Impact of self-service technologies in retail banking on cross-buying and word-of-mouth

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Abstract

Purpose – The purpose of this research is to study the influence of self-service technologies (SST) on cross-buying and word-of-mouth. This study tests the direct impact of perceived usefulness and perceived ease of use on cross-buying and word-of-mouth. Further, this study also tests the mediating role of e-service quality for the aforementioned relationships. The study has been undertaken in the context of retail banking in an emerging market, India.

Design/methodology/approach – A cross-sectional survey research design was used to collect data from 235 customers of retail banks in India. The data were analysed using IBM AMOS 23.0 taking structural equation modelling (SEM) approach to test the hypothesised relationships.

Findings – The findings of the study suggest that both perceived usefulness and perceived ease of use influence cross-buying and word-of-mouth. E-service quality partially mediates the relationship between perceived usefulness on cross-buying and word-of-mouth. E-service quality partially mediates the relationship between perceived ease of use and cross-buying but does not mediate the relationship between perceived ease of use and word-of-mouth.

Practical implications – This study shows that managers need to focus on perceived usefulness and perceived ease of use in order to ensure cross-buying and promote word-of-mouth recommendations by customers. Also, managers will be able to enhance cross-buying and promote word-of-mouth recommendations if e-service quality delivered by the bank is perceived to be good by customers.

Originality/value – This study contributes to the literature on SST and offers empirical evidence to show that perceived usefulness and perceived ease of use can influence cross-buying as well as word-of-mouth. Previous studies have shown that SST usage can foster loyalty, and the present study offers new evidence on the outcomes of behavioural loyalty. The study has been undertaken through responses taken from retail bank customers in an emerging market. This study also contributes to the literature on SST by testing the mediating effect of e-service quality for the above-mentioned relationships.

Keywords Perceived usefulness, Perceived ease of use, Word-of-mouth, Cross buying, e-service quality, Banking, India

Paper type Research paper

Introduction

Self-service technologies (SSTs) have made service delivery for customers cost-effective, convenient and ubiquitous (Wirtz and Zeithaml, 2018). In industries like banking, there is widespread use of SSTs, but even if the business benefits have been delivered, the customers' point of view with respect to SSTs is different from the perspective of business managers (Kimes and Collier, 2015). While there is widespread adoption of SSTs, interactions between customers and employees have been replaced by customers' interactions with SSTs, and consequently, the behavioural intentions of customers need further research (Giebelhausen *et al.*, 2014; Robertson *et al.*, 2016).

Studies have shown that SST usage can lead to satisfaction, trust and loyalty (Nijssen *et al.*, 2016; Robertson *et al.*, 2016). The mandatory use of SSTs by some service providers and the enhanced e-service quality have led to loyalty among SST users (Reinders *et al.*, 2015; Theodosiou *et al.*, 2019). However, studies on the consequences of SST usage on behavioural loyalty are lacking in the literature. Customers show behavioural loyalty through cross-buying and word-of-mouth (Ramaseshan *et al.*, 2017). Also, e-service quality of SSTs influences customer loyalty (Theodosiou *et al.*, 2019). The present study aims to investigate

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the consequence of SST usage on cross-buying and word-of-mouth as well as the mediating effect of e-service quality.

In the emerging markets, SSTs have become a critical component in services like banking. Banks can exploit economies of scale while ensuring easy access to banking services for customers through SSTs (Roy *et al.*, 2017). Previous studies have shown that SST usage results in greater exposure to a bank's services, and technology adoption has an influence on behavioural intentions of customers (Nijssen *et al.*, 2016). Banks have been taking efforts at getting customers to cross-buy other products that are not a part of the customer's portfolio (Evanschitzky *et al.*, 2017). Further, in today's highly interconnected world dominated by social media, word-of-mouth holds strategic importance for services like banking (Tung and Carlson, 2015). Likewise, e-service quality holds immense importance for services that rely on SSTs for delivering business value (Doherty *et al.*, 2015).

The technology acceptance model suggests that SST usage is driven by perceived usefulness (PU) and perceived ease of use (PEU) (Abdullah and Ward, 2016; Davis, 1989). Studies have shown that PU and PEU influence the behavioural intentions of customers (Dwivedi *et al.*, 2019). Therefore, the objective of the current study is to investigate the impact of PU and PEU on cross-buying, word-of-mouth and the mediating role of e-service quality.

