THE IMPACT OF TECHNOLOGY BASED SELF SERVICE BANKING SERVICE QUALITY ON CUSTOMER SATISFACTION: A CASE STUDY OF THE NIGERIAN BANKING SECTOR

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ABSTRACT

The purpose of the research is to determine the impact of Technology Based Self-Service Banking (TBSSB) on customers' satisfaction in the Nigerian Banking Sector. Focus is given to five selected banks within Yola metropolis, in Adamawa state. The research determines the degree of impact on speed of delivery, convenience, efficiency, reliability & security as well as their influence on customer satisfaction. Five hypotheses were formulated and tested using the Structural Equation Modeling-Partial Least Square (SEM-PLS). A survey of 248 valid questionnaire instruments, were collected from the customers of TBSSB within Yola metropolis of Adamawa State. Data obtained from the customers were analyzed using the SEM-PLS to determine the reliability and validity of the model. The findings indicate that speed of delivery and reliability has significant influence on customer satisfaction among other variables. Speed of delivery, convenience and efficiency has small impact on customer satisfaction while reliability seen as having medium degree of impact on customer satisfaction, while security has a large impact on the customer satisfaction. The research findings are of importance to both theory and practice.

Keywords: TBSSB, Service Quality, Customer Satisfaction, Technology Based Service,

1 INTRODUCTION

1.1 Background of the Study

Today, almost all the Nigerian commercial banks provide automated services better known as Technology Based Self Service Banking (TBSSB). The technology based self-service banking includes ; mobile banking, internet banking automated teller machine banking and any other self banking transactions, most of which are similar [3]. Technology Based Self-Service is changing the way the financial markets uses innovative resources with enterprise deliverables [7]. The emergence of TBSSB has led to the innovation of new strategies for improving and facilitating customer satisfaction[2]. Information Technology is considered as one of the greatest information superhighway in our global world today, transforming the financial institutions. Consequently technology has led to new innovative services, creating market opportunities and introducing new business information systems. The transformation and growth of Information Systems in the banking industry has added to inventions and advances in developing countries, which has introduced a new system of process in ICT in those countries [5]. TBSSB enables customers to complete services for themselves without supports from the bank employee.

TBSSB includes, all sorts of computing devices used for transaction in the bank such as Automated Teller Machine (ATM), electronic mobile banking and internet banking services among others [21] Moreover,. The rise of TBSSB in developing countries has played a significant role in determining the successes of online purchase, electronic commerce, as well as delivering services and improving collaborative flow of information [17]. Technology Based Self-Service is a "relatively new type of information system that uses the World Wide Web (WWW) to enable customers to do their transactions and financial activities in virtual space"[33]. It is an interesting self-banking service, where a customer could do different transactions without any support from the bank employee. There are many advantages of using the automated TBSSB service, which include; lower customer influx, low cost of operations, and convenient self-service banking [20]. These have eased Nigerian-banking culture and have successfully standardized their business operations. The technology transaction has brought about social change such as user control of operations, less restriction, environmental management and convenience among others.

2. Problem Statement

[34] Yen was able to use the Attribute Based Model (ABM) to explore the interaction between technologies based service opportunities and customer satisfaction. He investigated the interaction between the service quality option and technology. The model was used because it had an instrument of measurement for service quality.

In his study, the potential of Attribute Based Model was limited in its interface with technological service; which means interaction between the customer and the technology system. The model was not able to address how TBSSB service quality influences customer satisfaction in the banking systems. The ABM's major focus is on the customer' choice process; hence, its usefulness in the research of customer satisfaction in using self-service technology has not yet been explored [6]. On the other hand, the Discrepancy Theory of Satisfaction in Information System (IS), which has been used in studies of job

satisfaction, which are based on Maslow's hierarchy of need. This concept is frequently applied in customer satisfaction and information systems research, in the service economy to measure the delivery of products or services.

However, the widespread proliferation of TBSSB across the service industry is apparent. Self-Service Technology Banking is attracting a lot of research attention in banking marketing research and management [8] Research work has been carried out on technology banking TBSSB and the exceptional way of delivering quality services to customers in financial institutions [22]. Research has been done on the impact of technology mobile banking in Nigeria; nevertheless, existing studies on TBSSB are limited to one service platform, which is internet banking and information system, showing their relationship with quality service measurement [26]. TBSSB is a recent service delivery system, and little research has been carried on it [24]. The impact of technology banking on customer satisfaction in Nigeria and service quality is not yet clear [12]. The impact of self-service technology on customer satisfaction is not yet known (Parasuraman & Grewal, 2000).

