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Technology innovation in the Nigerian banking system: prospects and challenges

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Abstract

Purpose – The banking system in Nigeria is gradually moving away from transactions "across the counter" to the fingertips of the customers with the adoption of modern technology. However, every development comes with its "pros and cons" because as technology innovation has improved service delivery and profitability of banks in Nigeria, crimes are also at a high side. To activating the minds of bank operators about the importance of technology adoption and its shortcomings, this paper aims to examine the prospects and challenges of technology innovation in the Nigerian banking system.

Design/methodology/approach – Secondary data were retrieved from the annual reports of Central Bank of Nigeria (CBN) and Nigeria Deposit Insurance Corporation (NDIC) from 2013 to 2017 to know the interaction between e-banking platforms and performance of banks in Nigeria. The study administered a questionnaire to the bank customers in Lagos Island, Nigeria to understand their perception towards e-banking. This study is anchored on prospect theory to ascertain the risk orientation of the Nigerian banks regarding how they adopt technology and reasoned action theory to understand the intention of bank customers in using the opportunities of e-banking copiously.

Findings – The findings of this study reveal the migration from cheques to electronic related transactions. It further indicates a high rate of fraud committed through those channels. The analysis of primary data shows that innovation adoption, service quality, cybercrime have significant relationship with the competitiveness of banks, the intention of bank customers, and perception of customers towards online services. However, the rate of frauds does not have significant relationship with the usage of mobile banking products which further studies can critically examine.

Originality/value – This study has revealed available huge potentials in the e-banking that are yet to be used in Nigeria. However, consumer orientation needs to be worked on, because, customers still have the fear that cybercrime is mostly committed via e-banking platforms. Unlike in developed countries whereby quite good numbers of customers make use of e-banking platforms, majority of bank customers in Nigeria still prefer using manual methods and the world is already on the verge of moving into 5 G from 4 G.

Keywords Competitiveness, Service quality, Cybercrime, Technology innovation adoption, Perception of customers

Paper type Research paper

1. Introduction

Technology has virtually taken over business activities in the 21st century, and banking sector that plays a major role in the economic development of a nation is not an exemption of the innovation orchestrated by this phenomenon. Naturally, every invention in life comes

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with two edged faces because human reasoning is very complex to view things in one direction. It is evident in the literature that technology innovation has created enormous opportunities for banks not only in advanced countries but also in developing nations like Nigeria. However, the challenges this development has caused in the banking sector cannot be swept under the carpet because they are useful for policy and decision-making. Technology innovation is disruptive in nature; it creates opportunities and challenges for future opportunities and challenges. Therefore, firms are bound to benefit from the opportunities inherent in the new technology and as well contend with the pending challenges irrespective of the sector (Schiavi and Behr, 2018; Tongur and Engwall, 2014).

Banking practices for about three decades ago in Nigeria were so crude that customers could spend a whole day in the banking hall just to make deposit or withdrawal, even sometimes had to return to the same bank the following day for the same transaction because of a long queue. Banking operations as at that time were so designed in form of "arm-chair brick and mortal" approaches that those customers could not make transactions in another branch of the same bank on the same street. Banking services during conventional banking era in Nigeria were very poor because they were manually carried out owing to lack of technology innovation (Oluwatolani *et al.*, 2011; Okoye *et al.*, 2019). However, the advent of technology and its application in recent time of speedy service delivery has undoubtedly refurbished the system, though with its hiccup.

New technologies have transformed organizations by providing innovative ways of adding values to both existing and new markets, creating opportunities that can expand the scope of firms beyond the boundary of organizations (Zott *et al.*, 2011). Banking has been transformed by technology, and the clients are more satisfied than before through e-transactions thereby generating more sales revenue for banks in Nigeria and other parts of the world (Oira and Kibati, 2016). Bank customers can now do their transactions without seeing the four pillars of the branch of the bank. That is why it is possible in Nigeria today to see people enjoying banking services with their smart phones without even being an account holder of the bank (Okoye *et al.*, 2019). Therefore, technology has become a centre of global change and its adoption in the banking system has changed the tone of the music and copiously improved service delivery (Agbolade, 2011; Suoranta and Mattila, 2004; Tsai *et al.*, 2010).