The current study aims to contribute to the literature on SSTs in several ways. The extant literature suggests that PU and PEU have helped in the adoption of banking services through the use of SSTs (Alalwan *et al.*, 2016; Roy *et al.*, 2017). While previous studies have shown that cross-buying and word-of-mouth are influenced by satisfaction, trust and loyalty, the findings of the present study show the influence of PU and PEU on cross-buying and word-of-mouth in the context of retail banking, and thereby offers new findings for the literature on SSTs. Further, while previous studies have shown that PU and PEU can enhance the e-service quality (Collier and Barnes, 2015), the current study provides empirical evidence to show that e-service quality partially mediates the relationships of PU with cross-buying and word-of-mouth as well as PEU's relationship with cross-buying. The current study has been undertaken in the context of retail bank customers in an emerging market. While there has been rapid growth in emerging markets, particularly with respect to technological innovations for customers, the characteristics and behaviour of emerging market customers differ from those in developed markets, implying that the consequences of SST usage could be different for emerging market customers (Shankar and Narang, 2019; Sun *et al.*, 2019). Most studies on SSTs have focused on customers in developed markets, and the current study aims to add to the growing literature on SSTs in the context of emerging markets.

The remainder of the paper is organised as follows. First, the theoretical background and research hypotheses are presented. Next, the research methodology is explained along with the data analysis and results. Finally, the theoretical and managerial implications are presented along with the conclusions, limitations and future research directions.

Theoretical background and hypotheses development

SSTs have been defined as "technological interfaces that enable consumers to produce a service independent of direct service employee involvement" (Chen *et al.*, 2018; Meuter *et al.*, 2000, p. 50). The technology acceptance model suggests that the attitude, use intention and actual use of a technology-based system are based on the PU and PEU (Davis, 1989; Wu and Chen, 2017). PU has been defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320), while PEU has been defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320).

Early studies on SSTs showed that the enhanced service quality and lesser costs resulted in the rapid adoption of SSTs by customers of various services like banking (Dabholkar,

1996). The customers' readiness to adopt SSTs, coupled with the growing penetration of Internet-enabled mobile devices like smartphones, has prompted many service providers to make SST usage mandatory for customers (Reinders *et al.*, 2015). While a lot of the literature on SSTs is focused on adoption and attitude towards SSTs, there is a lack of research pertaining to the consequences of SST usage, which is an important line of enquiry (Robertson *et al.*, 2016). Studies on the consequences of SST usage have focused on customer satisfaction and trust (Robertson *et al.*, 2016), service quality (Jun and Palacios, 2016), customer relationship and loyalty (Nijssen *et al.*, 2016), service failure and recovery (Collier *et al.*, 2017) and brand engagement (Khan *et al.*, 2016).

The usage of SSTs has an influence on loyalty. Though some studies have shown that technology can be complicated and customers may find it a challenge to complete their tasks (Giebelhausen *et al.*, 2014), other studies have mentioned that customers feel more empowered and show increased participation (Djelassi *et al.*, 2018). In the context of loyalty behaviours related to SSTs, self-efficacy and satisfaction can drive loyalty (Ozturk *et al.*, 2016; Robertson *et al.*, 2016). Also, the e-service quality of SSTs influences customer loyalty (Theodosiou *et al.*, 2019).

Behavioural loyalty outcomes include cross-buying and word-of-mouth (Ramaseshan *et al.*, 2017). However, studies on consequences of SST usage have not focused on behavioural loyalty outcomes like cross-buying and word-of-mouth by customers. SSTs offered by service providers have made it easy and convenient for customers to search and buy more products (Kumar and Kashyap, 2018). While customers have shown interest in cross-buying, but whether SSTs can influence cross-buying needs further research (Estrella-Ramon, 2017). In the present context, customers share their opinions and recommendations based on SST usage, and these are taken seriously by others (Singh *et al.*, 2020). Therefore, word-of-mouth plays an important role in shaping the attitude of customers towards SSTs (Dwivedi *et al.*, 2019).

With respect to SSTs, PU and PEU shape the behavioural intentions of customers (Bailey *et al.*, 2017; Dwivedi *et al.*, 2019). The role of PU and PEU has been to offer enhanced convenience to customers and improve the self-efficacy with respect to use of SSTs (Ozturk *et al.*, 2016). The PU and PEU have helped in the widespread adoption of SSTs across industries like banking, retailing and hospitality (Bailey *et al.*, 2017; Demoulin and Djelassi, 2016).

