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Self-Service Technology Service Quality and Brand Loyalty in Zimbabwe's Banking Sector: A SEM Approach

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Abstract: This article examined the relationship between self-service technology service quality and brand loyalty in Zimbabwe`s banking sector with customer satisfaction and behaviour intentions playing the mediating role. The main objective was to develop a path analysis model for the banking industry in Zimbabwe. The study followed a deductive approach with an online survey used to collect primary data from more than 110 bank customers. The PLS-SEM algorithm was used to empirically test the path analysis model. The construct measures were confirmed reliable and valid with structural model showing goodness of fit based on the R^2, Q^2, SRMR, and path significance. The results further confirmed hypothesis H_1, H_2, H_3, H_4, and H_7 whilst rejecting H_5 and H_6. Self-service technologies have proven to be a critical enhancer of brand loyalty in the banking sector. The 'FinTech' industry has gone under a critical test due to COVID-19 pandemic that has seen global restrictions nearly paralyzing a number of sectors. Technology developers, policymakers, researchers, and regulators will have a better understanding of self-service technologies and their impact on brand loyalty in the service industry. Literature has shown some knowledge gaps in this field especially in Zimbabwe where the 'FinTech' industry is still in its infancy stages.

Keywords: Self-Service Technology; Service Quality; Satisfaction; Behaviour Intention; Loyalty; SEM.

JEL Classification: C38; C51; C52

1. Introduction

The world has experienced a proliferation of technology and innovations that have significantly altered the digital landscape and the way in which economic agents

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offer services and products. The banking industry has also seen a number of technological innovations due to the growth of the 'FinTech' industry.

Radomir and Wilson (2018) claim that customers nowadays have greater expectations and are more demanding compared to in the past. Customers are now more concerned with innovative products and/services as well as high-quality service. Radomir and Wilson (2018) argue that, "in this respect, one can conclude that reputation exerts an influence on perceived quality only before a purchase and that customers' quality perceptions act as drivers of reputation after the purchase. Similarly, enhanced reputation is regarded as one of the benefits assured by a high-quality offering". Radomir and Wilson (2018) argue that, "despite extensive research on corporate reputation, scholars have rather neglected the view that quality can act as a signal of reputation when customers experience a service offered by a company."

Radomir and Wilson (2018) state that, "in essence, it is argued that ongoing relationships are built on the norm of reciprocity. When companies are perceived to make efforts to maintain relationships with their customers, then customers are willing to reciprocate in order for the relationship to last. Researchers have therefore investigated the impact that quality may have on customer satisfaction and brand loyalty towards the service and/product providers."

Zimbabwe has witnessed a fair share of 'FinTech' growth in several areas, especially in insurance, payments and trading, and cryptocurrency. Zimbabwe's 'FinTech' ecosystem though young and dynamic has registered more than 50 FinTechs. These are working primarily in payments and remittances. 'FinTechs' development in Zimbabwe is driven by a number of factors that includes the macroeconomic situation, cash shortages and aggressive marketing. This has seen the volume of digital payments growing from 38 million in 2012 to 367 million in 2016, before accelerating to 1.96 billion in 2018.

Access and usage of financial self-service technologies and products has of late continued to rise on an upward trajectory with the increased adoption of digital platforms, as evidenced by the increased number of active mobile subscribers. In recent times, FinTech advancements have taken a dramatic leap following the outbreak of the COVID-19 pandemic. This has brought the new normal of doing business remotely in Zimbabwe and the banking sector has not been spared from this wave. Service providers are introducing technology enabled mechanisms such as self-service technologies (SSTs) to provide convenient and quality services to customers to attain better productivity and satisfaction (Iqbal, Hassan, and Habibah, 2018). Most banks globally and locally have created a variety of interfaces which include mobile money transfers, mobile complaints, social media platforms, mobile account opening platforms among other services. SSTs usage is a technological interface that permits customers to access a service where there is no presence of

direct service employees. The SSTs allows customers to do their transactions remotely. It provides organizations with benefits related to FinTech advancement, customer perception enhancement, customer experience, satisfaction and loyalty enhancements. SSTs could be more beneficial to banks though it has caused a number of job losses.

SSTs also help banks to decrease costs of staff training, equipment, and communication (Leung and Matanda, 2013). SSTs also put forward more consistent and steady services unaffected by variations of service demand or worker's frame of mind (Weijters, Rangarajan, Falk, and Schillewaert, 2007). Iqbal et al. (2018) point out that, "SSTs enhance customer's satisfaction and loyalty, hence facilitate effectively to approach new customer divisions. In addition to efficiency improvement, SSTs give power to both employees and customers through value addition by increasing time and place convenience." The use of SST gives customers the convenience of place and time, which enhances customer experience resulting in customer satisfaction and ultimately loyalty to the brand. Customer satisfaction is an attitude formed in the mind of the customer by comparing pre-purchase expectations with perceptions of reality and has a direct relationship with customer loyalty (Liu et al., 2019). Dick and Basu (1994) define customer loyalty as the strength of the relationship between the individual's relative attitude and repeat patronage.

This article examined the relationship between SST service quality and brand loyalty in Zimbabwe`s banking sector. The main objective being to develop a path analysis model suitable for Zimbabwe`s banking sector.

To understand the relationship between variables, the study followed a deductive approach to empirically test data collected by an online survey. The PLS-SEM algorithm was used to examine the path analysis model. Respondents were drawn from bank customers in Zimbabwe. The findings have both managerial and practical implications. The study`s contribution is scientific, practical, societal, economical, and educational.

The remainder of this article is as follows. First a review of the literature is presented. A review of literature is done to understand the relationships between variables. Subsequently, the research method, the findings and discussions in light of prior research are presented. The article will end with a conclusion that is a summary of the whole study.

