

Moderating Effect of Age on the Relationship between Electronic Banking and Customer Satisfaction: Empirical Evidence from Selected Deposit Money Banks (DMBs) in Funtua, Katsina State Nigeria

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Abstract: The study examined the effect of electronic banking services on customer satisfaction using age as moderating variable in selected deposit money banks (DMBs) in Funtua metropolis, Katsina state, Nigeria. A survey approach was used to collect data from the respondents. The study's population consists of the entire customers of UBA, Zenith bank and Guaranty Trust Bank that used electronic banking services. The population of customers that use electronic banking services in this three sampled banks cannot be determined. Therefore, the infinite population table produced a sample size of 384. Customers who attend the selected banks for the study were randomly administered with questionnaires where 384 copies of questionnaires were administered to them but 363 were validly returned by the respondents. However, the three banks were selected purposively. The study employed both descriptive and inferential statistics to analyse the data. PLS-SEM was used to analyze data for the study. The components of electronic banking that were used in this study as independent variables are mobile banking, automated teller machine and point of sale to evaluate the customer satisfaction considering age as moderating variable. The results indicated that there is relationship between electronic banking components and customer satisfaction and gender of the customers moderates both the relationship between mobile banking and point of sale with customer satisfaction but failed to moderate the relationship between automated teller machine and customer satisfaction.

Keywords: ICT, electronic banking, customer satisfaction, Deposit Money Banks.

1. INTRODUCTION

The development of information and communication technology (ICT) has changed the banking industry and made the world a global village. Sumra et al. (2011) asserted that the emergence of electronic banking has changed and redefined the way banks operate. ICT is essential to banking operations in the twenty-first century, when the banking business is more complex and competitive (Juddy, 2013). The banking industry is undergoing transition due to customer needs, innovation competition and globalization. Banking services have changed significantly over the past ten years as a result of the development of a knowledge-based economy and society brought on by advancements in information and communication technology (ICT) (Driga & Isac, 2014). Nigerian banking system was characterized by frustrations and poor services

occasioned by ineffectiveness and inefficiency in the services delivered prior to the introduction of E- banking services (Burodo, Suleiman and Shaba, 2019).

E-banking is one of the most crucial tools and methods that banks are using to ensure customer retention and satisfaction as the competition in the banking business has increased in recent years. In the very competitive financial industry, banks that use the most recent technologies and payment methods are more likely to prosper. Endalkachew, (2013) stated that banks have been able to generate more and more business, which has resulted in their greater profitability.

Due to the emergence of a knowledge-based economy and society as information and communication technology (ICT) advanced, banking services have undergone profound changes during the last 10 years (Driga & Isac, 2014).

The competition to improve service quality is now recognized as a strategic issue and is crucial for businesses operating in the service sector. Customers will be more satisfied with businesses that have attained greater service quality which will pave the way for achieving permanent competitive advantage (Guo et al, 2009). In order to satisfy customers and even make them happy with the quality of the services at first stage, it is necessary to understand their needs and desires and then to translate these demands into a condition where goods and services are produced (Hosseini and Ghaderi, 2010).

E-banking is a term used to describe a collection of self-service platforms that customers can use access financial services without having to physically visit a bank (Burodo, Maruf & Fatima 2022). These platforms include internet (online) banking, telephone banking, mobile banking, Agent banking, phone banking, TV banking and PC banking. It is a platform whereby customers access electronic devices such as personal computer, Automated teller machine (ATM), Point of sale terminals and mobile phones without actually visiting the banking hall (Pikkarainen et al., 2004). Therefore, customers are no longer required to pay for all of their purchases with hard cash because, society is progressively transforming to a cashless society. In a similar vein, Christopher et al. (2006) stated that e-banking provided a substantial channel to sell products and services of banks and it is seen as a requirement for banks to succeed.