For services like banking, PU and PEU have enhanced the effectiveness for bank transactions and ensured easy adoption of SSTs in emerging markets like India (Roy *et al.*, 2017). In the present context, banks are making every effort to reduce costs by promoting the use of SSTs, whereby the interactions between the bank's employees and the customers are minimal (Vakulenko *et al.*, 2018). Though some studies have raised concerns about the apprehensions of customers with regard to SSTs, recent studies have shown that increased levels of trust are responsible for the enhanced use of SSTs in services like banking (Szopinski, 2016). Traditionally, customers visited the bank branches and had face-to-face interactions with the bank's staff. The direct interactions with customers provided opportunities for the banks to interpret the unfulfilled needs of customers and offer additional products or ask for referrals to acquire new customers. On the other hand, cross-buying is of strategic importance for banks, and word-of-mouth has a strong influence on retail bank customers (Mukerjee, 2018; Tung and Carlson, 2015).

Cross-buying: When an existing customer purchases additional products from the same service provider, it is referred to as cross-buying. Relationship marketing theory suggests that when marketers are able to build strong relationships with customers, it can lead to cross-buying (Evanschitzky *et al.*, 2017). Cross-buying offers the consumer the convenience of one-stop-shopping which helps to reduce the total cost for customers as well as for banks (Mukerjee and Shaikh, 2019). The use of SSTs has resulted in firms taking the efforts to

cultivate online relationships and creating personalised offers to get customers to cross-buy other products (Steinhoff *et al.*, 2018). In the context of banking, satisfaction, image, perceived value and trust can influence the cross-buying intentions of bank customers (Tung and Carlson, 2015).

Customers using SSTs are more loyal since PU and PEU make the banking experience more useful and easy to use (Kucukusta *et al.*, 2015). Further, banks have been creating personalised cross-buying offers based on the preferences of customers, and these can influence cross-buying (Behera *et al.*, 2020). Also, loyalty leads to cross-buying behaviour among customers (Ramaseshan *et al.*, 2017). Therefore, it can be said that PU and PEU can induce cross-buying. On the basis of the aforementioned arguments, the following hypotheses are proposed:

H1. PU will positively influence cross-buying

H2. PEU will positively influence cross-buying

Word-of-mouth: Word-of-mouth has been defined as "the act of consumers providing information about goods, services, brands, or companies to other consumers" (Rosario *et al.*, 2016, p. 297). Studies on word-of-mouth have focused on word-of-mouth valence, word-of-mouth volume, influence of tie-strength on word-of-mouth senders' and receivers' behaviours, as well as the antecedents and consequences of word-of-mouth. The extant literature shows that word-of-mouth is influenced by satisfaction, loyalty, perceived value and customer experiences (Jalilvand *et al.*, 2017; Rosario *et al.*, 2016).

In financial services like banking, word-of-mouth holds greater significance, since it has an impact on the profitability of banks (Tang *et al.*, 2016). It has been mentioned that word-of-mouth is especially important for service providers whose offerings are largely intangible, and are experience- or credence-based (Balaji *et al.*, 2017). Customers' adoption of SSTs in banking is shaped by social and interpersonal influence, which can be attributed to word-of-mouth (Matsuo *et al.*, 2018). So, for services like banking, customers rely heavily on the advice and suggestions from others who have experienced the service (Mukerjee, 2018).

In the context of emerging market customers of banks, it has been shown that customers will offer word-of-mouth if their needs are fulfilled (Mukerjee and Shaikh, 2019). Studies suggest that when customers use SSTs for services like banking, they can co-create value which leads to enhanced loyalty and word-of-mouth (Chen and Wang, 2016). SSTs provide retail bank customers greater convenience and ease of use (Roy *et al.*, 2017). Since PU and PEU offer increased convenience and ease of use for customers through SSTs, it follows that customers will engage in positive word-of-mouth (Evanschitzky *et al.*, 2017). On the basis of the aforementioned arguments, the following hypotheses are proposed:

H3. PU will positively influence word-of-mouth

H4. PEU will positively influence word-of-mouth

E-service quality: The assessment of service quality and its outcomes on customer behaviour has been the focus of many studies (e.g. Blut *et al.*, 2015). E-service quality has been defined as: "extent to which a web site facilitates efficient and effective shopping, purchasing and delivery of products and services" (Ayo *et al.*, 2016; Parasuraman *et al.*, 2005, p. 217). For customers that make use of SSTs, the evaluation of e-service quality is a critical issue for customers and service providers (Wirtz and Zeithaml, 2018). E-service quality is an overall judgement of a service that contributes to customer satisfaction, purchase intentions and firm performance (Blut, 2016).