2. Literature Review

2.1. Theoretical background and hypotheses

2.1.1. Social Exchange Theory

Radomir and Wilson (2018) citing Blau (1964) states that, "according to the social exchange theory, an individual's decision to put effort into an activity is motivated by expected benefits, that is, returns which are not necessarily immediately observable but which are thought to justify the costs associated with the investment in the relationship". Radomir and Wilson (2018) citing Shore, Tetrick, Lynch, and Barksdale (2006) argue that, "interactions between individuals are considered exchanges that require both inputs in the form of costs and outputs in the form of benefits. Put differently, social exchanges require investment in the relationship for facilitating a sustainable exchange that leads to the expected benefits.""This means that a cyclical reciprocation is expected where an action undertaken by one party should lead to a response by the other party" (Palmatier et al., 2006 cited by Radomir and Wilson, 2018). Reciprocity, therefore, is a key concept in the social exchange theory. Radomir and Wilson (2018) state that;

"Despite its origin in interpersonal relationships and social psychology, social exchange (SET) theory is appropriate for evaluating relationships between buyers and sellers. Consequently, social exchange theory has been extensively referred to in a business-to-business (B2B) context and can be applied to consumer studies as well. In this study, social exchange implies that actions undertaken by banking institutions to respond to customers' needs lead to favourable customer perceptions and loyalty. In turn, customers are expected to feel a commitment to respond with a positive signal and engage in behaviours that would improve the performance of their financial service provider. When the efforts of service providers are observable, their actions are perceived as investments in the relationship. This may translate customers' response into positive corporate reputation perceptions. Further, social exchange theory suggests that customers may want to reciprocate and demonstrate that they value the relationship built by showing a predisposition towards maintaining the relationship."

Based on social exchange theory, this study proposes that perceptions about self-service technology service quality are important determinants of brand loyalty in the banking sector. "The more favourable these perceptions, the more inclined consumers are to respond with a favourable behaviour, as expressed through brand loyalty. In the present study, the resulting construct of brand loyalty reflect customers' reciprocation in relation to the self-service technologies offered" (Radomir & Wilson, 2018). This relationship was, however, mediated by customer satisfaction and behaviour intention.

2.1.2. SST service quality

Iqbal et al. (2018) state that, "as defined by Meuter, Ostrom, Roundtree, and Bitner (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 checkouts, self-service kiosks (that is, 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." Service quality conceptualization incorporates procedure related to service delivery (Parasuraman, Zeithaml, and Berry, 1985) and service outcome (Lehtinen and Lehtinen, 1991). A number of models have been formulated to measure service quality.

To capture SSTsq, the study used the SSTQUAL presented by Lin and Hsieh (2011). SSTQUAL has been validated by a number of validity and reliability tests (Iqbal, Hassan, and Habibah, 2018). The SSTQUAL comprises the following: Enjoyment; Assurance; Functionality; Convenience; Design; Customization; and Security (Lin and Hsieh, 2011).

Consequently, the following hypothesis is proposed:

H1: Self-service technology service quality is defined as a high-order construct which represents (a) functionality, (b) enjoyment, (c) security/privacy, (d) assurance, (e) design, (f) convenience, and (g) customization.

2.1.3. SST service quality and brand loyalty

"Lee, Lee, and Feick (2001) define customer loyalty as the increased probability of purchase, and frequent buying of firm's offerings. To Pearson (1994) customer loyalty is the mindset of customers who have favorable approaches concerning the company, promise to purchase the company's product/service frequently, and endorse the product/service to others" (Iqbal et al., 2018). Service quality is a vital component of customer loyalty. Ajzen and Fishbein (1975) and Ajzen (1985) cited by Iqbal et al. (2018) state that, "behavior is the outcome of attitude, subjective norms, and perceived behavioral control.""The Theory of Planned Behaviour (TPB) (Ajzen and Fishbein, 1975 and Ajzen, 1985) provides the foundation to study the user's satisfaction, loyalty, and attitude towards SSTs service quality" (Iqbal et al., 2018). Satisfied and loyal customers are critical in the growth and profitability of a firm. They ensure sustainability. "Further, TPB provides the link between satisfaction, loyalty, favorable attitude, repeat purchase, and positive intentions" (Iqbal et al., 2018). Parasuraman and Grewal (2000) cited by Iqbal et al. (2018) argue 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." Iqbal et al. (2018) cite Yang and Peterson (2004) who state that, "in an online setting

customer satisfaction and product value are the main drivers through which service firms attains customer loyalty." Ganguli and Roy (2011)`s investigation found a positive significant impact of service quality on customer satisfaction and loyalty in the banking sector. Xu, Thong, and Venkatesh (2014) cited by Iqbal et al. (2018) find that, "brand equity significantly impacts affective and conative loyalty."Therefore the following was hypothesized;

H2: Self-service technology service quality has a positive influence on brand loyalty.

2.1.4. SST Service Quality and Behavioral Intention

The Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) states that, "displayed behavior is result of intentions a person holds in order to perform the certain behavior. The Theory Planned Behavior (Ajzen, 1991) derived from TRA states that customer attitude towards the novel technologies usage is extensively believed to have influence on the behavioral intention" (Iqbal et al., 2018). Lin and Hsieh (2007) argue that, "in order to reveal the post purchase behavior, numerous prevailing models employ customer assessment of SSTs service quality in terms of satisfaction and behavioral intentions." These indications clearly show whether a customer will leave or stay with the firm, make positive remarks, endorsing the firm's products, ready to pay high prices, and being committed towards firm in term of loyalty (LaBarbera and Mazursky, 1983; Reichheld and Sasser, 1990; Rust and Zahorik, 1993; and Parasuraman, Zeithaml, and Berry, 1994). Iqbal et al. (2018) citing Cronin and Taylor (1992) and Gremler and Brown (1997) "explain that satisfaction and service quality must be an antecedent requirement for the customer behavioral intentions."