It is critical in the transformation of banks in areas such as products and services and how they are offered to customers. Therefore, E-banking is an essential tool for the development, growth, promotion of innovation and improvement of banks' competitiveness (Jannatul, 2010). Therefore, using electronic banking gives customers easier access to financial services as well as convenience and time savings while managing their finances (Al-Smadi, 2012). Consequently, in order to maintain their competitiveness in the market, Nigerian Deposit Money Banks (DMBs) are expected to provide quality service through innovative technology.

Customer satisfaction refers to the degree to which customers are happy with the organization's goods and/or services (Simon & Thomas, 2016). Customer satisfaction has been observed as a key strategy of every business and a benchmark against which many organizations have set their standards (Adeniran, Burodo and Suleiman 2022; Burodo, Suleiman and Yusuf, 2021; Suleiman and Yasir 2022A). A customer satisfaction is an ambiguous and abstract concept. Actual manifestation of the state of satisfaction will vary from person to person, product to product and service to service (Ahmed, Burodo and Suleiman 2022). The state of satisfaction depends on a number of factors which consolidate as psychological, economic and physical factors (Suleiman and Usman 2016). The main thing that will determine whether or not the business survives in the future is providing good customer service (Surafel, 2016). Customers' willingness to pay the price without bargaining or trying to find suppliers who provide the same product with lower price as well as their enthusiasm for repurchasing the product, tendency to recommend it to others and willingness to do so are all thought to be influenced by how satisfied they are with the company today (Kwashie, 2012). When a company's performance meets a customer's expectations, customer satisfaction is attained.

The customer will be dissatisfied if the performance would be lower than expectations, and he will be satisfied if the performance would be equal to expectations. He will be very pleased and happy if the performance would be higher than expectations (Kotler & Armstrong, 2014). Similarly, Oliver, 1997) stated that customer satisfaction is an essential component of marketing concept, which holds that satisfying customer needs is the key to generating customer loyalty. Kotler and Armstrong, (2014) described customer satisfaction as a general opinion regarding the net value of services obtained from a provisional source that is either negative or positive.

With special reference to Guaranty Trust Bank, Access Bank and First bank in Funtua, Katsina state, this study aims to investigate the impact of electronic banking service services on customer satisfaction considering age as moderating

variable. Therefore, customer of these three banks in metropolis who use electronic banking services were taken into consideration in this study.

1.1 Statement of the Problem

The management of a bank must make the ultimate decision to serve customers more quickly. As ATM, VISA CARD and other ICT technology are known to improve efficiency and customer satisfaction in a variety of ways. Today, it is a common phenomenon to see major banks using technology and electronic products. Electronic banking is aimed improving customer satisfaction while decongesting banking halls. In order to motivate customers to adopt electronic banking since it is convenient, reliable, fast and safe, the management of the Nigerian Banks has stated to promote it through the use of ATM (Quick Cash) Visa cards and other electronic products. This promotion involves giving presentations on the importance of the use of electronic devices.

However, the banking hall is constantly crowded with customers despite this advertising. Similarly, there is little information on how customers evaluate the functionality of electronic products that the banks have offered and how this has influenced the use of these services.

Despite the availability of those facilities, the banks have not fully benefited from them, despite the fact that though they have reduced their human resource strength. As a result, banking halls are overcrowded, resulting in dissatisfaction of customers.

1.2 Research Objectives

The broad aim of this study is to determine the impact electronic banking on customer satisfaction with respect to mobile banking, ATM and POS considering age as moderator in selected Deposit Money Banks in Funtua, Katsina state. The specific objectives are:

- i. To determine whether electronic banking via mobile banking significantly influence customer satisfaction.
- ii. To assess whether electronic banking via ATM have influence on customer satisfaction.
- iii. To determine whether or not electronic banking using POS significantly influence customer satisfaction.
- iv. To determine whether or not age moderate the relationship between electronic banking via mobile banking and customer satisfaction.
- v. To determine whether or not age moderate the relationship between electronic banking via ATM and customer satisfaction
- vi. To determine whether age moderate the relationship between electronic banking using POS and customer satisfaction.