When customers use SSTs, PU and PEU offer increased convenience and ease of use which lead to enhanced e-service quality (Collier and Barnes, 2015). Studies have shown that PU and PEU can lead to better customer experience owing to enhanced e-service quality and

improve the business with customers (Doherty *et al.*, 2015). Further, it has been shown that enhanced e-service quality leads to enhanced cross-buying (Evanschitzky *et al.*, 2017; Tung and Carlson, 2015). Therefore, it follows that e-service quality can play a role in the relationship between PU, PEU and cross-buying.

Studies have shown that enhanced e-service quality leads to enhanced trust, satisfaction and loyalty among customers (Giovanis and Athanasopoulou, 2018). When customers are satisfied and loyal, it has been found that they will engage in positive word-of-mouth (Blut, 2016; Loureiro *et al.*, 2018). Further, studies have shown that better e-service quality will result in greater confidence among customers leading to word-of-mouth (Ifie *et al.*, 2018). Since PU and PEU lead to better e-service quality (Collier and Barnes, 2015), it is logical that e-service quality will play a role in the relationship between PU, PEU and word-of-mouth. On the basis of the arguments cited above, the following hypotheses are proposed:

H5. E-service quality will positively mediate the relationship between PU and cross-buying

H6. E-service quality will positively mediate the relationship between PU and word-of-mouth

H7. E-service quality will positively mediate the relationship between PEU and cross-buying

H8. E-service quality will positively mediate the relationship between PEU and word-of-mouth

Methodology

Research design, setting and sample

A cross-sectional survey research design was adopted to test the hypothesised relationships. The conceptual framework is given in Figure 1. The context of the study comprises the retail customers of banks in India. The choice of India as a market for the current study can be attributed to several factors. First, the agencies like National Payments Corporation of India (NPCI) have been pushing the use of SSTs for financial transactions, and the growing Internet usage through mobile devices has resulted in manifold increase in the users of SSTs in recent times. Second, the Government of India and the Reserve Bank of India (India's central bank and the regulator for commercial banking) have been promoting the use of SSTs in banking in order to reduce the volume of currency notes in circulation. Third, the use of SSTs has gained

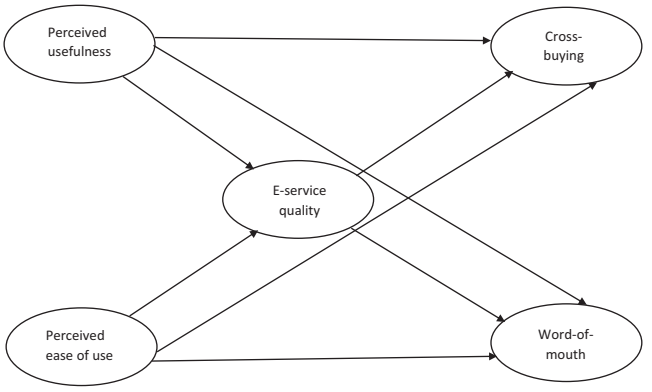

Figure 1.
Conceptual framework

momentum in recent times, and the State Bank of India (India's largest commercial bank) has reported that more than 80% of the bank's transactions are being undertaken through SSTs.

A questionnaire was designed using 24 items, wherein respondents could rate each item on a 7-point Likert-type scale. The questionnaire was designed in such a way that the independent and dependent variables were separated in order to deal with common method variance (Fuller *et al.*, 2015). The sequence of the scale items was manipulated in such a way that the respondents could not recognise whether a particular item belonged to a specific construct (Fuller *et al.*, 2015). This study ensured that scale items were not ambiguous and confusing. Prospective respondents were approached through social media and were invited to participate in the survey. Respondents were required to confirm that they had been using SSTs for banking transactions for at least three years before answering the questionnaire. The survey questionnaire was sent to 1,000 customers, and 235 valid responses were received, resulting in a response rate of 23.5% (responses that were incomplete were deleted).

The demographic information about the samples is given in Table 1. The questionnaire was floated online, and the majority of respondents were young (below 24 years of age). There are two reasons that justify the higher representation of young customers in the sample. Studies have shown that young people are more conversant with SSTs and prefer using it over other channels for undertaking banking transactions, while older people may struggle to use SSTs (Kucukusta *et al.*, 2015; Rojas-Mendez *et al.*, 2017). Further, the majority of India's population is below the age of twenty-four, and the sample in the current study is in line with the demographic profile of the country.

The responses of the early and late respondents were compared to test for the nonresponse bias. The *t*-test was conducted using the independent samples test method (*t*-value = −0.262; *p*-value = 0.794). Since the *p*-value is greater than 0.05, it can be concluded that there is no significant difference between the two groups.