The development witnessed so far in the technology reformation of banking system in Nigeria has its other side of the coin. The argument in this study is that experts and mangers should not only focus their attentions on the benefits of technology adoption but also show concern about how it affects the end users. The frauds perpetrated in the Nigerian banks have caused a lot of financial havoc not only to the stakeholders but also to the entire economic activities of the nation (Owolabi, 2010). Though, the issue of fraud in the banking system is not peculiar to a particular country because is a global phenomenon, yet, this is more rampant in the developing nations like Nigeria (Udeh and Ugwu, 2018). However, technology has no doubt improved the service quality of banks, but the platforms through which e-banking services and products are being accessed by the customers are not properly accessible (Kelvin *et al.*, 2013), because customers are not happy sometimes, as most of the transactions they carry out are executed and transmitted in secluded locations where they cannot oversee (Obeide, 2017). Consequently, technology innovation has enormously improved banking services but with its shortcomings.

2. Literature review

2.1 The history of banking in Nigeria

The history of banking in Nigeria can be traced to quasi and informal arrangement of contribution whereby a person called "collector" collected money and kept it on behalf of group of people called "contributors" for them to collect on the maturity date based on the

agreed participation charges. African Banking Corporation-a South African based bank overtook this system in 1892 with its first operations in Lagos (Chiemeke *et al.*, 2006; Oluduro, 2015). Thereafter, in 1893, the British Bank of West Africa (BBWA) commenced as a Trust Fund led by Sir Alfred Jones, and went into full banking operations in Lagos around 1894 with a branch situated in Calabar in 1900 (Bizer and DeMarzo, 1992; Oluduro, 2015).

The journey of BBWA passed through different stages before it was finally domesticated in 1979 to the First Bank of Nigeria (FBN) when local interests holding in foreign banks was increased by the Government of Nigeria (Oluduro, 2015). Though, in the opinion of Onodugo (2015), conventional banking practices commenced in 1952, because, that was the beginning of banking legislation in Nigeria (Osabuohien, 2008). Several commercial banks were later formed after FBN; some of them went into oblivion and corporate graveyard, some embarked on mergers and acquisitions that resulted to change of names, logos and brands as a result of transformational changes at different stages.

Before the introduction of electronic banking, carrying out banking transactions involved desktop computer which some authors argued that the era of computerization with mainframes and minicomputers marked the evolution of technology innovation in the banking system (Taiwo and Agwu, 2017). However, banking activities still remained ledger cards and pass-books with manual systems that orchestrated long queues, cash payment and cash withdrawal, and "one man one branch" syndrome. These challenges informed the players in this sector to import western technologies into the Nigerian banking system by migrating from "bricks and mortar" style to "clicks and mortal" method through introduction of electronic banking transactions to ease queuing issues, and as well consummating banking services without maintaining a bank account with such a bank (Agwu and Murray, 2015; Kujur and Shah, 2015; Taiwo and Agwu, 2017).

As mentioned by Onodugo (2015), Automated Teller Machine popularly called ATM was first launched and installed in Nigeria by the National Cash Registers for the erstwhile Societe Generale Bank as an electronic delivery device in 1989. This development gave Inter Switch an impetus to begin operations with five ATMs from First Bank of Nigeria and United Bank for Africa in 2003, but this story has changed today because ATM is all over the place in Nigeria (Onodugo, 2015; Tope, 2010). According to Central Bank of Nigeria (Central Bank of Nigeria Annual Report, 2017) report in 2017, ATM maintained the most patronized e-payment transactions in 2017, accounting for 78.2%, followed by Point of Sales (PoS) terminals, mobile payments and web (internet) with 14.3, 4.7 and 2.8%, respectively. The innovation in banking sector as experienced in the 21st century has enhanced self-service platforms and facilities through ATM, e-funds transfer, tel-banking, smarts cards, e-data interchange e-home and office banking (Agbolade, 2011). Technology has actually influenced the practice of intra and inter-bank transactions (Onodugo, 2015), and bank customers in Nigeria today can consummate banking services and products from their bedrooms because the banks they are operating are already in their phones and laptops.

