

Technology Service Quality and Customer Satisfaction in the Uganda's Banking Sector

Cyrus Osinde, Jamiah Mayanja, and Anthony Tibaingana

Abstract—Banking industry has transformed and technologies are being extensively used to ease customers banking needs. Despite its attractiveness, customer satisfaction towards technology banking service quality has become an issue among the banks in Uganda. Therefore, this study is aimed at assessing the impact of technology service quality on customer satisfaction in Pride microfinance limited. The research adopts a quantitative research design focusing on a single case study. Data were collected via self-administered questionnaire from a random sample of 384 customers drawn from the population of customers from selected branches using technology banking service. The questionnaire covered five dimensions of service quality namely; efficiency reliability, responsiveness, fulfillment, security. The findings indicate that technology service quality has positive and direct effect on customer satisfaction. The results of this study indicate that the dimension of fulfillment has the greatest impact on customer satisfaction. Among the dimensions of technology service quality, two dimensions, responsiveness and security did not have significant impact on customer satisfaction. Banking institutions should use service quality dimensions to evaluate technology delivered services to ensure customer satisfaction, which is a sources of competitive advantage given, that all financial institutions almost deal in similar products and services.

Index Terms—Banking sector, customer satisfaction, technology service quality.

I. INTRODUCTION

Globally, the banking sector has become highly competitive, commercial banks have begun to target microfinance traditional customers, new banks and MFIs have continued to be created and the clientele is becoming more sophisticated concerning the quality of service offered [1]. Offering quality services is very essential for all financial institutions where almost all competing companies in the industry offer similar products [1]. As a result, banking institutions are taking advantage of the booming trend of technology applications to automate their services as a way of differentiating themselves from competitors, particularly in meeting the demands of customers [2]. Self-service technologies like automatic teller machines, telephone banking, internet banking, mobile banking, SMS banking are being used to meet customers banking needs [3].

These self-service technologies have universal aspects of; convenience of use, security of transactions, quality of information delivered, ease of use and reliability of technology [1], [4].

In Uganda, the banking sector is one of the key drivers of economic growth and development [5]. The sector comprises of the Bank of Uganda (Central Bank), 25 commercial banks, 5 microfinance deposit taking institutions (MDI), 4 credit deposit institutions, 2 development banks serving approximately 7.4 million account holders [6]. Pride Microfinance Uganda Ltd is one of the oldest MDI in Uganda with 34 networked branches across the country, providing services and products majorly to low income earners [7]. Pride Microfinance introduced technology services such as online banking, automated teller machines (ATMs), point of sale (POS) machines and Mobile phone banking (MPB) to enhance institutions efficiency [7], [8]. The institution currently has 68 point of sale (POS) machines and 20 automated teller machines (ATMs) spread across the country. Mobile phone banking platform with Mobile Telephone Network (MTN) and Airtel were launched to allow customers to; deposit and withdraw money off their accounts, check their account balance, mini statement, do funds transfer, purchase airtime and pay for utilities. Alerts regarding all account transactions such as withdrawals and deposits are provided to keep customers informed about the status of their account. In addition, pay way services are provided to buy airtime and pay for utilities [8], [9].

Despite the growing adoption and use of technology banking, complaints revealing customer dissatisfaction are still being received and customer turnover is experienced. For example, since the introduction of technology service delivery, 986 customers have left and 39.3% of the accounts became dormant [8], [10]. In addition, Pride's customer satisfaction report (2016) showed that several clients logged in numerous complaints compared to the previous years 2014 and 2015 about the unreliability of the technology services [11], Clients have on several occasions reported visiting the ATMs but fail to transact either because the machines are down or out of cash. On the other hand, clients who try to access their money through the mobile phone banking channel have reported failure due to process complexity. That is, they can either access it through the Pride mobile application (app) compatible only with android phones or use the unstructured supplementary service data (USSD) of which the session time out is very short rendering it unfavorable for some customers [10]. This study aims to examine the relationship between technology service quality on customer satisfaction at Pride microfinance. The study aims to achieve the following

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objectives:

- 1) To identify the dimensions of technology service quality used by Pride MDI.
- 2) To establish the relationship technology service quality dimensions and customer satisfaction.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

