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IMPERATIVES FOR DEEPENING CUSTOMER SERVICE DELIVERY IN THE NIGERIAN BANKING SECTOR THROUGH ENGINEERING AND TECHNOLOGY-BASED CHANNELS

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ABSTRACT

The study was designed to identify basic factors required to deepen adoption of internet banking in the delivery of banking services to a rapidly growing market characterized by complexities in service requirements. Analysis of data collected from selected customers of 5 DMBs in Lagos, Ogun and Ebonyi States of Nigeria showed that alternative service channels offered by technology-based applications enhanced the delivery of banking services to bank customers. Specifically, the result showed significant impact of ease of access, cost, reliability, and security/integrity of technology-driven service delivery channels on the adoption of engineering technology-based applications in Nigeria's banking industry.

Key words: Engineering technology, Internet banking, Alternative service channels, Technology acceptance model

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1. INTRODUCTION

The term engineering refers to the application of scientific knowledge to achieve practical solutions to issues confronting man in his environment. At the early stage of a nation's development, human labour was intensively engaged in the conduct of virtually all economic activities and the banking sector was by no means an exception. Banks offer an array of financial services including acceptance of deposits, cash withdrawals, fund transfer, online payments, cheque deposits, balance enquiry, provision of account statements, etc. At the early period of conventional banking in Nigeria, these services were manually rendered to the banking public under the brick and mortar platform largely because of the number of customers being served at the period as well as limitations imposed by low level of technological innovations. Awareness of what the banking system offers, or could offer was also very low and so the banks could easily manage the traffic with minimum discontentment from customers. With the growth of financial literacy and human population, there has been a rapid growth in the number of bank customers thereby rendering the capacity of brick and mortar banking to satisfactorily deliver financial services to customers grossly inadequate. This is in spite of the rapid growth in the number of banking service providers. To remain in business in the ever dynamic business environment, banks have to consciously seek out ways of serving their larger audience in a cost-effective manner. Suoranta and Mattila (2004) asserted that the increasing dynamism of the operational environment has caused business organizations to be adaptive. Banks now realize that only those that improve their payment service delivery and operational systems are likely to survive the challenges endangered by the increasing wave of globalization, consolidation, privatization, deregulation and rapidly changing technology. There arose therefore a need for an alternative channel to conduct and deliver banking services. Provision of alternative service channels also offers opportunity for the hitherto financially excluded segments of the society to access financial services. Okoye, Adetiloye, Erin and Modebe (2016) posit that access to financial service by more members of the society supports growth of economic activities and hence output.

In recent times, service delivery in the banking sector is largely driven by electro-mechanical devices like personal computer units (PCUs), automated teller machines (ATMs), etc. Technological innovations, like artificial intelligence and cloud computing, use intelligent machines and soft-wares to capture, analyze and interprete data thereby enhancing the decision-making process. These devices run on soft-wares and programs designed to execute specific tasks. With artificial intelligence and cloud computing technologies, banking processes have been greatly redefined at a great gain to both the industry and users of financial services. In a more technical sense, these devices are hooked to the internet through protocols which are a set of rules that ensure orderly communication or transmission of data on the internet. The most common forms are the internet protocol (IP) and the transmission control protocol (TCP). The TCP is a higher level protocol than the IP. According to Ogunfunmi (2015) both protocols work harmoniously to achieve reliable data transmission. However, data transmission issues not resolved by IP are cleared by TCP to ensure reliable internet communication. Ogunfunmi

(2015) further mentioned TCP/IP technology as the major protocol that has driven the internet for over 30 years and which has produced tremendous growth and changes than contemplated even by the designers.

Today, it is common to see people (sometimes non account holders) access financial services through their smart phones. In other words, technology has become the carrier of financial services but the successful delivery of these services is however dependent on the adequacy and efficiency level of available technological infrastructure. Technology has not only changed the manner in which business operations are conducted and or services delivered but has also affected the speed at which people, organizations and things interconnect and communicate with one another. Today we hear of such innovations as the internet of things. Technology-dependent service delivery channels offer speed and convenience thereby rendering themselves amenable to ease of acceptance.