3 LITERITURE REVIEW

3.1 Customer Satisfaction and the Technology 2.1 Based Self Service Banking

Customer service quality, which means ensuring customer satisfaction at all times, has become a major factor of consideration in determining the success and growth of organizational enterprise (Djajanto, Nimran, & Kumadji, 2014). Service quality refers to the general evaluation of service delivered through electronic channels, such as the Internet, telephone lines and or automated services. Similarly, Dabholkar, Michelle, and Lee (2003) assessed the use of self-service technology and found that customers have begun to accept the new way of accessing various e-services including banking services.

In addition Meuter, Ostrom, Roundtree, and Bitner (2000) reported an increase in the number of financial institutions that were using self-service and other service technology such as Automated Teller Machines (ATM), telephone and internet banking, as well as mobile application banking. All of these could be utilized on various independent platforms to meet the customer's' needs without support from the bank staff. Another impact of technology self-service on customer's satisfaction was reported by [35]. In their case, they found that the corporate image had an effect on customers' perceived value of the service. This encouraged the banking sector to pay more attention to their customer's perceived value by improving their service quality [2], on his part focuses on mobile banking which he believes provides positive influence on service delivery at retail banks in Nigeria.

Customer satisfaction in a business world, can be define as a method by which services and products are supplied and delivered by industry in order to meet the customers expectation. Customer satisfaction, could also be viewed as the feelings and judgment of quality service as experienced by the customers, It is generally agreed that customer satisfaction is fundamental in ensuring business is successful. When customers are fulfilled with a business contract, it will ensure market growth for the organization in the near future. The impact of TBSSB on customer satisfaction has been found to be influenced by service quality, which considered the mobile banking technology. On the other hand, researcher examine the dependability and responsiveness ofAutomated Teller Machine (ATM) and how it determines customer satisfaction. Customer satisfaction presents an evaluation framework for the sustainability of technology systems and excellence management [10].

3.1 ATTRIBUTE BASED MODEL IN INFORMATION SYSTEM (IS) RESEARCH

Technology Based Self-Service (TBSS) has a significant feature, which has been used by customers to evaluate TBSS and its use. The Attribute Based Model according to Dabholkar (1996) is an appliance for dimension of the service quality of TBSS. This model is relevant because it has studied how the need of customer collaboration in using technological service influences the customer's intention to use it [34]. The model however, reveals that based on the degree of collaboration with the technology, the customers have adopted new perceptions about TBSS. The expected service attribute, the associated service quality and dimension are significant measurement in the study of TBSSB. In this study an attribute of service quality was added, which is efficiency to investigate the TBSSB impact of quality service and associated factors on consumer satisfaction.

The Attribute Based Model is considered as a significant measurement of service quality and associated factors. The model further describes that the associated factors of quality measurement can lead to intent to use technology based self-service banking. The first construct of the Attribute Based Model is speed of delivery. This is the actual stipulated amount of time between the time of delivery of a service and the waiting time. The second construct in the Attribute Based Model is convenience. This means ease of use of the technology service with limited risk. It also shows the user's ability to use the technology with ease. That information on the technology can be viewed at a convenient time. The factor have been found and suggested as significant factors that influence the objective to use TBSS [23]. Another construct of the Attribute Based Model is reliability; reliability has to do with continuous correct functioning of the technology system, and can be depended upon at all times [19]. Reliability of service has influence on user control and the satisfaction of service to be delivered.

Enjoyment of service as one of the constructs of Attribute Based Model is the stimulating and the satisfying perceived nature of the technology, which fascinates more businesses that are curious about using it. "Enjoyment is one of the most relevant attributes when evaluating service quality[9]. When the self-service technology consumes more time to process than the customer expected does, the customer would not be excited because it is time consuming.

The last construct of Attribute Based Model is Control/Security. This is an essential attribute valued by customers. Control and security are central in measuring impact of the self-service technology [34].