2.2 Technology innovation and its prospects to banks

In today's banking practices, technology innovation has made it easier for customers to monitor their bank accounts and how they carry out transactions on daily basis. E-banking offers easy access for customers into their accounts thereby giving room for suspicious and report of any illicit transaction carried out on their accounts without permission, and this has reduced under-the table practices by the bank officers (Offei and Nuamah-Gyambrah, 2016). The introduction of cashless policy which Edesiri and Promise (2013) refer to as cashlite economy was successful because of the technology advancement in the sector, and this has not only reduced physical cash movement that can warrant robbery but also

generated more revenue for the banks as a result of transaction charges. The existence of alternate channels in the Nigerian banking system has improved the profitability of banks in Nigeria, reducing the need to physically meet the bank staff or visit the banks (Offei and Nuamah-Gyambrah, 2016; Polatoglu and Ekin, 2001).

With the large number of customers that the Nigerian banks have nowadays, it would have been difficult for service quality to be enhanced with the old method of "across the counter transaction" if not for the advent of technology innovation. Though, the whopping cost of running a bank with modern technology is incontestable, yet, multi-billion (in Naira) is persistently declared by banks as profit after tax in their annual reports compared to pre-innovation banking era in Nigeria. Bank staff can operate from home with their cell phones, especially when they are on leave and their attentions are needed. The online real-time has made inter-bank clearing possible within 24 h in Nigeria compared with 3–5 days during traditional banking system; this e-payment and interbank settlement technique is an effort to modernize banks in developing countries in line with global standard (Cherotich *et al.*, 2015).

The volume and value of bank cheques cleared in 2017 nationwide fell by 7.7 and 6.9% (10.8m and N5.4bn, respectively) compared to the previous year, and this was attributed to increased adoption of e-payment channels according to CBN report (2017). The volume and value of payment on e-money products such as ATM, Point of Sales (PoS), Mobile and internet increased in 2017 by 43.2 and 37.6% (1.02m and N9.13bn, respectively) compared to the previous year (CBN, 2017). On web transaction, the volume and value increased by 105.8 and 39.4% (28.99m and N184.6bn, respectively) in 2017 compared to the previous year. Similarly, mobile payments improved in volume and value by 1.6 and 45.7% (47.81m and N1.1bn, respectively) in 2017 compared to the previous year. On the Nigeria Inter-Bank Settlement Systems Plc (NIBSS) electronic fund transfer increased by 4.3 and 2.5% (31.03m and N14.95bn, respectively) in 2017 compared to the previous year simply because consumers preferred the platform to bank cheques based on cost effectiveness and convenience (CBN, 2017).

2.3 Technology innovation and its challenges to banks

E-banking is a product of technology innovation in the sector, but in the opinion of Abu-Shanab and Matalqa (2015), insecurity is a major threat to e-transactions because of its potential to cause financial risks to customers and losses to banks. On the other hand, third party issue is another challenge for banks. For instance, Interswitch is an African-based integrated firm that facilitates digital payments and commerce, majorly through ATM terminals. Many are times, customers experience ATM dispense error owing to poor services. Information technology (IT) service providers through which banks deliver their financial services to the customers at times hamper the efficiency and service quality of the banks. Quite large bank customers in Nigeria do not understand that the services they get from their bankers are supported by IT service providers. Customers keep on blaming the operators of banks, and sometimes decide to switch bank when they experience poor service, because, service quality is a major strategic tool for customer satisfaction and survival (Akinyele and Olorunleke, 2010).

It is no longer a debatable issue that technology has brought innovation to the Nigerian banking system like other countries in the world; however, its idea of making the world a global village paves ways for easy accessibility into another person's data and information, thereby making customers' bank accounts susceptible to frauds. It is possible for a single fraudster to perpetrate frauds in the accounts of large number of customers that maintain e-banking (Abu-Shanab and Matalqa, 2015; Kovach and Ruggiero, 2011). Though,

technology innovation has enhanced networking, creating platforms for people to identify opportunities, disrupting existing methods to create better ways of satisfying existing and new markets. Yet, having the feelings that one's bank account is not adequately secured can dampen the confidence of customers. Taiwo and Agwu (2017) identify cost, maintenance of e-banking and fraud as challenges confronting banking system in Nigeria, while that of cyber-crime is more severe in developing countries compared with developed counterparts (Kujur and Shah, 2015).

3. Hypotheses development

In attempt to operationalize this study, four hypotheses emanate from prospect theory and the theory of reasoned action as explained below.