One major limitation of electronic banking is the lack of human touch in the delivery of banking services. It is devoid of the usual interaction between bank staff and customers. Chatbots powered by artificial intelligence and robotic technology has, to a large extent, taken the place of customer service engagements. Technological innovations have positively disrupted the conduct of business operations in general and banking business in particular. Technology has hugely impacted both the banking industry and consumers of banking services. Today, people can switch between banks and select products and services that suit their preferences and can access a variety of banking services on their devices, such as mobile phones, lap-top and desk-top computers, tablets, etc.

1.1. Statement of Research Problem

Before the introduction of electronic banking in Nigeria, provision of bank-based services was conducted manually or traditionally, which means that customers must be physically present at the banking hall to carry out their transactions. The implication of this is that banking halls are very often congested and bank customers are often unduly delayed before they are attended to. In such cases, going to the bank to do business transaction turns out to be a whole day activity leading to an extensive loss of man-hours. During the period, financial transactions are predominantly cash based, people have to carry large sums of money about for their transactions and this predisposes them to the risk of armed robbery attack and consequent loses of cash and in some cases life. There is a further problem of high cash management expenditure.

However the introduction of electronic banking was meant to reverse this ugly trend, thereby ensuring quick and efficient service delivery to customers. To be effective, various platforms have been designed to serve the divergent needs of bank customers in a manner that seeks to resolve the problem of cost, convenience, speed (time-saving), space, safety, and information access. Such platforms include mobile banking, internet banking, automated teller machines (ATMs), point of sale (POS), etc. These platforms offer convenience, cost-saving, real-time information, etc. to customers and provide banking services well beyond the confines of the traditional banking halls and hours and thereby promote cashless transactions and financial inclusion.

There is evidence that the adoption of electronic banking has produced significant improvements in the banking environment (Suoranta and Mattila, 2004; Tsai, Huang, Tsaur and Lin, 2010). To sustain and deepen the impact of electronic banking on delivery of banking services, this study seeks to identify attributes of alternative service delivery channels that promote customer retention and customer acceptance of the service channels. The study focused on customers of 5 deposit money banks (DMBs) selected from Lagos, Ogun and Ebonyi States of Nigeria.

1.2. Theoretical Framework

Technology acceptance theories seek to explain the behavioural intention of users to accept and use a new technology. Technological innovations are often perceived as a threat to an existing model or models but they embody opportunities for enhanced or improved service delivery. There is therefore a struggle to overcome barriers to acceptance of a new innovation. Such barriers may include reluctance on the part of potential users to migrate from known and predictable platforms to relatively unknown and unpredictable service delivery platforms. Lai (2017) explained that the outcome of the struggle between technological change and barriers to acceptance of the change, to a large extent, determines the rate of adoption or acceptance of a new innovation.

Following from the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), Davis (1986) developed the Technology Acceptance Model (TAM) to explain the acceptance and use of a new technology and or information system. The basic TAM used perceived usefulness of an innovation and its perceived ease of use to predict its rate of acceptance. The central argument is that acceptance of a new innovation depends on its perceived usefulness as well as its perceived ease of use. According to Davis (1986), the perceived usefulness of an innovation refers to the probability that using a new application will enhance user performance while perceived ease of use refers to the ability of the user to engage the application with minimal or no effort. These factors aim at adding value to the user and thereby enhance user satisfaction. In a modified version of the basic model, Davis (1989) argued that belief in a system may be affected by external factors. Surendran (2012) identified social factors (language, skills, and facilitating conditions) and political factors as two major external factors that affect system predictors (perceived usefulness and perceived ease of use). The modified TAM (fig 1) shows perceived usefulness and perceived ease of use as major influencers of attitude towards use of an innovation which informs intention to use the innovation and ultimately leads to actual system or innovation use or adoption (Davis, Bogozzi and Warshaw, 1989).