Iqbal et al. (2018) state that, "consumer behaviour research has well established the link between use behaviour and behavioural intentions." A number of studies attempted to investigate the behaviour intention to use SSTs (Venkatesh, Thong, and Xu, 2012) and the findings showed that attitude and multiple factors motivate behavioural intentions towards use of SSTs (Curran, Meuter, and Surprenant, 2003). "Martins, Oliveira, and Popovič (2014) combine the UTAUT and perceived risk to explain the behavioral intentions and internet banking usage behavior" (Iqbal et al., 2018). Behavioral intention had positive influence on internet banking usage behaviour. Iqbal et al. (2018) argue that, "a study by Demoulin and Djelassi (2016) found that past usage, situational factors, and perceived behavioural control are the important elements of behavioral intention towards SSTs." Given the above it was hypothesized that;

H3: Self-service technology service quality has a positive influence on behaviour intention.

2.1.5. SST Service Quality and Customer Satisfaction

Lin and Hsieh (2006) argue that satisfaction contemplates the extent to which a consumer emanates positive sentiments to a service encounter. To Jeong, Cha, and Jang (2016), satisfaction is concerned with customer's situation of being effectively compensated in a purchasing circumstance in exchange of certain cost. Satisfaction is viewed adequately when compared to past experiences. Oliver (1997) views satisfaction as the "customer's gratifying reaction." According to Iqbal et al. (2018), "Parker and Mathews (2001) view satisfaction as an emotional response which is initiated through the process of cognitive evaluation. However, Swan and Combs (1976) were the 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 below 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 (Iqbal et al., 2018). In order to enhance productivity and improve customers' satisfaction, companies integrate SSTs based convenient and novel service channels to serve customers (Demirci Orel and Kara, 2014 and Demoulin and Djelassi, 2016).

Many researches have shown significant relationships between service quality and customer satisfaction in diverse sectors (Wu, 2011; Bogicevic, Yang, Cobanoglu, Bilgihan, and Bujisic, 2017). Studies also found customer satisfaction to positively mediate between SSTs service quality and brand loyalty (Demirci Orel and Kara, 2014) with Iqbal et al. (2017) finding partial mediation. Therefore, the following hypotheses have been proposed;

H4: Self-service technology service quality has a positive influence on customer satisfaction.

H8: Customer satisfaction mediates the relationship between SST service quality and brand loyalty.

The link between customer satisfaction and behavioral intention has been well confirmed in previous studies (Burton, Roberts, and Sheather, 2003). Customer-centric marketing philosophy focuses on total customer satisfaction which, in turn, fosters positive behavioral intentions of customers (Kotler and Keller, 2009). Customers' psychology as well as behavioral intentions is significantly affected by satisfaction level, which is the representation of product quality and perceived value. Lin and Hsieh (2006) establish the positive association between satisfaction and behavioral intentions. Iqbal et al. (2018) state that, "Collier and Sherrell (2010) proved empirically that customer satisfaction form positive intentions towards SSTs experience regarding future use."

Iqbal et al. (2018) argue that, "customer satisfaction has been found to be an important driver of customer loyalty." As a result of intense competition and slow growth in the household and customer products market, customer satisfaction and customer loyalty are being viewed gradually as vital factors worthy of consideration. Kuo, Wu, and Deng (2009) found that satisfied customers become loyal to a particular brand or product. Loyalty is greatly influenced by satisfaction which is why satisfaction is considered an antecedent of loyalty. Satisfied clients have a tendency to be loyal, but loyal clients are not always satisfied clients. Iqbal et al. (2018) state that, "Deng, Lu, Wei, and Zhang (2010) studied customer satisfaction and loyalty determinants and found customer satisfaction along with trust and switching cost to boost customer loyalty." Therefore, it was hypothesized that;

H5: Customer satisfaction has a positive influence on brand loyalty.

H6: Customer satisfaction has a positive influence on behaviour intention.

2.1.6. Behavioral Intentions and Brand Loyalty

It is generally recognized that customer loyalty is dependent on extent of satisfaction. Customer loyalty is not merely dependent on customer satisfaction. Behavioral intentions may also play a mediating role between satisfaction and loyalty. Behavioral intentions have an influence on a customer's loyalty for a particular brand (Bloemer, Odekerken- Schroder, and Kestens, 2003; Chen and Hu, 2010). On one hand satisfied customers have positive attitudes and behavioral intentions towards a particular product or service. Positive attitudes create a commitment and share of purchase. On the other hand, an unsatisfied customer may not complain but may silently switch and create negative word-of-mouth or may complain, but not switch to other competitors (Deng et al., 2010). Again, when customers believe that they can get better quality, value or service elsewhere, they may switch even if they are satisfied with the present consumption (Vesel & Zabkar, 2009). It was therefore hypothesized that;

H7: There is a positive relationship between behaviour intentions and brand loyalty.

H9: Behaviour intention mediates positively between customer satisfaction and brand loyalty.