A. *Technology Service Quality*

Service quality is the comparison of service users' expectations with their perceptions of the performance of services [12]. A SERVQUAL model which constitute of five attributes namely; tangibles, reliability, responsiveness, is an approach used to evaluate service quality [12]. In the context of technology service, [13] suggests eleven criteria of electronic service quality (e-SQ). These criteria include access, ease of navigation, efficiency, customization/personalization, security/privacy, responsiveness, assurance/trust, price knowledge, site aesthetics, reliability and flexibility. [14] also developed a multi-item scale for assessment of electronic service quality, which they named as E-S-QUAL. The four dimensions of E-S-QUAL are efficiency, fulfillment, system availability and privacy.

Several researchers have used both the SERVQUAL and E-S-QUAL models to evaluate the quality of technology banking. [15] used SERVQUAL instrument to which considered; user friendliness, ease of use, accurate transactions and operation in 24 hours to investigate the relationship between technology and service quality in the banking industry in Nigeria. [16] also measured service quality in commercial banks using a SERVQUAL model. [17] used E-S-QUAL elements such as reliability; responsiveness; ease of use; personalization; security; and website to examine the effect of e-service quality dimensions on customer's perception in the banking sector. [18] adopted the E-S-QUAL element like; availability, security, personalisation, reliability and fulfillment to evaluate the effect of electronic service quality on customer satisfaction and loyalty at Saderat bank. [19] assessed internet banking services and customer satisfaction using E-S-QUAL. [20] assessed the quality of banking technologies using eight service quality dimensions namely; easiness, assurance, security, customization, comprehensiveness, convenience, support services and employee knowledge.

B. *Customer Satisfaction*

Customer satisfaction is defined as the consumer's response to the evaluation of the perceived discrepancy between prior expectations and the actual performance of the product or service as perceived after its consumption [21]. [22] and [23] define customer satisfaction has the extent to which a product's perceived performance matches a buyer's expectations. According to [24], customer satisfaction is the individual's perception of the performance of the products or services in relation to his or her expectations. Basing on the above definitions, customer satisfaction is a response that pertains to a particular focus and occurs at a certain time [25]. This implies that that satisfaction is an overall post-purchase evaluation by the

consumer [26]. If the purchased goods or services by the customer are measured at the same level of his/her expectations, the customer will be satisfied. If the level of the purchased goods or services is higher than the level of expectations, he/she will be very happy. If this level is lower than the expectations, the customer will be dissatisfied [27]. Several scholars consider customer satisfaction as the primary aspect for the banking sector [28].

C. *Interrelationships between Technology Service Quality Dimensions and Customer Satisfaction*

1) *Efficiency and customer satisfaction*

Efficiency is achieved if the site is simple to use, time saving, structured properly and requires minimum information to be input by the customer [29]. [30] mentioned that ability to perform transactions more quickly in the SST environment lead to customer satisfaction. Further, [31] noted that efficiency attribute of SST environment leads to customer satisfaction. The perceived waiting time, which is associated with the efficiency aspect of the SST in the retail banking, has a positive influence on customer satisfaction [32]. Therefore, based on the above arguments, we argue efficiency of technology bases service is a critical driver of customer satisfaction and therefore we propose the following hypothesis:

H1: Efficiency of technology service is positively related to customer satisfaction.

2) *Reliability and customer satisfaction*

Reliability refers to the consistency of performance, dependability, accuracy in billing, prompt reply to customer enquiries, keeping records correctly and performing the service right at the designated time [12]. Reliability is found to be one of the strong predictors of continuous usage of technology thereby influencing customer satisfaction in the retail banking [33]. [2] found the reliability of ATM machines influenced customer satisfaction with internet banking in Vietnam. [31] found a positive influence of the reliability of SST attribute on customer satisfaction. According to [34] customers in Hong Kong choose banks for investment funds depending on the dependability and reliability of the banks. It is noted that being reliable is an exceptionally important quality in the banking industry [16]. Thus, we hypothesize that:

H2: Reliability of technology service is positively related to customer satisfaction.