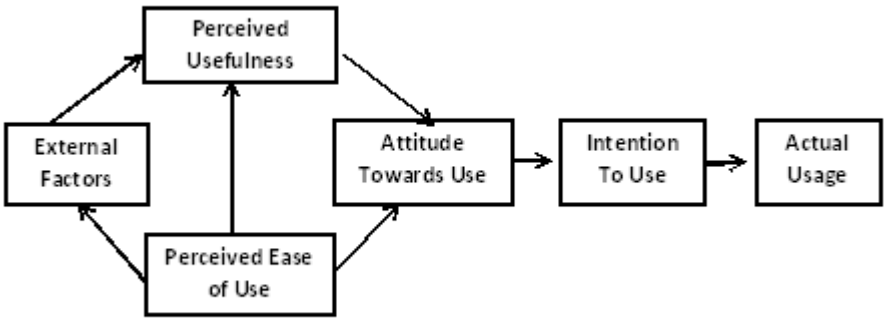

Fig. 1: Modified version of the Basic TAM (Davis, Bogozzi and Warshaw, 1989)

2. REVIEW OF RELATED LITERATURE

Following the introduction of electronic banking as an alternative channel for the delivery of banking services, the industry has witnessed drastic changes in relation to both its customer base and the number of services rendered. Indeed the growth of electronic banking has been quite phenomenal and scholars have continued to research on how the innovation has impacted the banking environment as well as factors that account for its rapid acceptance and adoption.

Agboola (2003) investigated the link between electronic banking and the quality of services offered by technology-compliant DMBs using a sample of 90 bank customers drawn from six

DMBs within Lagos metropolis. Evidence from the research showed that introduction of electronic banking produced drastic changes in both the service delivery techniques and the range of products offered by the banks.

Kwarteng (2015) explored the nexus between electronic banking and customer service delivery in Kumasi, Ghana. A sample of 69 bank customers and 29 bank staff were selected from three branches of three deposit money banks (DMBs) based on purposive sampling technique. The study showed branch banking as the preferred delivery channel for banking services in spite of the high level of awareness of electronic banking services among the respondents and the long queues associated with branch banking. However, to the extent that digital banking is used among the study group, the ATM channel was preferred.

The work of Yang and Paradi (1998) focused on developing a strategy for internet adoption as the next or alternative delivery channel for banking services. The study was based on a survey designed and administered on selected bank staff using the electronic mail (email) delivery system. The system which covered a total of 19 banks from Canada, Britain, Korea, Lebanon, Switzerland, Mexico, Australia, and the United States showed that adoption of internet banking channels enabled banks to remain competitive. With regard to channel preference, the study showed faster migration to computer and other communication-based devices than was the case with ATMs, owing to relatively low cost of the devices. To deepen the adoption of internet banking services, the authors suggest that service providers should ensure adequate security of transactions, verification and legal enforcement of electronic messages, and protection of privacy of the parties.

Haque (2013) in his internship report on alternative channels of banking attributed growth of digital banking platforms to cost-effectiveness and convenience. He argued that bank expansion no longer means addition to existing branch network but investing in technologies that enable it to reach out to customers through alternative channels like ATMs, kiosks, online portals, mobile applications and sites. Kaur and Kiran (2014) also found that customers show preference for electronic banking platforms relative to branch banking because they offer convenience and reduced manpower costs. Technology adoption reduces the manpower needs of business organizations.

In his research on electronic banking channels, Uppal (2011) analyzed the growth of information technology in various bank groups in India. The groups covered in the study are public sector banks, private sector banks and foreign banks. The study showed that while private sector banks and foreign banks have massively deployed IT applications for their service delivery, brick and mortar banking still dominate banking operations in public sector banks. He concluded that firm survival in an era of intense competition largely depends on capacity to acquire and deploy requisite technology infrastructure.