2. LITERATURE REVIEW

To support the claims of any study, there is need for an empirical review of authorities who conducted studies in the area of discussion. However, similar studies were reviewed as follows:

Singla and Bambore (2017) studied the Factors Affecting E Banking Adoption and Its Impact on Customer Satisfaction of Ethiopian Banks. The purpose of this study was to identify current users of e-banking by forecasting their intention to use it, its acceptance and its effects on customer satisfaction in selected banks of Ethiopia. The study used a cross-sectional survey design. Data analysis was done through inferential statistics. The study collected data from a self-administered survey of a few Ethiopia banks. In order to determine the factors that influence the adoption of e-banking and Its Impact on Customer Satisfaction, the study used Exploratory Factory Analysis (EFA) by using SPSS 16 and Confirmatory Factor Analysis (CFA) with AMOS 21. The findings showed that Perceived ease of use and perceived usefulness were significantly influences the actual usage of Electronic Banking Services.

Kwaku and Martin (2016) conducted a study on the contribution of electronic banking on customer satisfaction with a particular reference to GCB Bank limited, Koforidua. This study is aimed at determining the Contribution of Electronic Banking on Customer Satisfaction at GCB Bank-Koforidua. This is a quantitative research that employed primary data through questionnaires. Data was collected from management, staff and customers of GCB Bank, Koforidua Branch. The

results revealed that most of the respondents were not fully aware of the existence of internet facilities. Additionally, it was discovered that although the bank was using the service, but customers were not fully patronizing it the use of internet banking. Finally, the study recommended that all GCB Bank branches should adopt internet banking facilities to facilitate effective banking operations and transactional activities.

AlHaliq and AlMuhirat (2016) assessed how Electronic Banking Services in Saudi Banking Sector affected customer satisfaction. The purpose of this study is to ascertain how satisfied Saudi Arabian customers are with their electronic banking (e-banking) services. Descriptive statistics was employed by the study. Primary data was used in the form of a questionnaire. The findings of the analysis showed that customer satisfaction in Saudi banks is significantly influenced by electronic banking services. However, to increase customer satisfaction, the study recommended that banks in Saudi Arabia should improve the electronic services they offer.

Simon and Thomas (2016) investigated how electronic banking services affected customer satisfaction in selected commercial banks of Kenya. The study aims to determine how internet banking affects customer satisfaction in selected commercial banks in Kenya. This study used a descriptive survey method. The population of the study consists of 262511 regular customers drawn from five banks in tier one namely equity bank, Barclays bank, Kenya commercial banks, Standard Chartered Bank and Co-operative Bank. Although there were just five banks, the sample was generalized to represent the characteristics of the 43 banks due to the huge number of e-banking registered customers. The sample was obtained using coefficient of variation. The study used a descriptive research design. This study employed primary data through a structured questionnaire. The findings from the analysis showed that mobile banking, ATMs, point of sale and internet banking remains constant at zero, the level of customer satisfaction will be 2.578. The findings also demonstrated that, with all other independent variables set to zero, increasing internet banking by one unit would result in a 0.426 increase in customer satisfaction and increasing mobile banking by one unit would result in a to a 0.782 increase in the customer satisfaction. Additional, the findings indicated that adding more automated teller machines would result in a 0.612 rise in customer satisfaction, while adding more point of sale system would result in a 0.486 increase in the customer satisfaction. In terms of magnitude, the result showed that mobile banking have the highest effect on customer satisfaction followed by automated teller machines, then point of sale system while internet banking had the least effect on customer satisfaction. All the variables were considered significant as their P-values were less than 0.05. This study therefore recommended that banking intuitions should improve their internet banking so as to make it flexible, fast and easy to use.