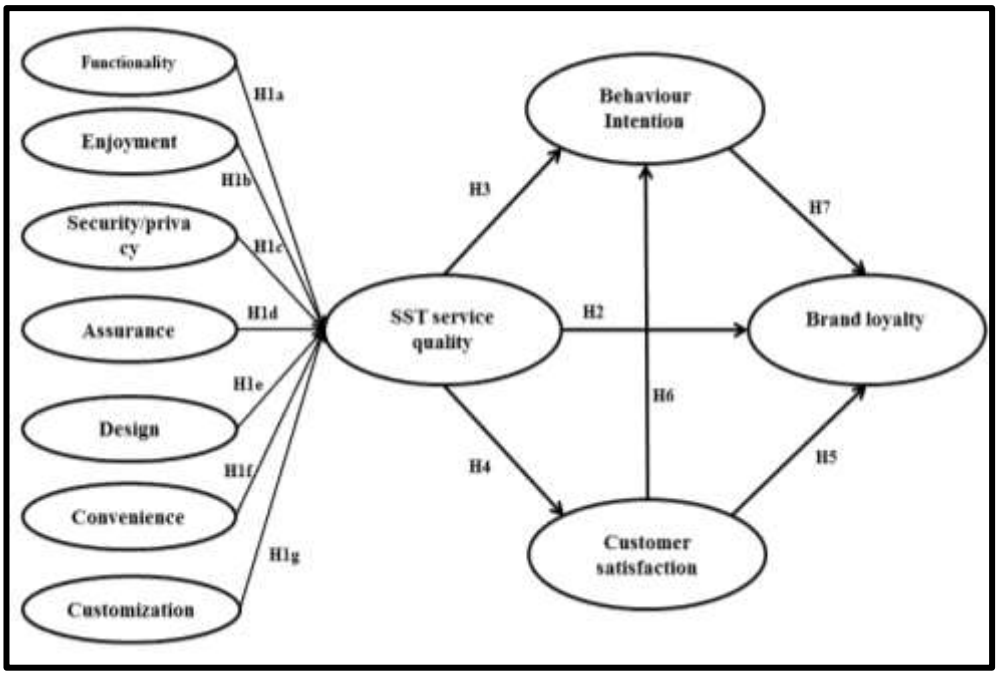

Figure 1. Research Model

3. Method

This article examined the relationship between self-service technology service quality and brand loyalty in Zimbabwe`s banking sector. The mediating role of behaviour intention and customer satisfaction was also examined. To understand the relationship between these variables, the study followed a deductive approach with primary data collected from bank customers in Zimbabwe through an online survey. The study empirically tested the path analysis model. This study was carried out when the country has registered a number of FinTech mainly triggered by Covid-19 pandemic restrictions among other factors. The country has registered 96% digital transactions against 4% cash largely due to a well-developed payment system (World Bank`s 'Digital Economy for Zimbabwe Country Diagnostic Report' in March 2021). However, the continual existence of long bank queues is a cause for concern.

3.1. Respondents and Procedure

Approximately, more than 110 online questionnaires were administered via email and WhatsApp platforms to banking customers in Zimbabwe during the month of October and November 2021. It was difficult to ascertain the exact number due to

onward forwarding. The online survey was created on Google forms. The generated link was then administered via WhatsApp and email. Approximately 15 to 20 minutes was needed to complete the survey. A pilot study was done using five students with and without SSTs knowledge. The pilot study was done to elicit ambiguous, negatively worded, salient features, and difficult questions in the questionnaire. This approach adopted from Maune et al. (2021). Automatic responses were received from 93 (84%) respondents through the Google forms platform. Data was then cleaned and 88 (80%) responses were retained for analysis. Five responses were discarded due to different reasons. Marcoulides and Saunders (2006) guide the sample size used in this study (see Maune et al., 2021). The study was also guided by Hoyle (1995). Table 1 denotes the demographic descriptive statistics.

Table 1. Demographic Descriptive Statistics

Variable	Category	Frequency	Percentage
Gender	Male	50	57%
	Female	38	43%
Age	<20	0	0%
	21 – 30	58	66%
	31 – 40	19	22%
	41 – 50	7	8%
	>50	4	4%
Education	Ordinary Level	2	2%
	Advanced Level	16	18%
	Cert/Diploma	2	2%
	Undergraduate	43	49%
	Masters	22	25%
	Ph.D.	2	2%
	Other	1	1%

Source: Author`s compilation

3.2. Measurement

The measurement scales used in this study were adopted from prior studies. SSTQUAL was used to measure SST service quality (Lin and Hsieh, 2011 and Iqbal et al., 2018). Customer Satisfaction was measured by American Customer Satisfaction Index (ACSI) (Fornell et al., 1996 and Iqbal et al., 2018). Behavioral Intention and Brand Loyalty were measured using the scale adopted from Cronin, Brady, and Hult (2000) and Iqbal et al. (2018). Table 2 shows the measures used. The study used reflective measurement model because of the interchangeability and correlation of indicators (Wong, 2013). For that reason, the indicators were checked for validity and reliability (Maune et al., 2021). A 7-point Likert scale was adopted

for the purposes of this study (from, "completely disagree" to "completely agree"). Table 2 shows removed or retained, source, and factor loading of all items.

Table 2. Survey Items, Measurement Variables, Factor Loadings, and Sources

Construct(s)	Measurement Variable	Factor loadings	Sources
Functionality	FUN-1. "I can get my service done with the bank's SST in a short time"	0.876	FUN-1 to 5 adapted and modified from "functionality" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	FUN-2. "The service process of the [bank's] SST is clear"	0.832	
	FUN-3. "Using the [bank's] SST requires little effort"	*Removed*	
	FUN-4. "I can get service done smoothly with the [bank`s] SSTs"	0.855	
	FUN-5. "Each service item/function of the SST is error-free"	*Removed*	
Enjoyment	ENJ-1. "The operation of the [bank's] SSTs is interesting"	0.858	ENJ-1 to 4 adapted and modified from "enjoyment" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	ENJ-2. "I feel good being able to use the [bank`s] SSTs"	0.854	
	ENJ-3. "The [bank's] SSTs have interesting additional functions"	*Removed*	
	ENJ-4. "The [bank's] SSTs provide me with all relevant information"	0.834	
Security/privacy	SEC-1. "I feel safe in my transactions with the [bank's] SSTs"	0.806	SEC-1 to 2 adapted and modified from "security/privacy" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	SEC-2. "A clear privacy policy is stated when I use the [bank's] SSTs"	0.810	
Assurance	ASU-1. "The firm that is providing the SST is well-known"	0.818	ASU-1 to 2 adapted and modified from