Choudhury and Bharttachargee (2016) used the survey method to examine the nexus between electronic banking channels and customer loyalty. The study was based on data collected from a sample of 400 salaried employees selected through the stratified random sampling method. Electronic banking service delivery channels were evaluated based on Ease of use, Usefulness, Cost-saving, and Self-control while loyalty was measured in terms of attitudinal loyalty and Behavioural loyalty. The result showed that electronic banking delivery channels have strong positive impact on customer loyalty.

Oluwagbemi, Abah and Achimugu (2011) examined how adoption of information technology impacted the banking industry in Nigeria. They found that IT adoption fundamentally transformed the content and quality of banking services delivery thereby strengthening the competitiveness of Nigerian banks. The authors identified information

technology as a major component of economic development and a backbone of knowledge-based economies in terms of operations, service quality and productivity.

The work of Kumbhar (2011a) examined how alternative banking impacts customer satisfaction among users of digital banking channels. The study used a sample of 150 bank customers in Satara city, Maharashtra State, India. Owing to information and time constraints the respondents were selected based on the convenience of the researcher. The study showed service quality of alternative banking channels (represented by efficiency, security/assurance, cost-effectiveness, problem resolution and responsiveness) as first line determinants of customer satisfaction while factors like convenience, availability, ease of use, etc. are second line determinants. This result supports the argument put forward by Jayanty (2014) who maintained that in digital banking, customers fundamentally look out for convenience and effortless access to banking services as well as digital interactions that cater to all their banking needs in addition to a personalized experience that are relevant, engaging and enjoyable.

In a research study by Okoye, Omankhanlen, Okoh and Isibor (2018) which examined the nexus between technology-based financial services delivery and customer satisfaction in Nigeria, the result suggested that customer satisfaction arising from major attributes of service quality like ease of use, convenience, reliability of service, etc. inform customers' intention to adopt or use electronic banking channels. In a related study, Isibor, Omankhanlen, Okoye, Achugamonu, Adebayo, Afolabi and Ayodeji (2018) found that adoption of e-banking in Nigeria not only enhanced customer satisfaction but has supported economic growth. This further sustains rapid growth of electronic banking in Nigeria.

The work of Onaolapo and Anene (2016), among other objectives, examined the relationship between bank service quality and adoption of internet banking among students of 5 universities (composed as follows: Federal = 1; State = 1; Private = 3) in Oyo State, Nigeria. Five hundred and fifty (550) students were selected for the study and estimation was based on the technique of pooled regression and correlation analyses. The study produced evidence of strong impact of service quality, trust and technophobia on the adoption of internet banking. In a research study by Yousafzai, Pallister and Foxall (2005), the authors emphasized that banks' websites should not only be useful and easy to use but should incorporate trust-building mechanisms. Also, in Yousafzai, Pallister and Foxall (2009), the authors further explained that while usefulness and efficiency of internet banking service are strong determinants of internet banking adoption, customers trust and its antecedents (perceived security and perceived privacy) are equally significant and add value to customer-bank relationship.

Jeong and Yoon (2013) investigated major influencers of mobile banking adoption using a sample of 165 respondents. They observed that quality of mobile banking service (measured by its perceived usefulness, ease of use, credibility, and self-efficacy) has strong impact on customers' disposition to mobile banking adoption. Ho and Ko (2008) also found strong positive effect of self-service technology characteristics like ease of use, usefulness, cost-saving and self-control on customers' continued use of internet banking. These attributes create value for customers and thereby enhance their readiness to continue to engage self-service channels for their transactions.