3) *Responsiveness and customer satisfaction*

Responsiveness refers to the willingness or readiness to provide service, timeliness of service such as mailing a transaction slip immediately, calling the customer back quickly and giving prompt service [12]. According to [31] responsiveness of the technology banking reflects the level of assistance given when a technology stops working or when a mistake is made while using the service. An empirical study on ATM service quality on customer satisfaction conducted by [35] noted that 200 ATM users of United Bank of Africa Lagos indicated ATM responsiveness as the most important factors to increase customer satisfaction. [36] noted that technology responsiveness in terms of understanding customers' needs and wants, providing feedback, convenient operating hours

and individualized attention as important for customer satisfaction. Under this framework, we suppose that responsiveness of technology service may lead to customer satisfaction, thus we hypothesized:

H3: Responsiveness of technology service is positively related to customer satisfaction.

4) Fulfillment and customer satisfaction

Fulfillment refers to the extent to which the promises about order delivery and item availability are fulfilled [29]. Besides, fulfillment also refers to the accuracy of service promises, delivers the product in the promised time [37]. [38] identified three items of fulfillment as providing services according to users' preferences, acknowledging users by name and quickly delivering what the user orders. [19] identified fulfillment as an important electronic service quality for the Iranian internet banking. [2] conducted a research on service quality, customer satisfaction, and customer loyalty of internet banking in Vietnam, and fulfillment was identified as the most important influence on customer satisfaction. Based on the argument we hypothesize that;

H4: Fulfillment of technology service is positively related to customer satisfaction.

5) Security and customer satisfaction

Security refers to the freedom from danger, risk, or doubt, physical safety and financial security, confidentiality [12]. The perceived security of SSTs determines the acceptance and usage of SST by customers [39]. Earlier research studies by [40] and [41], have recommended that financial transactions done using the technology services should be secure to make customers feel that their personal information shall not be shared with third parties. Secure features available in an SST environment have been shown to affect service quality perception and satisfaction towards SST services [42]. This implies that e-banking customers are more satisfied with the security and accuracy of transactions. Therefore, based on the above arguments, we argue security of technology bases service is a critical driver of customer satisfaction and therefore we propose the following hypothesis:

H5: Security of technology service is positively related to customer satisfaction.

III. RESEARCH METHODOLOGY

A. Population and Sample

This research adopts a quantitative research design focusing on Pride Microfinance as a case study. A survey was conducted on customers because they are directly affected by the technology services. According to [43] surveys are used to determine the opinions, attitudes, preferences and perceptions of persons of interest to the researcher. The study population consisted of 521,210 customers of the ten branches where technology services have been fully implemented. Forty-five (45) customers were randomly selected from each branch giving a sample of 450 customers. As regards to the adequacy of sample size, in behavioral research, sample size of between 30 and 500 is recommended [44].

B. Data Collection

The study employed questionnaire to obtain information from the participants which consisted of three sections. Section A consists of demographic data which involved gender, educational level, tenure with the institution and technology services accessible to customer. Section B consists of twenty-two (22) items which were used to measure 6 variables, namely efficiency, reliability, responsiveness, fulfillment, security and customer satisfaction. The questionnaire items were adopted from previous studies [2], [16], [31], [30], [35] and [42].

Respondents were requested to indicate their response on a 5-point itemized rating scale ranging from 1 = strongly disagree to 5 = strongly agree. [45] note that Likert scales are relatively easy to use and provide respondents with a wide range of choices and enable the researcher to discover the strength of feeling or attitude towards an issue. The participants were given the questionnaire outside the banking hall to answer after obtaining their informed consent to participate in this research. This strategy was used to clarify any misinterpretation associated with the questionnaire items. Of the 450 survey questionnaire administered, 383 completed questionnaires were received (a response rate of 85%).

C. Data Analysis

The statistical computer program used for data analysis was SPSS for Windows Version 11.0. Several tests are conducted to determine demographic profile of the respondents, mean values, standard deviation of each construct and inter-correlation among variables. The multiple regression analysis was used to further explain the significance of the independent and dependent variables.

IV. RESEARCH RESULTS

Respondents Demographic Profile

The demographic profile of the respondents is presented in Table I. considered gender, educational level, tenure with the institution and technology services accessible to customer.