Measures

The measures for the constructs were adapted from the extant literature to the context of banking and financial services. The adapted items were shown to a group of marketing experts from the banking domain to assess the face and content validity. PU and PEU were

Table 1. Demographic profiles of respondents

	N	%
Gender		
Male	147	62.5
Female	88	37.5
Age (years)		
18–25	120	51
26–35	57	24
36–45	36	15
46–55	20	9
>55	2	1
Education		
High school	19	8
Undergraduate	141	60
Graduate	75	32
Annual income		
Less than INR 250,000	35	15
Between INR 250,000–500,000	73	31
Between INR 500,001–1,000,000	80	34
More than INR 1,000,001	47	20

measured using three-item and four-item scales constructed using items from Abdullah *et al.* (2016). Cross-buying was measured with a four-item scale, while word-of-mouth was measured using three-item scale, and both these measures were taken from Mukerjee and Shaikh (2019). The items related to cross-buying provide an understanding of the customer's intention to buy other products from the bank while the items for word-of-mouth will offer clarity on the customer's intention to undertake positive word-of-mouth for the bank. E-service quality was measured with a 10-item scale constructed using the items from Theodosiou *et al.* (2019). The final scale items for all the constructs are given in Table 2.

Scale items	Factor loadings
Perceived usefulness (SCR = 0.89, AVE = 0.75)	
I believe that self-service technologies enable me to conduct banking transactions more quickly	0.90
I believe that self-service technologies enable me to manage my financial resources more effectively	0.91
I believe that self-service technologies are very useful	0.77
Perceived ease of use (SCR = 0.87, AVE = 0.62)	
I believe that undertaking banking transactions using self-service technologies do not require a lot of mental effort	0.74
I believe that the procedures for using self-service technologies for banking are easy to understand	0.77
I believe that it was easy for me to learn how to perform the banking transactions using self-service technologies	0.83
I believe that it was easy for me to become confident in my use of the transactions using self-service technologies	0.80
Cross-buying (SCR = 0.92, AVE = 0.76)	
I intend to buy more products from the bank	0.86
I will choose the bank for buying products in future	0.89
I intend to increase my volume of business with the bank	0.83
I have the intention of buying an additional product from the bank	0.88
Word-of-mouth (SCR = 0.94, AVE = 0.85)	
I say positive things about the bank to other people	0.92
I recommend the bank to someone who seeks my advice	0.94
I encourage friends and relatives to do business with the bank	0.88
E-service quality (SCR = 0.95, AVE = 0.69)	
The bank's self-service technology applications make it easy to find what I need	0.81
The information on the self-service technology applications is well organised	0.79
The bank's self-service technology applications are always available for business	0.82
The bank's self-service technology applications do not crash	0.86
The bank delivers on the promises it has made through self-service technology applications	0.80
The bank quickly delivers the requests made through self-service technology applications	0.84
The bank sends the items that I order through self-service technology applications in reasonable time	0.84
The bank makes accurate promises about products and services on self-service technology applications	0.83
The bank protects my personal and banking transaction information well	0.83
The bank does not share my personal information with other organisations	0.84

Note(s): SCR= scale composite reliability; AVE = average variance extracted

Table 2. Psychometric properties of the scales

Data analysis and results

The data were analysed using structural equation modelling (SEM) in IBM AMOS 23® software through measurement model and structural model (Hair *et al.*, 2017). The scale reliability (Cronbach's α) for PU was 0.83, whereas for PEU it was 0.79. The scale reliability for CB (cross-buying) was 0.89, WOM (word-of-mouth) was 0.91 and ESQ (e-service quality) was 0.92.

All the scales were then subjected to confirmatory factor analysis (CFA) using IBM AMOS 23.0 with maximum likelihood estimation method (MLE). The fit indices of the measurement model were $\chi^2 = 600$ $p < 0.001$; CMIN /DF = 2.48; TLI = 0.89, IFI = 0.91, CFI = 0.91, NFI = 0.85, RMSEA = 0.08.

Scale validity

The factor loadings, scale composite reliability and average variance extracted for the constructs PU, PEU, CB, WOM and ESQ exceeded the threshold level of 0.5. The AVE for each of the construct was greater than 0.50, as indicated in Table 2. The scale composite reliability of each of the construct was greater than 0.70. Thus, the constructs meet the convergent validity criteria. Further, the CFA result of the four constructs is summarised in Table 2. The CFA result suggests the goodness-of-fit indices exceed the suggested cut-off values. The square root of the AVE was greater than the correlation between the constructs as given in Table 3. Therefore, the constructs meet the discriminant validity criteria (Voorhees *et al.*, 2016). The Harman's one factor test was conducted for common method variance, as suggested by Fuller *et al.* (2015). The one factor accounted for variance of 0.44, which is less than 0.50; hence, common method variance is not an issue in the study (Fuller *et al.*, 2015).