	ASU-2. "The firm that is providing the SST has a good reputation"	*Removed*	"assurance" in Lin & Hsieh (2011) and Iqbal et al. (2018)
Design	DES-1. "The layout of the [bank's] SST is esthetically appealing"	*Removed*	DES-1 to 2 adapted and modified from "design" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	DES-2. "The [bank's] SST appears to use up-to-date technology"	0.800	
Convenience	CON-1. "The SST has operating hours convenient to customers"	*Removed*	CON-1 to 3 adapted and modified from "convenience" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	CON-2. "It is easy and convenient to access the [bank's] SST"	*Removed*	
	CON-3. "It is easy and convenient to use the [bank's] SST"	*Removed*	
Customization	CUS-1. "The [bank's] SST [addresses] my specific needs"	0.765	CUS-1 to 3 adapted and modified from "customization" in Lin & Hsieh (2011) and Iqbal et al. (2018)
	CUS-2. "The [bank's] SST has my best interests at heart"	*Removed*	
	CUS-3. "The [bank's] SST has features that are personalized for me"	*Removed*	
Customer Satisfaction	CS-1. "Overall, I am satisfied with the self-service technologies offered by the [bank]"	0.875	CS-1 to 3 adapted and modified from "customer satisfaction" in Fornell et al. (1996) and Iqbal et al. (2018)
	CS-2. "The self-service technologies offered by the [bank] exceed my expectations"	0.936	
	CS-3. "The self-service technologies offered by the [bank] are close to my idea"	0.873	
Brand Loyalty	BLY-1. "I would use [the bank`s] SST again"	0.932	BLY-1 to 4 adapted and

	BLY-2. "I would recommend the [bank`s] SST to any of my friends and [relatives]"	0.881	modified from "loyalty" in Cronin et al. (2000) and Iqbal et al. (2018)
	BLY-3. "I will continue to use [the bank`s] SST"	0.944	
	BLY-4. "I would speak positively about [the bank`s] SST to others"	*Removed*	
Behaviour Intentions	BI-1. "The probability that I will use this self-service technology again is high."	1.000	BI-1 to 3 adapted and modified from "behavioral intentions" in Cronin et al. (2000) and Iqbal et al. (2018)
	BI-2. "The likelihood that I would recommend this self-service technology to a friend is high."	*Removed*	
	BI-3. "If I had to do it over again, I would make the same choice."	*Removed*	

Source: Authors' compilation

3.3. Structural Equation Modeling Approach

Though there are several approaches to SEM, PLS was used for the purposes of this study. The SmartPLS (v.3.3.3) software tool was used for data analysis. Due to Covid-19 Pandemic lockdown restrictions, PLS-SEM was used for its suitability for small sample sizes. PLS-SEM is considered a better alternative CB-SEM when dealing with small sample sizes. "PLS-SEM was also chosen due to its predictive accuracy" (Maune et al., 2021). Wong (2013) argues that, "despite its limitations, PLS-SEM is useful in applied research projects especially when there are limited participants and when the data distribution is skewed." Maune et al. (2021) argue that, "PLS-SEM has been deployed in fields, such as behavioural sciences, marketing, organization, management information system, and business strategy." Before imported into SmartPLS 3 software, the data set cleaned first.

3.4. Analysis of the Study

The PLS-SEM path analysis model estimate is as depicted in figure 3. The path analysis model depicts the subsequent reflections:

3.4.1. Reflective Measurement Model

The article adopted a reflective measurement model. Each indicator is related by a simple regression to a specific latent variable or construct (Maune et al., 2021).

Thirteen (13) items (FUN3, FUN5, ENJ3, ASU2, DES1, CON1, CON2, CON3, CUS2, CUS3, BLY4, BI2, and BI3) were left out of the path analysis model because of high cross-loading and/low factor loadings according to Gefen and Straub (2005)`s recommendations. The composite reliability (CR) and Cronbach`s alpha were used for reliability test of the constructs. All constructs met the recommended CR value criteria of 0.700 as given by Hair et al. (2017). All constructs exceeded the 0.700 Cronbach`s alpha threshold (see table 3). The study achieved convergent validity with all constructs` Average Variance Extracted (AVE) exceeding 0.500 as given by Bagozzi and Yi (1988). Table 3 depicts validity, reliability, and factor loadings for all items. The author used the Fornell-Larcker criterion to assess discriminant validity. Table 4 shows the establishment of discriminant validity as per Fornell and Larcker (1981) measurement criterion. The author also used the Heterotrait-Monotrait ratio to assess discriminant validity with Table 5 showing the establishment of discriminant validity according to Henseler et al. (2015).

Table 3. Loadings, Reliability, and Validity

	Loadings	Cronbach`s Alpha	Composite Reliability	AVE
FUN1	0.876	0.954	0.960	0.686
FUN2	0.832			
FUN4	0.855			
ENJ1	0.858			
ENJ2	0.854			
ENJ4	0.834			
SEC1	0.806			
SEC2	0.810			
ASU1	0.818			
DES2	0.800			
CUS1	0.765			
CS1	0.875	0.878	0.924	0.801
CS2	0.936			
CS3	0.873			
BI1	1.000	1.000	1.000	1.000
BLY1	0.932	0.908	0.942	0.845
BLY2	0.881			
BLY3	0.944			

Table 4. Fornell-Larcker Criterion

	BI	BLY	CS	SSTsq
BI	*1.000*			
BLY	0.835	*0.919*		
CS	0.633	0.667	*0.895*	
SSTsq	0.755	0.800	0.789	*0.828*

Table 5. Heterotrait-Monotrait Ratio (HTMT)

	BI	BLY	CS	SSTsq
BI				
BLY	0.872			
CS	0.665	0.733		
SSTsq	0.772	0.862	0.841	

3.4.2. Structural Model

The results of the structural model were assessed after confirming the validity and reliability of measures of the constructs. Maune et al. (2021) citing Tenenhaus et al. (2005) and Avkiran (2018) argue that, "the analysis of the structural model is an attempt to find evidence supporting the theoretical model:

$$\xi_j = \beta_{jo} + \sum_i \beta_{ji}\,\xi_j + v_j$$

Where: $\xi_j$is the endogenous construct and $\xi_i$represents the exogenous constructs, while β_{jo} is the constant term in this (multiple) regression model, β_{ij} are the regression coefficients, and v_j is the error term; the predictor specification condition applies."