3.1 Prospect theory

Involving in any business activity is a risk, and risk-taking decision has been in existence for decades (Edwards, 1954; Holmes *et al.*, 2011), as environment is very complex for accurate predictions. The best way to describe decision-making within the scope of risks is prospect theory (Kahneman and Tversky, 1979). This theory was first considered by Kahneman and Tversky in 1979 and the underlying assumption is about decision making under the condition of risks, therefore, people will prefer to avert risk without minding the future benefits (Abdellaoui *et al.*, 2007; Tversky and Kahneman, 1986). The way people carry out decision-making best describes prospect theory (Holmes *et al.*, 2011).

One of the major arguments surrounding the explanation of prospect theory is that, naturally, people have penchant to remain in their comfort zones for the fear of unknown (Levy, 1992), and they feel that, the negative consequences for leaving a former position to a new situation could be more than the positive outcomes (Thaler, 1980). The argument here is all about the decisions of bank operators to embrace new technology, as innovation has the capacity to disrupt existing methods so as to add better values to the end users. In another dimension, this study proposes that customers may decide to remain in their traditional method of "across the counter" (banking hall) if they discover that using e-banking platforms could make them to be exposed to unnecessary risks. These assumptions inform the two hypotheses stated below:

H1. Innovation adoption does not have significant relationship with the competiveness of banks.

H2. Frauds in banks do not have significant relationship with the usage of mobile banking products.

3.2 Theory of reasoned action

It is widely argued in the literature that whatever action taken by an individual, there is a motivating factor and intention behind it. The genesis of the theory of reasoned action can be traced to the study of Fishbein and Ajzen in 1967 (Ajzen and Fishbein, 1980). This theory offers a model that can predict the reason behind individual's action and attitude (Ajzen and Fishbein, 1980). The primary aim of this theory is to examine and identify the fundamental motivating factors behind every intention, decision and choice taken by individuals either consciously or unconsciously. Therefore, the theory has been examined across numerous disciplines, behavioural intentions and different issues such as using contraceptive drugs, condoms, donation of blood, online shopping and consumption intention among others (Hoffmann *et al.*, 1999).

In the opinion of Otieno *et al.* (2016), theory of reasoned action (TRA) is a suitable theory that can guide information systems, especially those studies that involve technology innovation intentions and adoption. The argument made by Otieno *et al.* (2016) confirms the fact that customers' needs and preferences can inform the intentions of organizations to adopt a particular technology or find means of meeting the demands. Therefore, the position of this study is that, failure of any organization to deliver service quality as expected by the customers could necessitate negative intentions and poor consumption of such firm's services or products. Customers can easily switch banks for a better service (Hennayake, 2017). Another argument is that bank customers may not optimally use the full potentials of the products/services delivered through e-platforms or channels if they have intention and perception that frauds could be perpetrated in their bank accounts. Therefore, this research proposes that:

H3. Service quality does not have significant relationship with the intention of bank customers to switch.

H4. Cyber crime does not have significant relationship with the perception of customers towards online services.

4. Methods

Primary and secondary data were generated for this study through annual reports of CBN (2013-2017 and NDIC (2013-2017) and responses from the bank customers in Lagos Island, Nigeria. In the case of primary source, a cross-sectional survey design was adopted to generate the primary data needed to establish the relationship between the variables. As argued by Cochran (1977), in a population that is not finite, 384 could be considered suitable for research with 95% level of confidence. However, a five-point Likert form of questionnaire was considered for the administration of 300 copies to the respondents by adopting convenience sampling technique randomly selected from business owners and residents in Lagos Island with the aid of cluster method. Also, the last census conducted in Nigeria was in 2006; therefore, it is difficult to have a graphic figure for people in Lagos Island.

The questionnaire was pre-tested prior the survey with other scholars that are experienced in designing questionnaire through which the instrument was modified to guarantee validity and suitability. The questionnaire was self-administered and the respondents were assured of secrecy of their responses as most Nigerians are very conscious of confidentiality. For the purpose of reliability of data, Cronbach's alpha values of 0.741 (technology innovation adoption and competiveness), 0.713 (frauds and usage of mobile banking products), 0.745 (service quality and intention of bank customers to switch), 0.824 (cyber crime and perception of customers towards online services), each is higher than the acceptable value recommended by Nunnally (1978). Out of 300 copies of questionnaire administered, 297 copies of questionnaire were validly filled and returned representing 77.34% response rate. Simple trend analysis was adopted to examine how historical performance of technology adoption and its challenges can inform strategic decisions of bank operators in Nigeria. Though, some experts argue that trend analysis may not adequately represent the future because it is not all situations that event in the past repeat itself. However, it is a good indicator for policy making. Pearson correlation was adopted in analyzing the primary data to examine the relationship between the variables mentioned in the hypotheses.