Hypotheses testing

The hypothesised relationships were tested using SEM in the IBM AMOS 23.0 version. The hypothesised model has PU, PEU, cross-buying, word-of-mouth and e-service quality as the latent variables. For the direct effects, PU positively influences cross-buying (H1) and word-of-mouth (H2). PEU positively influences cross-buying (H3) and word-of-mouth (H4), as given in Table 4.

In this study, the mediation testing was done using SEM, since it has been suggested that it is a suitable approach for testing mediation (Danner *et al.*, 2015). This study analysed the

Construct	Mean	SD	Perceived usefulness	Perceived ease of use	E-service quality	Cross-buying	Word-of-mouth
Perceived usefulness (PUs)	6.25	1.05	0.86				
Perceived ease of use (PEU)	5.74	1.27	0.73	0.79			
E-service quality (ESQ)	5.54	1.31	0.81	0.75	0.83		
Cross-buying (CB)	5.13	1.48	0.79	0.77	0.80	0.87	
Word-of-mouth (WOM)	5.45	1.34	0.74	0.72	0.82	0.67	0.92

Note(s): Correlation is significant at the 0.01 level; the diagonal values are the square root of the AVE; the lower half values indicate correlation coefficients between the constructs

Table 3.
Descriptive statistics and Pearson correlation matrix

Hypotheses	Paths	β value	*p*-value	Results
Direct relationships				
H1	Perceived usefulness → Cross-buying	0.54	0.00	Supported
H2	Perceived ease of use → Cross-buying	0.58	0.00	Supported
H3	Perceived usefulness → Word-of-Mouth	0.53	0.00	Supported
H4	Perceived ease of use → Word-of-Mouth	0.56	0.00	Supported
Indirect / mediating relationships				
H5	Perceived usefulness → E-service quality	0.62	0.00	Supported – partial mediation
	E-service quality → Cross-buying	0.64	0.00	
H6	Perceived usefulness → E-service quality	0.45	0.00	Supported–partial mediation
	E-service quality → Word-of-Mouth	0.60	0.00	
H7	Perceived ease of use → E-service quality	0.62	0.00	Supported – partial mediation
	E-service quality → Cross-buying	0.64	0.00	
H8	Perceived ease of use → E-service quality	0.62	00	Not supported by Sobel's test
	E-service quality → Word-of-mouth	0.60	0.00	

Note(s): β = standardised path co-efficient

Table 4. Summary of hypothesised relationships

mediation effect in a single model, and the results are given in Table 4 (Pappu and Quester, 2016). Mediation can be tested using the Sobel test, and it is established if the Sobel test statistic is greater than 1.96 (Meule, 2019; Sobel, 1982). The results show that e-service quality partially mediates the relationship between PU and cross-buying with Sobel test statistic 9.58 ($p < 0.0$); e-service quality partially mediates the relationship between PU and word-of-mouth with Sobel's test statistic 5.14 ($p < 0.0$); e-service quality partially mediates the relationship between PEU and cross-buying with Sobel test statistic 1.98 ($p < 0.0$), but e-service quality does not mediate the relationship between PEU and word-of-mouth since in this case Sobel test statistic is 0.94 ($p < 0.0$). The direct paths between PU, PEU and e-service quality as well as those between e-service quality with cross-buying and word-of-mouth are significant; hence, it can be said that e-service quality partially mediates the relationship between PU with cross-buying and word-of-mouth and also between PEU and cross-buying. Table 5 gives the results of the Sobel test.

Discussion and conclusion

Theoretical implications

The objective of this study was to test the influence of SSTs on cross-buying, word-of-mouth and e-service quality. Previous studies on SSTs have shown that it can influence satisfaction (Meuter *et al.*, 2000), service quality (Jun and Palacios, 2016); customer relationship and loyalty (Nijssen *et al.*, 2016); service failure and recovery (Collier *et al.*, 2017). While loyalty among SST users has been shown as an outcome of mandated use of technology by service providers (Reinders *et al.*, 2015) and e-service quality (Theodosiou *et al.*, 2019), the consequences of SST usage on behavioural loyalty outcomes like cross-buying and word-of-

Indirect / mediating relationship	Sobel test value
PU-ESQ-CB	9.58
PU-ESQ-WOM	5.14
PEU-ESQ-CB	1.98
PEU-ESQ-WOM	0.94

Table 5. Sobel test results

mouth are lacking in the literature (Vakulenko *et al.*, 2018). Further, the mediating role played by e-service quality on strategic outcomes like cross-buying and word-of-mouth has not been studied previously. The current study has made an attempt to offer new empirical evidence on the consequences of SST usage on cross-buying, word-of-mouth and e-service quality.