The paths hypothesized in the research framework are reflected in the structural model. The assessment of the structural model was centered on significance of paths, Q^2, and R^2.The model goodness fit was established by the significance of each structural path as defined by the R^2. Falk and Miller (1992) state that the value of R^2 must be equal to or over 0.1. Table 6 shows all the values of R^2 and all the values are above 0.1 thereby establishing the predictive capability of the model. The q2 effect sizes were analysed together with a blindfolding performed to test the effects on BLY as well as to derive practical implications in addition to assessing the predictive relevance of the model (Geisser, 1974; Stone, 1974 cited by Radomir and Wilson, 2018). The following values were generated through Blindfolding predicting the relevance of constructs: BI has a Q2 of 0.518, BLY of 0.626, and CS of 0.470. Radomir and Wilson (2018) state that, "Q2 is a measure indicating the out-of-sample predictive relevance, that is, the capability of the model to predict endogenous

constructs such as [BLY].” To help assess the model fit, the study used Q^2, SRMR, and VIF.According to Maune et al. (2021), “A Q^2 above 0 shows predictive relevance of the model. The results shows that there is significance in the prediction of the constructs (see table 6). Furthermore, the model fit was assessed using SRMR. The value of SRMR was 0.084 that is below the required value of 0.100, indicating an acceptable model fit.”

The VIF values were examined to check collinearity issues of all sets of predictor constructs in the structural model. The inner VIF values of all endogenous constructs and corresponding exogenous constructs are shown in Table 7. All the VIF values were below the acceptable threshold of 5. The author continued to examine the results.

Table 6 shows the hypotheses testing and the goodness of fit assessment results carried out to establish the significance of paths.

Table 6 Mean, STDEV, T-Values, P-Values, Confidence Intervals, R^2, and Q^2

Hypothesis	**Relationship**	**β**	**STDEV**	**T Statistics**	**P Values**	**2.50%**	**97.50 %**
H_{1a}	FUN1< - SSTsq	0.871	0.033	26.316	0.000	0.796	0.923
	SSTsq	0.828	0.059	14.076	0.000	0.691	0.914
	FUN2< - SSTsq	0.851	0.036	23.506	0.000	0.772	0.911
	FUN4< - SSTsq						
H_{1b}	ENJ1< -SSTsq	0.857	0.028	31.052	0.000	0.797	0.905
	ENJ2< -SSTsq	0.849	0.039	21.758	0.000	0.757	0.913
	ENJ4< -SSTsq	0.835	0.036	23.172	0.000	0.756	0.897
H_{1c}	SEC< -SSTsq	0.802	0.041	19.715	0.000	0.701	0.878
	SEC< -SSTsq	0.806	0.037	21.577	0.000	0.731	0.872
H_{1d}	ASU1< - SSTsq	0.809	0.041	19.714	0.000	0.720	0.880
H_{1e}	DES2< -SSTsq	0.797	0.042	18.861	0.000	0.708	0.875
H_{1g}	CUS1< - SSTsq	0.765	0.045	17.113	0.000	0.670	0.844
H_2	SSTsq -> BLY	0.363	0.153	2.480	0.013	0.005	0.594
H_3	SSTsq -> BI	0.753	0.073	10.425	0.000	0.566	0.860
H_4	SSTsq -> CS	0.789	0.039	20.267	0.000	0.707	0.860
H_5	CS -> BLY	0.048	0.114	0.330	0.741	-0.164	0.278
H_6	CS -> BI	*Removed*					
H_7	BI -> BLY	0.528	0.073	7.164	0.000	0.399	0.691
		R^2	***R^2 Adjusted***	***Q^2***			
	BI	0.572	0.567	0.518			
	BLY	0.765	0.758	0.626			
	CS	0.621	0.618	0.470			

Table 7. Collinearity Assessment – Inner VIF Values

	BI	BLY	CS	SSTsq
BI		2.354		
BLY				
CS		2.664		
SSTsq	1.000	3.728	1.000	

3.4.3. Mediation Analysis

Mediation analysis was done to assess the mediating role of CS and BI on the linkage between SSTsq and BLY. The results (see table 8) revealed insignificant ($p > 0.05$) mediating role of CS and a significant ($p < 0.05$) mediating role of BI. The total effect of SSTsq on BLY was significant ($_{\beta} = 0.804$, $t = 13.602$, $p = 0.000$). Table 8 also shows that the direct effect of SSTsq on BLY was significant ($_{\beta} = 0.378$, $t = 2.480$, $p = 0.013$). The impact of SSTsq on BLY became more significant with the inclusion of BI on one hand ($_{\beta} = 0.396$, $t = 5.090$, $p = 0.000$) and on the other hand, the addition of CS had an insignificant impact ($_{\beta} = 0.030$, $t = 0.327$, $p = 0.744$). In general, CS and BI were insignificant and significant respectively.