4.1 Analyses

Figure 1 shows bank transactions that were made and the contributions of various channels from the year 2013 to 2017 in terms of volume and value as reported by Central Bank of Nigeria. As indicated in the Figure 1, the volume of cheques consistently dropped from 29.4 million in 2013 to 10.8 million in 2017 representing a huge decrease of about 172.22%. Similarly, the value of cheques during these periods constantly dropped from ₦15.6tn in 2013 to ₦5.4tn in 2017 amounting to a decrease of 188.89%, and this could be ascribed to customers' preference for e-transactions (CBN, 2017). In confirmation of this development, the volume of ATM used from 2013 to 2017 increased from 295.3 to 800.6 million, while the value was from ₦2.83bn in 2013 to ₦6.4bn in 2017 (increased by 171.1 and 126.15%, respectively). Also, the volume of Web transactions increased from 2.9 million in 2013 to 29 million in 2017 with the increase in value from ₦47.32bn to ₦184. 6bn, this accounted for increase of about 900 and 290.1%, respectively.

The transactions made by bank customers in Nigeria through Pos in terms of volume, revealed that from 9.40 million 2013, it increased to 146.3 million in the year 2017, while the value was from ₦161.02bn to ₦1.41tn in 2017 (increased by 1,456.4 and 775.5%, respectively). Mobile payment volume increased from 15.8 million in 2013 to 47.8 million in 2017, while the value increased from ₦142.8bn ₦1.1tn accounted for increase of about 202.5% in volume and 671.7% in value for the years under review. The volume of real time gross settlement (RTGS) grew from over 0.4 million to 1.2 million as the value increased

Years	2013		2014		2015		2016		2017	
Mode	Vol.	Val. (₦)	Vol.	Val. (₦)	Vol.	Val. (₦)	Vol.	Val. (₦)	Vol.	Val. (₦)
Cheques	29.4m	15.6tr	15.4m	7.4tr	13.5	6.2tr	11.70m	5.80tr	10.8m	5.4tr
ATM	295.30m	2.83b	400.10m	3.68b	433.59m	3.97b	590.20m	4.99b	800.6m	6.4b
Web Transaction	2.9m	47.32b	5.57m	74.3b	7.98m	91.6b	14.00m	132.40b	29.0m	184.6b
PoS	9.40m	161.02b	20.82m	312.1b	33.72m	448.5b	63.70m	759.00b	146.3m	1.41tr
Mobile Payment	15.81m	142.8b	27.74m	339.2b	43.93m	442.4b	47.10m	756.90b	47.8m	1.1tr
RTGS	0.40m	101.62b	0.57m	135.5b	0.94m	374.22b	1.16M	371.64b	1.2m	418.7b
NIBSS Instant Payment	17.1m	10.84b	40.83m	19.92b	71.64m	25.65b	153.60m	38.11b	370.8m	56.20b
NIBSS E-fund Transfer	30.0m	14.31b	29.82m	14.62b	28.94m	13.09b	29.75m	14.58b	31.03m	14.95b

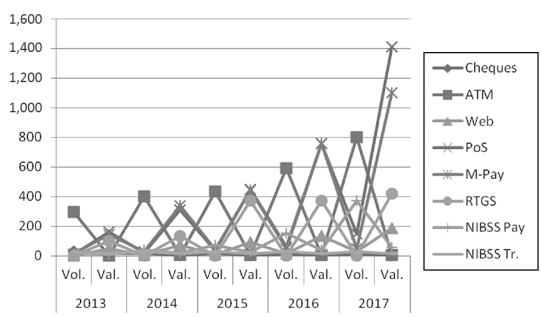

Figure 1.
Trend analysis table for bank transactions in Nigeria from 2013 to 2017

Source: Central Bank of Nigeria Annual Report (2013–2017)

from ₦101.62bn to ₦418.7bn within 2103 to 2017, and this represented 200% increase in volume and 312.03% increase in value.