TABLE I: SAMPLE CHARACTERISTICS (N = 383)

Variable	Categories	Frequency	Percentage
Gender	Male	224	58.5
	Female	159	41.5
Level of education	Master's Degree	22	5.7
	Bachelor's Degree	135	35.2
	Diploma	103	26.9
	Certificate	123	32.1
Tenure with Pride	<1 Year	84	21.9
	1-3 Years	162	42.3
	4-5 Years	98	25.6
	>5 Years	39	10.2
Technology services	Automated teller machines	233	60.8
	Mobile phone banking	102	26.6
	Point of sale machines	48	12.5

TABLE II: FREQUENCY OF TECHNOLOGIES USED BY CLIENTS

Technology	Rate of Usage					
	Always		sometimes		Never	
	N	%	N	%	N	%
Automated teller machines	195	47.2	107	43.5	81	16.5
Mobile phone banking	158	38.3	97	39.4	128	26.1
Point of sale machines	60	14.5	42	17.1	281	57.3

The results in Table I show that the majority of the respondents (58.5%) were male while 41.5% were female. Respondents with a bachelor's degree comprised 35.7%, while those with master's degree comprised 5.7%. Respondents that had been in customers for fewer than 5 ye for 1-3 years comprised 42.3%, while 10.2% had been for more than five years. The research was dominated by those use automated teller machines (60.8%).

The results in Table II, indicate that (47.2%) always use

automated teller machines, (38.3%) mobile phone banking while (14.5%) point of sale machines. More than half of the respondents (57.3%) never use point of sale machines. Generally, the findings clearly demonstrate that clients have access to a variety of technology service use them regularly, though Automated teller machines are most popular. This finding is supported by [46] and [20] studies which discovered that majority of the bank customers use automated teller machines more than point of sale.

From Table III, the internal consistency of the construct was examined using Cronbach's alpha and all consistency values of Cronbach's alpha lie between 0.65 and 0.93, indicating that the questionnaire used is reliable [47]. As far as the mean values are concerned, customers are highly satisfied with fulfilment (mean= 4.13, SD = 1.36), and fairly satisfied with efficiency (mean= 3.93, SD = 1.48), reliability (mean= 3.92, SD = 1.45) responsiveness (mean= 3.56, SD = 1.41) and security (mean= 3.47, SD = 1.382).

TABLE III: AVERAGE MEAN, CRONBACH'S ALPHA AND CORRELATION MATRIX

Variable	Average Mean	Standard deviation	Cronbach Alpha	SAT	EFF	REL	RES	FUL	SEC
SAT	3.77	1.48	0.65	1.00					
EFF	3.93	1.45	0.79	0.50	1.00				
REL	3.92	1.41	0.66	0.48	0.48	1.00			
RES	3.56	1.36	0.77	0.44	0.71	0.36	1.00		
FUL	4.13	1.382	0.79	0.51	0.43	0.81	0.32	1.00	
SEC	3.47	1.480	0.65	0.39	0.38	0.68	0.45	0.70	1.00

* $p < 0.01$

Satisfaction (SAT); Efficiency (EFF); Reliability (REL); Responsiveness (RES); Fulfilment (FUL); Security (SEC) Security (SEC)

TABLE IV: MULTIPLE REGRESSION ANALYSIS

Dependent Variable: Customer satisfaction R Square = 0.493					
Independent variables	Beta	T-value	Sig. (p)	Hypotheses	Hypotheses outcome
EFF	0.305	4.205	0.000	H ₁	Supported
REL	0.342	4.332	0.000	H ₂	Supported
RES	0.212	2.133	0.034	H ₃	Not supported
FUL	0.423	5.260	0.000	H ₄	Supported
SEC	0.205	2.067	0.039	H ₅	Not supported

* $p < 0.01$

Efficiency (EFF); Reliability (REL); Responsiveness (RES); Fulfilment (FUL); Security (SEC) Security (SEC)

As shown in Table III, the correlation matrix indicates strong significant positive relationship between fulfilment ($r=0.518, p \leq 0.01$) and efficiency ($r=0.503, p \leq 0.01$) with customer satisfaction. Reliability ($r=0.485$) and responsiveness ($r=0.443$) have a moderate significant positive moderate correlation with customer satisfaction. The weakest correlation was for security and customer satisfaction ($r=0.390, p \leq 0.01$). The correlation matrix indicates that the highest coefficient of correlation in this research is between fulfilment and reliability, is 0.815.