In a research study by Akanbi, Ayodele and Adedipe (2014), the authors investigated factors that influence respondents' intention to use internet banking among undergraduates in a private University in Nigeria. Three hundred and fifty-seven respondents purposively selected from 3 faculties of the University were used for the study. The authors found perceived ease of use, capability, perceived usefulness, triability, and compatibility as influencers of internet banking adoption among students.

The work of Oteh, Ibok and Nto (2017) aimed at identifying the various e-banking channels, their level of usage, and their implications for financial deepening in Nigeria using a sample of 120 respondents (business owners) selected from two markets in Aba North and Aba South Local Government Areas of Abia State, Nigeria. Sample selection was based on multi-stage sampling technique. The authors found ATMs/Debit cards as the most preferred channel.

The study by Kim, Widdows and Yilmazar (2005) used probit regression to estimate determinants of internet banking adoption. The research focused on household demographics of 4420 households in relation to internet adoption. They found that younger, well educated, affluent and computer literate individuals have higher propensity to adopt internet banking. The authors also found that consumers ability, attitude and opportunity cost of time are significant influencers of behavioural intention to adopt internet banking. The work of Mirza, Wallstrom, Baheshti and Mirza (2009) examined the factors that explain adoption of internet banking services in Iran. The study focused on customers of 2 banks: Saman bank, a private bank, and Mellat bank, a public bank. The result showed strong correlation between service quality and internet banking adoption. It also showed that age and level of education strongly explain customers' propensity to use internet-based banking services. They however mentioned security challenges and poor technological knowledge as major impediments. Also, Ahmed and Islam (2009) identified security risks, poor ICT infrastructure, poor governance and employee dissatisfaction arising from job cuts as major obstacles of internet banking in Bangladesh. Further evidence from Mirza *et al* (2009) and Kumbhar (2011b) indicated that private sector banks offer better quality internet banking services to customers than public sector banks and therefore enjoy a higher rate of adoption among customers.

Adesina and Ayo (2010) used survey research method to investigate the level of user acceptance of e-banking systems and to determine factors that underlie users' behavioural intention to engage e-banking systems in Nigeria. The study involved administration of 500 questionnaires within Lagos and environs out of which 292 were returned and analyzed. Impact assessment of the following dimensions of service quality on customer adoption behaviour was conducted: perceived credibility, computer self-efficacy, perceived usefulness and perceived ease of use. The result showed ATM as the preferred channel of e-banking service delivery owing to its perceived convenience, ease of use, time saving and appropriateness to customer service needs. It also reported security risks/challenges as major obstacles to its adoption.

The work of Cudjoe, Anim and Nyanyofio (2015) investigated factors that determine the usage of mobile banking services in Ghana using a sample of 150 customers of Access Bank Ghana Limited. They find that perceived usefulness and ease of use positively influence intention to use mobile banking service channel. However, perceived credibility and financial cost had stronger negative impact on behavioural intention to use mobile banking among the sampled group.

Luo, Lee, Mattila and Liu (2012) examined obstacles to adoption and use of mobile banking services in the USA, China, Korea and Finland. The study focused on non-users of mobile banking services to ascertain why customers resist adoption of mobile banking channels. A sample of 20 respondents was drawn from each of the selected countries. The result showed perceived risk and lack of awareness about mobile banking services as major obstacles to widespread use of its services.

The work of Saidi, Azib, Amran, Sulham, Anuar, and Saidi (2016) investigated determinants of e-banking adoption among bank customers in Malaysia. They found strong impact of perceived ease of use, perceived usefulness, demographic characteristics and internet experience on internet adoption among bank customers. Using a sample of 211 customers drawn from six commercial banks, Zeleke (2014) also found significant impact of attitude,

subjective norms, perceived behavioural control, perceived usefulness, perceived ease of use, and perceived risk on behavioural intention to adopt e-banking service channels. Aboelmaged and Gebba (2013) also reported strong positive impact of attitude and subjective norm on mobile banking adoption in Dubai. The study was based on a sample of 119 undergraduate and postgraduate students of UAE Universities.