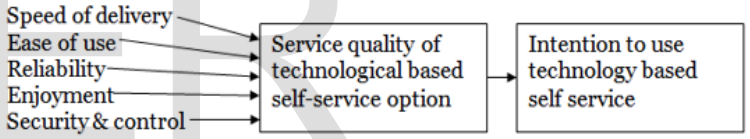

Figure 1: Shows the Attribute Based Model (Adapted from Dabholkar, 1996).

3.2 DATA COLLECTION AND ANALYSIS

Survey design was used to collect data from the selected five retail commercial banks in Jimeta metropolitan area of Adamawa State. Using purposive sampling techniques to understand users experience of TBSSB and was systematic purposeful and answerable. The purpose of this empirical investigation is therefore to obtain reliable and valid data in accordance with the research question and objectives the five selected banks were as follows: These are: Zenith Bank®, Guaranty Trust Bank®, First Bank of Nigeria®, Fidelity Bank® and Union Bank® of Nigeria. The users were above 18 years of age and were selected at the various designated banks

Table 1: Demographic Classifications

Variable	Classification of Variables	Frequency	Percentage
Gender	Male	135	54.4%
	Female	113	45.6%
Age	Between 18-30	137	54.8%
	Between 31-50	89	35.9%
	51 and Above	22	8.9%
Educational Status	O/Level	42	16.9%
	Diploma/NCE	65	26.2%
	Basic Degree	129	52%
	Master's & Ph.D.	12	4.8%
Profession	Self-employed	35	14.1%
	Student	97	39.1%
	Employed	74	29.8%
	Unemployed	42	16.9%

Above is the result of the demographic classification of the respondents. 45.6 % of the respondents were female and 54.4 % were male. The respondents were all 18 years and above. This means 54.8% of the respondents were 18-31years of Age, 35.9 percent were within the age range of 31-50years. And 8.9 % of the respondents were above 50 years, of all the respondents, 16.9 % of them had the Ordinary Level Senior School Certificate Examination, 26.2 % had Diploma/NCE, 52 % had Bachelor or Degree BSc/B-Tech, while 4.8 % had Masters of Science and Doctorate of Philosophy M.Sc./Ph.D. The occupation of the respondents is as follows: 14.1% were self-employed, 39.1% were student, 29.8 % were employed and 16.9 % were jobless.

3.3 Soft wares for Analysis

. The collected data was analyzed using SPSS for descriptive analysis and the Partial Least Squares Structural Equation Modeling (PLS-SEM) for structural impact, delivery, convenience, efficiency, reliability, security and customer satisfaction

Table 2: Variables, Indicator Loadings, Indicator Reliability, Composite Reliability and AVE

Latent Variable	Indicators	Loadings	indicator Reliability i.e Loadings $*^2$	Composite Reliability	Average Variance Extracted (AVE)
Convenience	CE1	0.701	0.501	0.805	0.579
	CE2	0.814	0.663		
	CE3	0.764	0.584		
Customer Satisfaction	CS2	0.835	0.697	0.825	0.611
	CS3	0.725	0.523		
	CS4	0.782	0.612		
Efficiency	EF1	0.806	0.649	0.819	0.602
	EF2	0.712	0.507		
	EF3	0.806	0.651		
Reliability	R1	0.744	0.554	0.801	0.573
	R3	0.728	0.531		
	R4	0.797	0.635		
Security	S1	0.741	0.549	0.782	0.544
	S3	0.736	0.541		
	S4	0.736	0.541		
Speed of Delivery	SD1	0.723	0.522	0.811	0.517
	SD2	0.706	0.510		
	SD3	0.735	0.541		
	SD4	0.713	0.508		

3.4 Convergent Validity

Convergent validity is significant and is established when the variance extracted value exceeds 0.5. "Convergent validity explains the variance in its indicator as it is explained by AVE" [13]. The above table shows results analysis of variance extracted ranged from 0.517 to 0.611 (Table 4). This was shown by scale speed.