Table 8. Mediating Role of CS and BI

	Total effect	**T**	**Sig.**	**Direct effect**	**Sig.**		**Indirect effect**	**T**	**Sig.**
SSTsq->BLY	0.804	13.602	0.000	0.378	0.013	SSTsq->CS->BLY	0.030	0.327	0.744
						SSTsq->BI->BLY	0.396	5.090	0.000

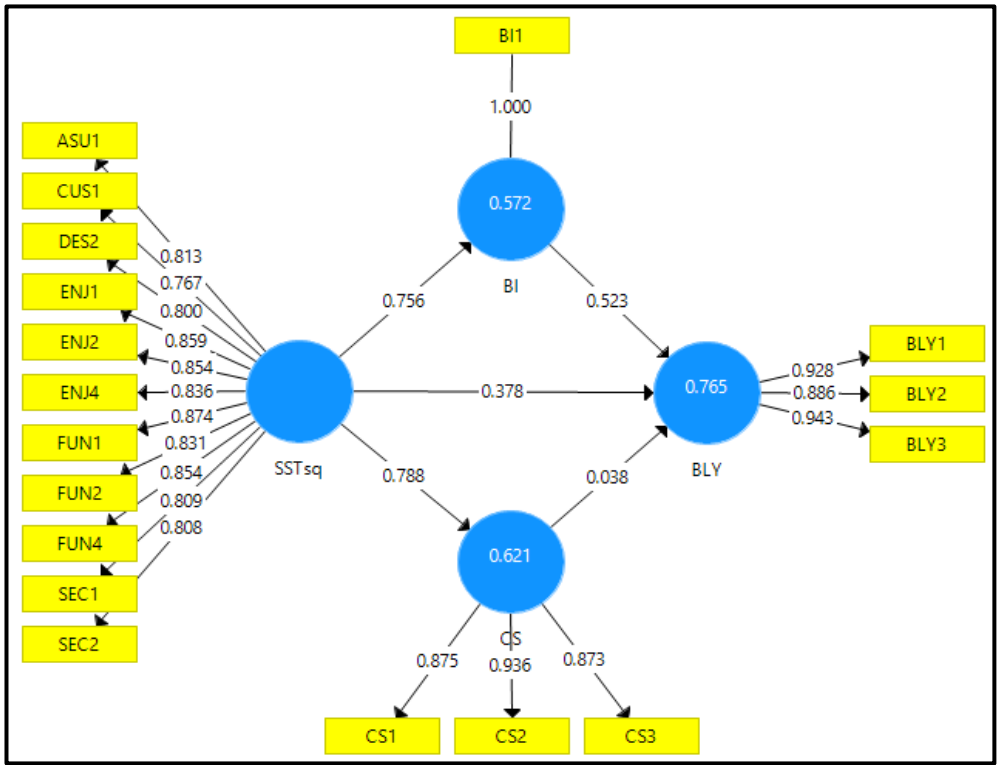

Figure 3. Research Model Results

Goodness of fit: SRMR=0.084 (estimated), 0.084 (saturated)

3.4.4. Importance-Performance Map Analysis

The IPMA was run to determine the relative importance of constructs in the PLS model. In this analysis, "importance reflects the absolute total effect on the final endogenous variable in the path analysis diagram while performance reflects the size of latent variable scores" (Garson, 2016). According to Garson (2016), "this analysis is particularly important in [prioritizing] managerial actions. It is [critical for managerial] focus [to be directed] at improving the performance of those constructs that exhibit a large importance regarding their explanation of a certain target construct but, at the same time, have a relatively low performance."

In this case, a construct becomes significant when its absolute total effect is higher on BLY as measured on the Y axis. Here, SSTsq (0.890) has somewhat greater absolute importance than BI and CS (see Figure 4 and Table 9). Furthermore, a construct has better performance when its mean latent variable score is higher,

showing robust paths measurement as measured on the X axis. Here, BI (73.167) displays greater performance than SSTsq and CS (see Figure 4 and Table 9).

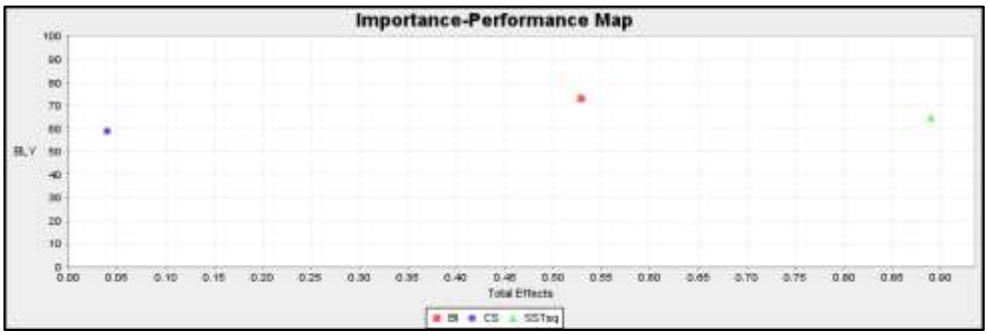

Figure 4. IPM Analysis

4. Discussion

The article assessed the influence of SSTsq on BLY in Zimbabwe`s banking sector using SmartPLS-SEM. The variables were mediated by CS and BI. A path analysis model was developed from literature and hypotheses were tested to ascertain critical paths in the model. The results of the study are as tabulated above. Of note, however, was the insignificant relationship between CS and BLY (H_5) ($\beta = 0.048$, $t = 0.330$, $p = 0.741$). This relationship was in contrast with findings by Kuo et al. (2009) and Den et al. (2010) whose findings show a positive and significant association linking CS and BLY.

In spite of growing attention in the relationship between CS and BI in prior research, this study, however, found an insignificant relationship between the two. Therefore, path CS ->BI (H_6) was not supported hence it was removed from the path analysis model. This path was not reflective of the findings of Burton et al. (2003), Kotler and Keller (2009), Lin and Hsieh (2006), Collier and Sherrell (2010). It is also critical to note that the significance of paths in such a path analysis model can be affected by a number of factors such as level of technological advancement in a country or by the nature of the data collected or industry under study. However, other relationships were in line with prior research findings that showed significant paths between SSTsq and BLY with full mediation by CS and BI. The findings further ascertained the research hypothesis H_1 (with some variations though as shown in table 6), H_2, H_3, H_4, and H_7. The IPMA results show the important constructs in the PLS model.