The increased use of SSTs has resulted in employee-customer interactions in service firms being replaced by SST-customer interactions leading to new challenges for marketers (Lee, 2015). Though there has been widespread adoption of SSTs in services like banking, the consequences of SST usage on outcomes like cross-buying and word-of-mouth are lacking in the literature (Estrella-Ramon, 2017; Singh *et al.*, 2020). The findings of the current study show that SSTs can influence cross-buying and word-of-mouth, while e-service quality partially mediates the relationships.

Previous studies have shown that PU and PEU influence customer intentions and can drive SST usage (Demoulin and Djelassi, 2016). Trust has a positive influence on PU and drives the adoption of SSTs (Alalwan *et al.*, 2016). Studies have shown that PU influences various outcomes like satisfaction and loyalty (Wang *et al.*, 2017; Wu and Cheng, 2018). The current study offers empirical evidence to show that PU influences strategic outcomes like cross-buying and word-of-mouth. Services like banking are seeking strategic outcomes through cross-buying and word-of-mouth, and the current study offers new evidence for the marketing literature (Evanschitzky *et al.*, 2017; Taillon and Huhmann, 2019). Previous studies have established that cross-recommendations can influence cross-buying during SST usage (Zhu *et al.*, 2018). However, while previous studies have failed to establish the linkage between PU and cross-buying (Chen *et al.*, 2017), the current study extends the existing research by establishing the role of PU in driving cross-buying intentions of customers. Further, previous studies have shown that word-of-mouth is effective in persuading people about PU of SSTs, but the current study establishes that PU can also drive word-of-mouth (Mehrad and Mohammadi, 2017).

The second contribution of this study is in establishing the linkage between PEU with cross-buying and word-of-mouth. Previous studies have established that PEU can drive SST usage and has a strong influence on important outcomes like service quality (Alalwan *et al.*, 2016; Blut, 2016). Recent studies have shown that PEU can help drive increased participation of customers in co-creation of services (Jimenez-Barreto and Campo-Martinez, 2018). The current study offers evidence to show that PEU positively influences strategic outcomes like cross-buying and word-of-mouth. The positive influence of PEU on cross-buying is a new finding, since previous research undertaken in the context of online apparel purchase had failed to establish that PEU can influence cross-buying (Chen *et al.*, 2017). Further, previous studies have shown that word-of-mouth is effective in persuading people about PEU of SSTs, but the current study establishes that PEU can also drive word-of-mouth (Mehrad and Mohammadi, 2017).

The third contribution of this study is with regard to the partial mediation of e-service quality in the relationships between PU with cross-buying and word-of-mouth and the relationship between PEU and cross-buying. Previous studies on bank customers in emerging markets have shown that e-service quality can positively influence the attitude and intention to use SSTs and influence customer satisfaction and loyalty (Ayo *et al.*, 2016). While studies have established the relationship between e-service quality with cross-buying and word-of-mouth (Blut, 2016; Tung and Carlson, 2015), the current study establishes the partial mediation role of e-service quality in the context of SST usage. With respect to SSTs, previous studies have shown that e-service quality mediates the relationship between website quality and customer satisfaction (Blut *et al.*, 2015). Studies on cross-buying have shown that convenience and relationship commitment can drive cross-buying, while the present study shows that e-service quality partially mediates the relationship of SSTs and cross-buying (Tung and Carlson, 2015). Likewise, past research

has shown that website quality can influence word-of-mouth, and the current study has shown that e-service quality partially mediates the relationship between SSTs and word-of-mouth (Blut, 2016). For services like banking, e-service quality helps to build loyalty among customers through contemporary SSTs, and the current study establishes that banks can also achieve other outcomes like cross-buying and word-of-mouth through e-service quality (Shankar and Jebarajakirthy, 2019).

The fourth contribution of this study is with regard to the literature on emerging markets. In the context of SST usage in emerging markets, several studies have focused on technology adoption, technology anxiety and influence on customer outcomes (Ayo *et al.*, 2016). Studies undertaken on retail bank customers in India have shown that PU and PEU have a positive influence on customers' intentions to use SSTs (Kaushik and Rahman, 2015). The current study establishes that retail bank customers in emerging markets are willing to undertake cross-buying and word-of-mouth if they find that the PU and PEU of SSTs are up to their expectations. The findings of the current study are significant since service providers in emerging markets are taking immense efforts in driving cross-buying and word-of-mouth (Mukerjee and Shaikh, 2019).