3.5 Discriminate Validity

An appropriate Average Variance Extracted (AVE) enables us to form discriminate validity. The "AVE is determined if the square root of all the AVE is bigger than any correlation in the construct. This is the rule of

thumb, "the square root of each construct should be much larger than the correlation of the specific construct or and any of the other constructs in the model" which ought to be at least 0.5"[13]. In addition, discriminant validity is confirmed if the diagonal element in the table is higher than the off-diagonal construct in the table. The values are indicated in table:4 below

	CONVENIENCE	CUSTOMER SATISFACTION	EFFICIENCY	RELIABILITY	SECURITY	SPEED OF DELIVERY
CONVENIENCE	0.761					
CUSTOMER SATISFACTION	0.498	0.782				
EFFICIENCY	0.597	0.428	0.776			
RELIABILITY	0.558	0.605	0.524	0.757		
SECURITY	0.520	0.503	0.500	0.622	0.738	
SPEED OF DELIVERY	0.626	0.488	0.564	0.466	0.428	0.719

Table 4: Fornell-Larcker Analysis for Checking Discriminate Validity

CONSTRUCT	CONVENIENCE	CUSTOMER SATISFACTION	EFFICIENCY	RELIABILITY	SECURITY	SPEED OF DELIVERY
CE1	0.701					
CE3	0.814					
CE4	0.764					
CS2		0.835				
CS3		0.725				
CS4		0.782				
EF1			0.806			
EF2			0.712			
EF3			0.806			
R1				0.744		
R3				0.728		
R4				0.797		
S1					0.741	
S3					0.736	
S4					0.736	
SD1						0.723
SD2						0.706
SD3						0.735
SD4						0.713

Figure 5: Partial Least Square outer loadings

Variables	Path Coefficient	F^2
Speed of Delivery	0.772	0.044
Convenience	0.925	0.06
Efficiency	0	0.074
Reliability	0.071	0.29
Security	0.008	0.769

Table 3: Summary of Path Coefficient F^2 Results and Discussion

The effect size is usually used to assess the impact of the predictor construct on the endogenous construct. We therefore compute the effect size by applying the Cohen equation. From table 3, we know that our R^2 included is = 0.435. The general formula for calculating the F^2 effect size is shown below. F^2 effect size = (R^2 (incl.) – R^2 (excl.)) / (1 - R^2 (incl.)); In the formula R^2 included or excluded are the R^2 values of the endogenous latent variable when a selected exogenous latent variable is included or excluded from the model. This was estimated the first time when the exogenous latent variable was included (yielding R^2 included). To compute for the F^2 effect size, we need the R^2 included from our result which is R^2 = (0.435). We then determine the R^2 value excluded by deleting a specific predecessor of the endogenous latent variable (Cohen, 1992). The R^2 value excluded for our exogenous variable are: SD = 0.410, CE= 0.401, EF= 0.393, RE =0.266 and security SE =0.000, when we apply the F^2 effect size by (Cohen, 1992).

In summary, the predictive relevance or impact of speed of delivery on customer satisfaction is small given the F^2 at (0.044). The impact of convenience as predictive

relevance on customer satisfaction is small given the F^2 at (0.06), and convenience relevance impact on customer satisfaction is small F^2 at (0.074). Likewise, the predicting relevance of reliability on customer satisfaction is given at (0.29), which is interpreted as medium. Finally, the predictive relevance of security on customer satisfaction is large given that F^2 is (0.76). Therefore we can conclude that the relevant predictors of exogenous variables on endogenous ones can be interpreted as H1= small, H2=small, H3=low, H4 =medium and H5= large (Cohen, 1992).

4.0 CONCLUSION

Structural Equation Modeling Partial Least Square (SEM-PLS) was used to test the theory; we investigated the impact of the TBSSB service quality on customer satisfaction. The result shows that speed of delivery and reliability of TBSSB service, have significant impact on customer satisfaction among others. Also, in the determination of relevance impact of exogenous variable (predictor) on endogenous variable, the result of the F^2 test of relevance impact shows that "speed of delivery" "convenience" and "efficiency" have a small impact on customer satisfaction while "reliability" has medium impact and "security" has a large impact on that endogenous variable.

The study has significant implications for managers and staff of the banks visited. The study also recommends faster and reliable distribution of transaction in order to maintain goodwill, efficiency and productivity for the financial institution. This research focuses mainly on the technology self-service banking quality service. Therefore, further study should research technology-based service such as electronic bank transfer, e-commerce and security issues. Finally, focus should also be placed on how culture affects implementation of TBSSB in certain geographical locations.

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