It is notable that fulfilment of technology service seems more influential to customer satisfaction than other variables. This finding is then proven to be consistent with the result demonstrated by [48] which discovered a direct relationship between the dimensions (efficiency, reliability, security and privacy, and responsiveness) of internet banking service quality and customer satisfaction. The results of this study also support what [49] found that fulfilment play an essential role in creating customer satisfaction in internet banking. Likewise, findings from the study corroborate with the study of [19] which established that fulfilment constitutes electronic service quality for the Iranian internet banking.

The results of the multiple regression analysis are reported in Table IV. The variance explained in the dependent variable by the technology service quality dimensions is 49.3%. Hypothesis 1 assumes that efficiency of technology service has a significant influence on customer satisfaction. The results indicate that efficiency of technology service has a positive effect on customer satisfaction ($\beta = 0.305, p < 0.001$). Hypothesis 2 assumes that reliability of technology service has a significant influence on customer satisfaction. The results indicate that e reliability of technology service has a positive effect on customer satisfaction ($\beta = 0.342, p < 0.001$). Hypothesis 3 assumes that fulfilment of technology service has a significant influence on customer satisfaction. The results indicate that fulfilment of technology service has a positive effect on customer satisfaction ($\beta = 0.423, p < 0.001$).

Thus, H1, H2 and H4 are supported.

The regression coefficient for interactions between responsiveness of technology service and customer satisfaction (H3) is not statistically significant at ($\beta = 0.212, p < 0.001$). The regression coefficient for security of technology service and customer satisfaction (H5) is not statistically significant at ($\beta = 0.205, p < 0.001$). Thus, H3

and H5 are not supported. The results suggest that customers do not believe that responsiveness and security of technology service would have a meaningful influence on customer satisfaction. The results of this study support [16] finding where there was a negative relationship between security and customer satisfaction in Internet Banking in Vietnam.

V. CONCLUSIONS AND RECOMMENDATIONS

This research seeks to make an original contribution to knowledge by investigating the effect of technology service quality on customer satisfaction in Pride Microfinance in Uganda. The current study considered customer satisfaction as a person's feelings of pleasure or disappointment that results from service performance, and to enhance the understanding of the construct further, this study empirically tested technology quality dimensions such as fulfillment reliability, efficiency responsiveness and security. The relationship between technology services quality and customer satisfaction in Pride microfinance has been confirmed. The results showed that technology service quality explain 49% variance in customer satisfaction. It is notable that fulfillment of technology service seems more influential to customer satisfaction than other dimensions, while responsiveness and security of technology service quality do not have a meaningful influence on customer satisfaction.

This study identified a total of five service quality dimensions. In order to maintain a high level of service quality, banks using technology banking services should pay attention to all the dimensions tested in this study. However, given limited resources, it is recommended that the technology banking quality emphasise the three main significant dimensions, fulfillment, efficiency and reliability, in order to achieve high level of service quality and customer satisfaction. For this reason, banking institutions in Uganda, or probably in any developing country, should ensure technology banking is more fulfilling by performing the service right the first time and also providing quick confirmation when the work done. Quick confirmation after transaction or work is significant for customers. In terms of efficiency, technology banking should be concise, time saving, easy to understand and should keep customers informed in a language they can understand and also provide the adequate explanations. For reliability, technology should function properly and should be up and running all the time. The technology should not freeze after customers putting in all information. An understanding of the dimensions identified permits bank managers and policy makers to put more efforts and resources to the most effective ways to increase customer satisfaction and inspire new customers to accept technology banking.

VI. LIMITATIONS AND FUTURE DIRECTIONS

The study made use of a quantitative research design which may have prohibited the researcher to gain in-depth information from the respondents. A qualitative research study could be suggested in order to gain more insight on the customers' views about technology service quality. A

relatively small sample size of Pride Microfinance limits the generalizability of results. A survey with a large sample size that covers different banking institutions is recommended for future studies to shed more light on the customers' perspective on technology service quality.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors made substantial contributions to conception and design of the study, literature review, conducted data collection and performing the analyses, and interpretation of the results and participated in drafting the article, assessing the conclusions, writing the article and the editing.

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