3. METHODOLOGY

This study was designed to investigate the link between engineering technology and customer service delivery in the Nigerian banking sector. It largely focused on identifying factors that enhance adoption of alternative service channels offered by technology-driven applications. The survey method was adopted for the study. This involved the use of questionnaire to generate data from the target group. Three hundred and seventy-six (376) respondents were selected from customers of five deposit money banks in Lagos, Ogun and Ebonyi States based on the convenience and judgement of the researchers. The questionnaire design followed the 5-point Likert scale: SA = Strongly Agree-(5); A = Agree-(4); U = Undecided-(3), D = Disagree-(2); SD = Strongly Disagree-(1). However, two hundred and eighty-two (282) were retrieved in usable condition and this formed the basis of our analysis.

To ensure internal consistency or stability of the items used to explain the phenomenon, a reliability test was conducted using the Cronbach's Alpha. A Cronbach's Alpha coefficient of 0.7 and above implies acceptable reliability and it is an indication that the test result shall be consistent over time. The impact of technology on customer service delivery was estimated using the linear regression method.

4. DATA PRESENTATION AND ANALYSIS

The composition of the study sample is as follows: 125 (44.3 per cent) males and 157 or 55.7 per cent females. In terms of age, 170 of the respondents are below 35 years of age (representing 60.3 per cent) while 112 (39.7 per cent) others are in the region of 35 years and above. The sample is also made up of 133 or 47.2 per cent singles and 149 or 52.8 per cent others who are either married, divorced, separated or who could not be conventionally categorized.

With regard to literacy level, 44 (15.6 per cent) of them have no formal education but 82 or 29.1 per cent were educated up to senior secondary level. 97 of the respondents, representing 34.4 per cent had formal education up to HND/B.Sc level while 59 (20.9 per cent) others had higher degrees/certificates. All the respondents have used at least one type of electronic banking service channel for at least one year and are customers of at least one of the selected banks.

4.1. Preliminary Examination

The result of the reliability test conducted to ascertain the stability of the items in the model is presented in table 1 below.

Table 1: Reliability Statistics

Cronbach's Alpha Coefficient	Number of Items
0.803	282

Source: Authors computation, 2018

From the table above, the Cronbach Alpha coefficient is .803 for the 282 items that were analyzed. The result indicates that the research instrument used for this study is reliable as it is more than the generally accepted score of 0.7.

4.2. Test of Hypotheses

Two hypothetical statements earlier formulated to guide the conduct of this research are tested in this segment of the work. The test is based on the output of the regression analysis as follows:

Hypothesis One

H_0: Application of electronic banking does not offer a convenient and cost-effective channel for delivery of banking services to customers.

H_1: Application of electronic banking offers a convenient and cost-effective channel for delivery of banking services to customers.

Table 2: Model summary

Model	R	R Squared	Adjusted R Squared	Std. Error of the Estimate	Change Statistics				
					R Squared Change	F Change	df1	df2	Sig. F Change
1	.794[a]	.630	.628	.41949	.630	237.863	2	279	.000

Source: Authors computation, 2018

The correlation coefficient of 0.794 shows a strong positive linear relationship between the dependent and independent variables. The R-squared value of 0.630 and the adjusted R-squared of 0.628 show that about 63 per cent of variations in the dependent variable is explained by the independent variables.

Table 3: ANOVA Estimates

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	83.713	2	41.857	237.863	.000[b]
Residual	49.095	279	.176		
Total	132.809	281			

Source: Authors computation, 2018

Table 3 shows the statistical significance of the result. The ANOVA table tests the null hypothesis to determine if it is statistically significant. The null hypothesis is rejected if the P value is ≤ 0.05. From the results, the model in this table is statistically significant (sig=.000) and hence the null hypothesis should be rejected and alternate hypothesis accepted. This indicates that application of electronic banking offers a convenient and cost-effective channel for delivery of banking services to customers.

