by using that technological interface in 24 h of a day and 7 days in a week. Similarly, airline firms also have introduced the self-check-in machine at air-ports through with customer can easily reserve their seats, can check the flight schedule etc. and all information regarding the billings and rate planes. The role of air travel agents has been now replaced by the self-check-in machine at air ports that results in the saving of the traveling agent

commission and other unnecessary expenses. So, the implementation of SSTs has resulted in customer facilitation, cost reduction and a convenient service environment for the users of SSTs. Different companies have provided the facilities of online shopping from their web. In this way, they have facilitated their segment of customers who don't have time to visit their shop. Moreover, pure e-commerce business also exists who sell their products online through technological interface. All the information regarding product, price, its type and quality have been provided on the website. Customers can purchase these products by sitting in their home or office etc. and payments have also been made online by the means of debit or credit card and firm delivers the order of the through some courier service or they have their own delivery system. In this regard, a greater flexibility in term of time and place exists and customers have easy and convenient ways to shop without spending their additional time.

### **5.1. Theoretical implications**

The results of this study provide important contributions in existing literature. The major contribution of this study is providing the empirical evidence of mediating impact customer satisfaction between SSTs service quality, customer loyalty, and behavioral intentions. This posit in term of why and how SSTs service quality have impact on loyalty and behavioral intentions. In this regard, the study adds the literature of SST service quality about this relationship. Hence, the suggested model provides important insights in the SSTs literature in service marketing research, as this relationship in perspective of developing countries i.e. Pakistan has not been investigated previously. It is evident from previous studies that customer satisfaction is taken as mediating variable between service quality and SST service quality settings, and the results of those studies showed positive relationship between SST service quality and loyalty and behavioral intentions. So, the results of this study further confirm the relationship explored previously. Moreover, this study provides evidence by empirically testing the SSTQUAL scale (Lin & Hsieh, 2011) in Pakistani context. In this way, the results of this study validate the dimensionality of SSTQUAL with all its seven dimensions in a different cultural settings i.e. Pakistani service sector.

### **5.2. Practical and managerial implications**

The results of this study offer important practical and managerial implications to understand the customer attitude towards the use of SSTs in term of Loyalty and Behavioral Intentions. In this regard, it is important for the service organizations to pay intensive efforts in understanding the factors that might create satisfaction or dissatisfaction among the customers using such kind of the systems. Firms must maintain high standards of security and privacy measures to attain the greater confidence over the technological interface. Similarly, more the SST service quality, higher the intentions of the consumers to adopt the SSTs. The service firms must take initiative to drive positive intentions of the customers towards the SSTs through consistent monitoring and evaluation. These steps could help service firms to provide necessary information regarding the improvement in the service delivery process through use of SSTs. Firms should also employ those methods which provide greater autonomy to their customers and the technological interface must have greater ability to provide the customized services to their customers.

The results of this study also provide insights for the service firms located in Pakistan to invest more into new technologies. As the future of the service firms depends largely on types of technological innovation they bring to better serve their customer. As the coming era is the technological era, the firms must pay intensive attention to improve their customer experience using advanced technological interface. Moreover, the reputed service firms should also take initiatives to improve the technological literacy among their customer and should take aggressive steps to let their customer know about the system they have introduced, or they are going to introduce soon. This would be an important factor for the success of that firm and it will also improve the customer loyalty and positive behavioral intentions.

### 5.3. Limitations and future research directions

This study has certain limitations which may have effects on results generalizability. The major limitation is concerned with the sample selection. As the data for this study were collected from the major big cities of Punjab Province of Pakistan while customer located in other provinces may have different attitude regarding the use of these kind of systems So, the results provide limited insights to know the customer attitudes in term of loyalty and behavioral intentions regarding the use of Self Service technology systems. So, the additional research should be initiated to closely observe the behavior of the customer located in some other regions as well. As this study was purely quantitative in nature, certain limitations regarding the survey based data collection exist, further research should be carried out by the means of employing different methodological approaches i.e. mixed methodology and qualitative approach. Additionally, some other variables i.e. corporate image of the service provider should be employed in the current model as a moderating or as a mediator variable for the future research purpose.

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## Appendix A. Survey questionnaire

### Functionality

FUN-1. I can get my service done with the firm's SST in a short time

FUN-2. The service process of the firm's SST is clear

FUN-3. Using the firm's SST requires little effort

FUN-4. I can get service done smoothly with the firm's SSTs

FUN-5. Each service item/function of the SST is error- free

### Enjoyment

ENJ-1. The operation of the firm's SSTs is interesting

ENJ-2. I feel good being able to use the SSTs

ENJ-3. The firm's SSTs have interesting additional functions

ENJ-4. The firm's SSTs provide me with all relevant information

### Security/privacy

SEC-1. I feel safe in my transactions with the firm's SSTs

SEC-2. A clear privacy policy is stated when I use the firm's SSTs

### Assurance

ASU-1. The firm providing the SST is well-known

ASU-2. The firm providing the SST has a good reputation

### Design

DES-1. The layout of the firm's SST is esthetically appealing

DES-2. The firm's SST appears to use up-to-date technology

### Convenience

CON-1. The SST has operating hours convenient to customers

CON-2. It is easy and convenient to reach the firm's SST

CON-3. It is easy and convenient to use firm's SST

### Customization

CUS-1. The firm's SST understands my specific needs

CUS-2. The firm's SST has my best interests at heart

CUS-3. The firm's SST has features that are personalized for me

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**Customer Satisfaction:**

CS-1. Overall, I am satisfied with the self-service technologies offered by the firm

CS-2. The self-service technologies offered by the firm exceed my expectations

CS-3. The self-service technologies offered by the firm are close to my idea

**Loyalty**

LOY-1. I would use this SST again

LOY-2. I would recommend this SST to any of my friends

LOY-3. If I need to use again, I would come to the SST

LOY-4. I would speak positively about this SST to others

LOY-5. This SST is my preferred choice

**Behavioral Intentions (BI)**

BI-1. The probability that I will use this self-service technology again is high

BI-2. The likelihood that I would recommend this self-service technology to a friend is high

BI-3. If I had to do it over again, I would make the same choice

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