Managerial implications

SSTs are driving the growth in businesses like banking, and a report published by BCG mentions that digital lending is poised to become a $1 trillion business in a few years (BCG, 2018). In emerging markets like India, SSTs are driving the proliferation of various on-demand services like hotel rooms (OYO), cab rentals (Uber and Ola), movie ticket bookings (BookMyShow) and banking services (through Internet banking portals and mobile apps of various banks). In the Indian banking industry, the Reserve Bank of India has been urging the commercial banks to collaborate with financial technology (Fin-Tech) firms and improve the performance of SSTs. The current study has shown that PU and PEU can influence strategic outcomes like cross-buying and word-of-mouth, while e-service quality partially mediates the aforementioned relationships.

Managers can foster cross-buying through improvements in SSTs, with particular focus on enhancing the PU and PEU. The customers' journey while using SSTs can be tracked by firms, and based on the analysis of customer experiences, the systems can be made more useful and easy to use (Åkesson *et al.*, 2014). Personalised offers based on the customer's preferences can help to drive cross-buying (Behera *et al.*, 2020). In India, the State Bank of India (India's largest commercial bank) has already launched the mobile app called YONO (You Only Need One) that offers access to a variety of services like air tickets, insurance policies and online shopping, apart from the bank's products. In the absence of customer-employee interactions with increased use of SSTs, the affective responses of customers to cross-sell offers needsto be assessed before they are sent out to customers (Lee, 2015). The offers for cross-buying can be presented through gamification which will result in innovative experiences for customers (Kim and Ahn, 2017).

The strategic importance of cross-buying and word-of-mouth suggests that banks need to track the customers' feedback on the PU and PEU in a regular manner and address concerns particularly related to privacy (Bailey *et al.*, 2017). Managers have accepted that word-of-mouth has a strategic role in a world dominated by the increasing usage of SSTs by customers, especially for services like banking (Taillon and Huhmann, 2019). The current study has shown that PU and PEU can influence customer word-of-mouth behaviour. Managers can focus on the customers' engagement on SST platforms and launch innovative loyalty programmes for driving word-of-mouth (Beckers *et al.*, 2018). To make it easy for customers to offer word-of-mouth, multiple channels like blogs and social media can be leveraged (Erz and Christensen, 2018). The SST platforms can provide customers the option

to offer word-of-mouth through their social media pages whereby trust towards the service provider is engendered (Kosiba *et al.*, 2018; Wang *et al.*, 2017).

The importance of e-service quality suggests that managers need to continuously monitor the customers' perceptions about e-service quality and undertake constant improvements to address the gaps in service quality (Doherty *et al.*, 2015). In the SSTs being deployed by various banks, customers are asked to rate the e-service quality immediately after a transaction is completed. By keeping a track of e-service quality and taking corrective action whenever the e-service quality ratings show a decline, managers can drive cross-buying and word-of-mouth. However, e-service quality is influenced by the local culture and the regulatory environment, and managers need to develop a locally-relevant approach for managing it effectively (Blut, 2016). As a new era dawns in SSTs with the advent of robots and chatbots being used for customer interactions, marketers will need to manage the social-emotional dimensions and imbibe humanness in service transactions to enable better success with e-service quality, cross-buying and word-of-mouth (Wirtz *et al.*, 2018).

Conclusions, limitations and directions for future research

In conclusion, it can be said that customers' positive evaluation of PU and PEU can help service providers using SSTs to drive cross-buying and word-of-mouth. Further, the partial mediation role of e-service quality suggests that constant tracking of the customers' perceptions about e-service quality and undertaking regular improvements can result in boosting cross-buying and word-of-mouth.

The current study, despite the significance of its findings, has a number of limitations. First, this study adopted a cross-sectional approach, and temporal changes in the research constructs were not considered. Longitudinal studies can focus on the effects of temporal changes. Second, this study was undertaken in an emerging market context, and the results may not be similar for developed markets. Other researchers are encouraged to test the outcomes of PU and PEU on various other strategic outcomes like share of wallet, customer commitment, customer engagement, brand attachment and so forth. Further, the influence of emerging SSTs like chatbots and robots on strategic outcomes like cross-buying and word-of-mouth can be investigated. The current study can be replicated for SSTs used in other industries like app-based cab rental services, online retail stores and so forth.

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