John and Rotimi (2014) studied the effect of electronic banking on satisfaction of corporate bank customers in Nigeria. Primary data was employed through structured questionnaire. To analyse the data descriptive inferential statistics were both used. The chi square technique was employed to test the hypothesis. The results of the study show that there is a significant relationship between customers' satisfaction and electronic banking. Moreover, E-banking has gained popularity due to its flexibility, ease of use and transaction related benefits like speed, accessibility and efficiency. The study recommended the need for strengthen telecommunication in order to ensure the application of electronic banking in Nigeria and improve customer satisfaction.

Regarding empirical gap, to the best of the Author's knowledge no study on the effect of electronic banking services on customer satisfaction at UBA, Zenith bank and GT bank in Funtua metropolis has been published in any academic journal.

Additionally, from the empirical studies reviewed. There is a methodological gap in the literature because the majority of studies used different statistical tools. For example, the Exploratory Factory Analysis (EFA) by using SPSS 16 and Confirmatory Factor Analysis (CFA) with AMOS 21 was used by (Simon & Thomas 2016). In the same vein John and Rotimi (2014) tested hypothesis using chi-square technique However, in order to fill this research gap, this study employed Partial Least Square Structural Equation Modeling (PLS-SEM) Approach.

In terms of geographical gap, no research of this nature was conducted in Funtua metropolis. Specifically using mobile banking, ATM and POS as the determinants of electronic banking services, considering age as moderating variable.

2.1. Theoretical perspectives on customer satisfaction

This section explores theories on electronic banking and customer satisfaction in the banking section. To justify the selection of the research topic, these theories are employed.

2.1.1. Technology Acceptance Model (TAM)

The Theory of Reasoned Action (TRA) by Ajzen and Fishbein's (1980) serve as the inspiration for the Technology Acceptance Model (TAM). It makes the claim that individuals' intentions to perform are influenced by their ideas and attitudes. According to TRA, an individuals' attitude toward an action is influenced by their behavioral beliefs about the consequences of that behavior (based on the information that has been made available to them or presented to them) and their affective assessment of those effects. Beliefs are characterized as the individual's expected estimated likelihood that engaging in a particular behavior will result in a particular consequence.

Davis (1989) developed and introduced the TAM paradigm to address the issue of how users come to accept and use a technology. Perceived usefulness and perceived ease are two important TAM variables that are considered to be essential predictors of user acceptance. The TAM states that real users acceptance of a technology is determined by their behavioral intentions. The user's perspective on technology affects their behavioral intentions. According to Davis (1989) Perceived usefulness and perceived ease of use, are beliefs that lead to favorable attitudes and intentions to accept and use technology.

The Theory of Reasoned Action (TRA) on the other hand, is significantly more comprehensive than the TAM, as the TAM was clearly designed particularly to apply to computer usage behaviour (Davis, Bagozzi, & Warshaw, 1989).

2.1.2. Innovation Diffusion Theory

Diffusion Theory was proposed by Rogers in 1983 which explains why people choose a technology as a mode of doing a traditional activity. It is interested in determining how, why and at what rate innovative ideas and technologies spread throughout a social system (Rogers, 1962). This is done through developing websites and mobile applications that meet the customer needs (Arnaboldi & Claeys, 2008). Customers can have access to their accounts from anywhere as long as they have internet access. According to this theory, a new technological idea, technique, or a new use of an old one, migrates from creation to use (Rogers, 2003). Similarly, Robinson, (2009) stated that it is the distribution of inventions themselves that undergoes change, not people.

On the other hand, diffusion, is the process by which an innovation is disseminated through certain channels to the members of a social system over time (Rogers, 2003). It is the process by which a technology spreads among a population of organizations (Fichman, 2000). Diffusion of innovations is the term used to describe how ideas move from one society to another or from a center or institution within a society to various areas of that society (Rogers, 1962). IDT contends that members of social system gradually become aware of technological innovation through certain channels over time.

The stages a technological innovation goes through are Knowledge (exposure to its existence, and understanding of its functions), persuasion (the forming of a favourable attitude to it), decision (commitment to its adoption), implementation (putting it to use) and confirmation (Arnaboldi & Claeys, 2008) (reinforcement based on positive outcomes from it).