Radomir and Wilson (2018) state that, "the main purpose of [the IPMA was] to identify areas where managerial action is likely to bring the greatest improvement of a selected target construct in the PLS path [analysis] model." Constructs with a

relatively high importance but a relatively low performance are particularly interesting for improvements that, in turn, results in an increased performance of the selected target construct. “In terms of raising performance, it would be better for management to focus [their] efforts on [SSTsq], in the knowledge that it has a higher importance and improvements here are likely to lead to larger improvements in explaining [BLY]” (Radomir and Wilson, 2018). Holding all other things constant, a one unit increase in the performance of SSTsq brings 0.890 increase in the performance of BLY (see table 9).

Table 9. Importance-Performance Analysis

Construct	Performance	Total effect
BI	73.167	0.529
CS	58.759	0.040
SSTsq	64.565	0.890

4.1. Limitations

The study examined the effects of SSTsq on BLY in Zimbabwe` banking sector using SmartPLS-SEM. The results of this study need to be considered in light of the following limitations regarding the sample, time frame and data collected.

Data collection and COVID-19 restrictions limited the scope and findings of this study. The impact of COVID-19 left the researcher using online questionnaires which were proven to be a challenge due to the cost of using internet in Zimbabwe. Internet data is expensive in Zimbabwe in comparison with other sub-Saharan African countries. Initially the researcher had targeted more than 110 respondents but due to a number of reasons such as the one mentioned above, 93 responses were received. After data cleaning process, only 88 were found suitable for use for the purposes of this study. Maune et al. (2021) argue that, “there is very limited literature on methods, risks, challenges and opportunities faced by researchers carrying out researches during the Covid-19 pandemic lockdowns. Participatory methods may be planned, to include some marginalised groups in the near future.”In future a bigger sample will be useful to validate findings.

A longitudinal study would be useful in future studies that measure relationships between variables. In addition, more future researches may consider advanced PLS-SEM techniques such as the FIMIXPLS, PLS multigroup, and PLS-POS methods to uncover unobserved heterogeneity and generate further differentiated findings and conclusions.

Covid-19 pandemic lockdown restrictions have caused some serious ethical challenges to researchers especially on data collection. As a result researchers are therefore encouraged to put a lot of research ethics into consideration. In situations like this the use of secondary data will be more relevant in some cases although this might not be adequate to come up will all-encompassing conclusions and recommendations. These are some of the issues that call for serious considerations. Despite all this, the researcher had to forge ahead with what works, because truth is a normative concept – truth is what works.

5. Conclusion

In summary this article examined the relationship between self-service technology service quality and brand loyalty in Zimbabwe`s banking sector with customer satisfaction and behaviour intentions playing the mediating roles. The main objective of this study was to develop a path analysis model for the banking industry in Zimbabwe.

To understand the relationship between variables, the study followed a deductive approach with primary data collected through an online survey. The study applied the PLS-SEM algorithm to analyse relationships between latent and observed variables. Respondents were drawn from bank customers in Zimbabwe. More than 110 online questionnaires were administered via WhatsApp platforms and email to banking customers drawn across the country during the month of October and November 2021. Ninety three (93) responses were received through the Google forms platform. The author retained 88 responses for analysis after the data cleaning.

Radomir and Wilson (2018) argue that, “research has shown that customers are today more demanding and have greater expectations, than in the past.” However, “despite extensive research on corporate reputation, scholars have rather neglected the view that quality can act as a signal of reputation when customers experience a service offered by a company” (Radomir and Wilson, 2018). In principle, on the norm of reciprocity is where ongoing relationships are built. Research has also shown an upward trajectory in the access and usage of financial self-service technologies and products. There has been an increase in the adoption of digital platforms, as evidenced by the increased number of active mobile subscribers. Service providers are introducing technology enabled mechanisms such as self-service technologies to provide convenient and quality services to customers to attain better productivity and satisfaction. The SSTsq allows customers to do their transactions remotely. Most banks globally and locally have created a variety of interfaces which include mobile money transfers, mobile complaints, social media platforms, mobile account opening platforms among other services. However, of concern in Zimbabwe is the continual

existence of long banking queues despite COVID-19 pandemic restrictions and job losses.

This study was based on the SET that "suggests that customers may want to reciprocate and demonstrate that they value the relationship built by showing a predisposition towards maintaining the relationship" (Radomir and Wilson, 2018). Literature provides that perceptions about both self-service technology service quality and customer satisfaction are important determinants of behaviour intention that leads to brand loyalty in the banking sector. Consumers are more inclined to respond with a favourable behaviour when perceptions are favourable as expressed through brand loyalty.

The study adopted a reflective measurement model. The study satisfied the validity and reliability tests such as Cronbach`s alpha, composite reliability, Average Variance Extracted, Fornell-Larcker criterion, and Heterotrait-Monotrait ratio. The results of the structural model were then evaluated after confirming the validity and reliability of the measures of constructs. The structural model was assessed for Goodness of fit of the structural model was assessed by establishing significance of paths, Q^2, and R^2. Furthermore, the model fit was assessed using SRMR. Additionally, the VIF values were examined to check collinearity issues in the structural model.

Mediation analysis was done to assess the mediating role of CS and BI on the linkage between SSTsq and BLY. On the whole, the roles of the two mediators (BI and CS) were significant and insignificant respectively. The IPMA was run to determine the comparative significance of constructs in the structural model with SSTsq showing greater importance while BI showing greater performance.

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