Table 4: Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	B		
(Constant)	.827	.079		10.471	.000
Ease of access to e-banking services.	.679	.033	.845	20.435	.000
Cost of e-banking service delivery platforms.	-.093	.031	.323	-2.965	.003

Source: Authors computation, 2018

Table 4 shows how the variables included in the model predict the behaviour of the dependent variable. From the table, it was observed that ease of access has strong positive impact on electronic banking service delivery. This indicates that the greater the ease with which customers can access banking services from alternative platforms, the more they patronize the platforms. The study however produced evidence of strong negative effect of cost on the choice of service delivery channel, an indication that customers are inclined to embrace service channels that offer them the opportunity to save time, money and other economic resources. Of the above predictors, the standardized coefficient, β, of 0.845 indicates that ease of access ranks higher than cost in explaining the dependent variable. It indicates that one standard deviation change in ease of access to alternative banking channels produces 0.845 change in its rate of adoption. On the other hand, one standard deviation change in cost of alternative banking channels produces 0.323 change in its rate of adoption.

Hypothesis Two

H_0: Application of electronic banking does not offer a reliable and secure channel for delivery of banking services to customers.

H_1: Application of electronic banking offers a reliable and secure channel for delivery of banking services to customers.

Table 5: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.576	.574	.96219

Source: Authors computation, 2018

The correlation coefficient of 0.759 shows a strong positive linear relationship between the dependent and independent variables. The R-squared value of 0.576 and the adjusted R-squared of 0.574 show that about 57 per cent of variations in the dependent variable is explained by the independent variables.

Table 6: ANOVA Estimates

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	364.175	2	182.088	196.678	.000[b]
Residual	267.561	289	.926		
Total	631.736	291			

Source: Authors computation, 2018

Table 6 shows the statistical significance of the result. The ANOVA table tests the null hypothesis for statistical significance. The null hypothesis is rejected if the P value is ≤ 0.05. From the results, the model in this table is statistically significant (sig=.000) and hence the null hypothesis should be rejected and alternate hypothesis accepted. This indicates that application of electronic banking offers a reliable and secure channel for delivery of banking services to customers.

Table 7: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	.171	.147		1.164	.245
	Reliability of technology-based service delivery channels.	.357	.044	.365	8.071	.000
	Security/Integrity of service delivery channels	.573	.052	.499	11.016	.000

Source: Authors computation, 2018

Table 7 shows the extent to which reliability and security of alternative banking channels explain its adoption or usage among the sampled group. The result shows that both variables have strong positive impact on customers' intention to engage electronic-based banking service channels. The result further indicates that security/integrity of alternative banking channels rank higher than reliability of e-banking channels in customers' choice of service delivery channel.

5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

The study was designed to determine the nexus between customer service and the adoption of technology-driven service delivery channels in the Nigerian banking sector. It specifically focused on examining how the application of engineering technology impacts banking service delivery in Nigeria. Analysis of data collected from selected customers of 5 DMBs in Lagos, Ogun and Ebonyi States of Nigeria showed that alternative service channels offered by technology-based applications enhanced the delivery of banking services to bank customers. Specifically, the result showed significant impact of ease of access, cost, reliability, and security/integrity of technology-driven service delivery channels on the adoption of engineering technology-based applications in Nigeria's banking industry. This informs customers' continued engagement of alternative banking platforms for their transactions.

A major conclusion from the above result is that the application of engineering technology in banking operations has significantly enhanced delivery of banking services to bank customers in Nigeria.

Based on the findings above, it is recommended that banks should procure and use engineering technology applications to enhance their service delivery so as to attract and retain customers. Technology-based applications like ATMs, POS, Chatbots, etc. have clearly shown to be a major factor in the improvement of banking service delivery because they incorporate customer-oriented features like convenience, reliability and security which are essential requirements for survival in today’s highly competitive business environment.

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