2.2. Theoretical Framework

This study carefully considered Technology Acceptance Model (TAM), which operates contains two key indicators for potential adopters: perceived usefulness and perceived ease of use after a thorough review of relevant theoretical models. IAM able to define the relationship between electronic banking services and customer satisfaction. TAM is one of the appropriate models for explaining the study's assumptions as it enable to provide a direct or categorical linkage between their assumptions and the need for the research in such a way that an appropriate and detailed explanation can be drawn.

The Innovation Diffusion Model (IDM), on the other hand, is interested in determining how, why and at what rate innovative ideas and technologies spread in a social system. It clarifies why people prefer to use technology as a medium to perform a traditional activity. Thus, the Innovation Diffusion Model also described the study's underlying assumptions and it is upon the theory's assumptions that this study is hinged on.

3. METHODOLOGY

A survey approach was used in order to gather information from the respondents in this study. The population of the study consists of the entire users of electronic banking services that hold account with UBA, Zenith bank and GT bank in Funtua metropolis. However, the study's population is infinite. This is because, the population of customers that use electronic banking services in this three sampled banks cannot be determined. The infinite population table therefore produced a sample size of 384. The sample size of 384 was calculated using the sampling approach by Kriejcie and Morgan (1970) for computing sample size for infinite (unknown) population. The current study used primary data through questionnaire to

collect data from respondents that are using electronic banking services for transactions. Customers who attend the selected banks for the study were randomly administered with questionnaires where 384 copies of questionnaires were administered but 363 were validly returned by the respondents. However, the three banks were selected purposively. Because, the study is interested in bank customers that used electronic banking services. Both descriptive and inferential statistics were employed by this study. PLS-SEM was used to establish the relationship between electronic banking services and customers' satisfaction using age as moderating variable in Funtua metropolis. Mobile banking, ATM and POS are the three dimensions of electronic banking services in this study and were used as independent variables to evaluate the customer satisfaction status as illustrated in Figure 1

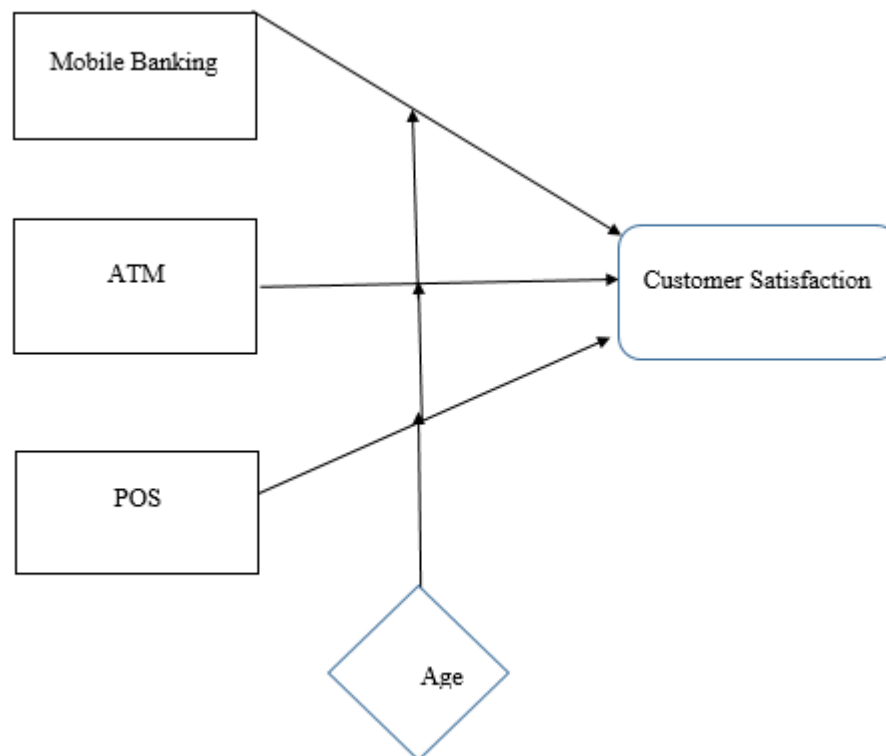


Figure 3.1: Research Model

4. RESULTS AND DISCUSSION

4.1 Descriptive statistics

Internal consistency was measured using the Cronbach's alpha, and the results were within the acceptable range of 0.70 to 0.95 (Suleiman and Yasir, 2022B) as presented in Table 1. All the constructs have a mean of at least 3.5 for the sample (N = 363), which indicates that the majority of participants expressed generally positive responses to the constructs that were measured in this study. The standard deviation (SD) value in each case is relatively low and ranges between 0.904 and 1.280.

Table 1: Descriptive statistics of the constructs

Constructs	Mean	Standard deviation	Cronbach's alpha
Mobile banking	4.205	0.904	0.714
ATM	3.951	1.008	0.710
POS	4.164	0.959	0.745
Customer satisfaction	3.762	1.280	0.739

4.2 Measurement model

Individual item reliability is presented in table2. Factor loadings for all the items exceeded 0.5 as recommended by (Hair et al. 1998). Also, in table 2, the reliability of the constructs was also tested using composite reliability criterion. Composite reliability values in this study ranged from 0.829 to 0.881 which exceeded the minimum recommended value of 0.7 (Hair et al., 1998). Table 2 also contained convergent validity which allowed us to measure the amount of variance generated by the indicators of a variable, i.e., to see whether the indicators belonged to a single variable, and to confirm their one-dimensionality. As proposed by (Fornell & Larcker, 1981), a cut-off index for this criterion is 0.5. Our results showed that all variables explained at least 50% of the variance of their indicators. As a final step in the validation analysis of the measurement scale, we measured discriminant validity to establish whether each of the variables shared more variance with its indicators than with the rest of the indicators included in our study. In this analysis, we used Fornell and Larcker' (1981) analysis and the heterotrait-monotrait (HTMT) ratio of correlations. As can be seen in Table 3, since inter-construct correlations show that each construct shares larger variance values with its own measures than with other measures, then discriminant validity is established in this study.

Table 2: Reliability and validity of the constructs

Constructs	Variables	Factor loadings	Composite reliability	AVE
Mobile banking	MB1	0.888	0.875	0.778
	MB2	0.876		
	ATM1	0.916		
ATM	ATM2	0.763	0.829	0.710
POS	POS1	0.831	0.881	0.788
	POS2	0.941		
Customer satisfaction	CS1	0.944	0.877	0.782
	CS2	0.821		

Table 3: Discriminant validity

Latent Variables	1	2	3	4
Mobile banking	0.843			
ATM	0.176	0.884		
POS	0.087	0.201	0.882	
Customer satisfaction	0.233	0.481	0.223	0.888

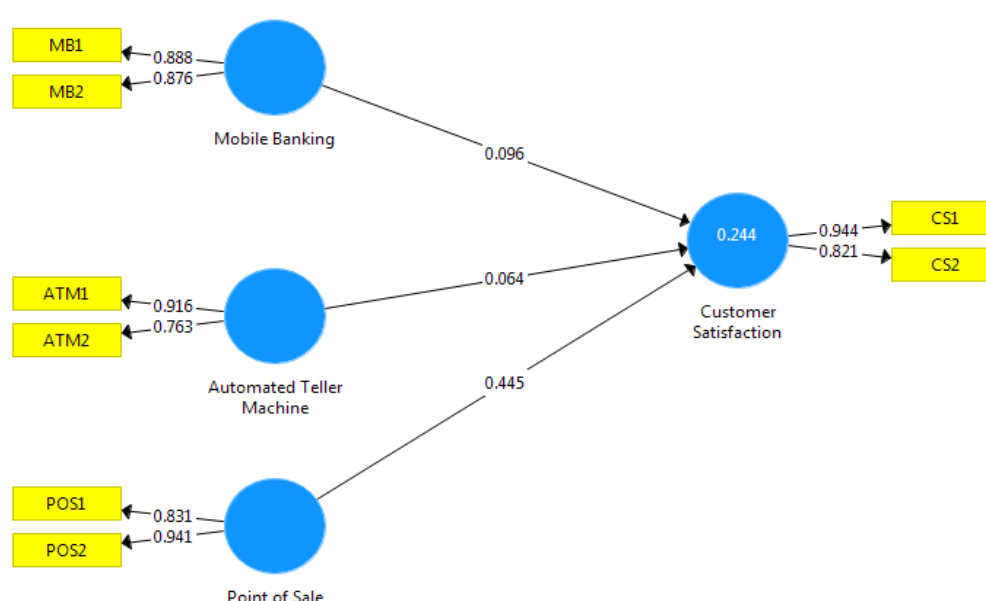


Figure 1: Factor loadings of the measurement model.

4.3 Structural Model Analysis

The second step in analyzing using the PLS method is by assessing the structural model. This is done by running the bootstrap resampling technique (Henseler et al., 2009) with 5000 iterations to ensure stability. This provides analyses on hypotheses and constructs' relationship based on examination of standardized paths. The result of our assessment is displayed in Table 4

Table 4: Hypothesis testing Results

Hypotheses	Relationship	Coefficients	Standard deviations	T-statistics	P-values	Decision
H1	MB->CS	0.230	0.084	2.731	0.007	Supported
H2	ATM-> CS	0.212	0.094	2.258	0.024	Supported
H3	POS-> CS	0.203	0.088	2.305	0.022	Supported

Table 4 showed that all hypotheses are supported with t-value ranging from 2.258 to 2.731. Mobile banking ($\beta = 0.230$; $p < 0.05$) significantly predicts customer satisfaction, automated teller machine and point of sale ($\beta = 0.212$; $p < 0.05$) and ($\beta = 0.203$; $p < 0.05$) were both significant in determining customer satisfaction.

Further analysis was performed to assess the effect of age on all constructs. This moderator effect will explain if a variable has affected the relation's direction or strength between independent and dependent variables. The result of the analysis is presented in Table 5. It can be concluded that not all hypotheses are supported. Only the relationship between mobile banking ($\beta = 0.263$; $p < 0.05$), point of sale ($\beta = 0.302$; $p < 0.05$) to customer satisfaction that being affected by gender with t-value of 2.752 and 5.869 respectively. Having rejected hypothesis five in Table 5 is an indication that age doesn't affect the relationship between automated teller machine and customer satisfaction which means customers become dissatisfied automated teller service from bank in respective of their ages. However, the relationship of mobile banking and point of sale with customer satisfaction that is moderated by age.

Table 5: Moderator Analysis Results

Hypotheses	Relationship	Coefficients	Standard deviations	T-statistics	P-values	Decision
H4	MB*Age-> CS	0.263	0.096	2.752	0.006	Supported
H5	ATM*Age->CS	0.217	0.112	1.937	0.053	Not supported
H6	POS*Age-> CS	0.302	0.052	5.869	0.000	Supported

5. CONCLUSION

This study aimed at measuring the moderating effect of age on the relationship between Electronic Banking and Customer Satisfaction. The Structural Equation Modelling (SEM) methodology was employed to test the constructs framework that customer satisfaction was influenced by the electronic banking technologies. The results of this study established that there is positive significant relationship between electronic banking constructs and customer satisfaction. Similarly, it is found that the age of the customers both moderates the relationship between mobile banking and point of sale with customer satisfaction. However, the results also indicated that the age of customer does not moderate relationship between automated teller machine and customer satisfaction. Hence, the study conclude that the higher the quality of the ATM as electronic banking component, the better the satisfaction customer derives regardless of their but in the case of mobile banking and point of sale, age of the customers significantly moderates their satisfactions.

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