The volume of Nigeria Inter-Bank Settlement (NIBSS) instant payment (NIP) increased from 17.1 to 370.8 million (2013–2017), while the value increased from 10.84 ₦bn to ₦56.2bn (increased by 2,068.4 and 418.5%, respectively). However, the volume of NIBSS electronic funds transfer (NEFT) constantly declined from 2014 to 2016 but slightly increased by 3.4% (from 30 million in 2013 to 31.03 million in 2017). The value increased in 2014 by 2.2%, a decrease in 2015, but a slight increase in 2016. There was an increase of 4.5% in 2017 compared to the value in 2013. The implication of this is that, the adoption of modern technology has drastically reduced the rate of using cheques to do banking transactions in Nigeria to avoid unnecessary queuing issues at the banking halls.

In Figure 2, the frequency of ATM from 2015 to 2017 increased by 103.97% and the value of loss increased by 56.55%. The frequency of Web-based frauds increased by 434.94%, while the value of actual loss decreased by 0.0021% from 2015 to 2017. The frequency of frauds and the amount of loss orchestrated through transfer/withdrawal decreased by 44.96%, and 76.73% from 2015 to 2017. Also, the frequency and value of frauds perpetrated through suppression of deposits declined by 115.8 and 87.93%, respectively, from 2015 to 2017. Cheques related fraud in terms of frequency and the actual loss recorded a decrease of 70 and 109.88%, respectively. The frequency of frauds committed by the employees of banks in Nigeria decreased by 65.1%, while the value decreased by 64.04% from 2015 to 2017.

Unauthorized credits related frauds decreased by 34.91% in terms of frequency, while the actual amount of the loss decreased by 967.3% from 2015 to 2017. The frequency of frauds committed by outsiders and customers decreased in 2016 by 37.5% but increased by 38.46% between 2016 and 2017. The value of loss remained the same in 2015 and 2016 while it increased by 228.57% between 2016 and 2017. In terms of foreign currencies, the frequencies of frauds increased by about 100%, while the amount of loss increased by 12.12% between 2015 and 2017. Diversion of bank charges decreased by 4.55% in terms of frequency, while the amount of loss increased by 873.3%. Lodgment of stolen warrants did not have record from the Nigeria Insurance Corporation in 2015, but the frequency of fraud committed through this channel showed an increase of about 64.3%, while the value of the loss decreased by 21.43% between 2016 and 2017. From these data, it is obvious that the highest number of frauds committed was through ATM, but Web-based recorded the highest in terms of amount of loss involved. However, the total number of frauds committed increased constantly from 2013 to 2017 by 594.55% while the value of loss reduced 81.52%.

4.2 Respondents characteristics

Table 1 illustrates the consumption behaviour and pattern of customers regarding bank operations in Nigeria with majority of respondents representing 48.5% operating a platform of e-banking, followed by 43.8% of customers that make use of two to five e-banking platforms, while the remaining 7.7% of the customers operate six to ten e-banking channels. Another set of respondents with 37.7% agreed that they use e-banking channels quite often, the highest proportion of the respondents with 47.1% agreed that they make use of e-banking channels often, while the remaining 15.2% of the respondents do not often use e-banking channels. This is an indication that customers do make use of electronic banking system as revealed in the Table 1.

In terms of the number of banks operated by the customers, 30.6% have only one bank they patronize, the majority of the respondents with 56.2% operate two to five banks, while the remaining 13.1% of the respondents operate six to ten banks. Table 1 also reveals that the majority of respondents with 50.8% have been operating bank accounts between 10 and

Years	2013		2014		2015		2016		2017	
Channels					Freq.	Actual Loss (₦ 'B)	Freq.	Actual Loss (₦ 'B)	Freq.	Actual Loss (₦ 'B)
ATM/Card-related fraud					8,039	0.504	11,244	0.476	16,397	0.798
Web-based fraud					1,471	0.857	3,689	0.582	7,869	0.709
Transfer/ Withdrawal					1,396	0.562	836	0.626	963	0.318
Suppression of deposits					602	0.218	357	0.224	279	0.116
Cheques related fraud					272	0.17	124	0.037	160	0.081
Bank Staff					213	0.146	182	0.179	129	0.089
Unauthorized Credits					143	0.587	172	0.198	106	0.055
Outsiders/ Customers					33	0.021	24	0.021	142	0.069
Foreign Currencies					18	0.033	26	0.033	36	0.037
Diversion of bank charges					92	0.0075	83	0.036	88	0.073
Lodgment of stolen warrants					-	_	14	0.034	23	0.028
Total					12,279	3.173	16,751	2.446	26,182	2.372
Total Fraud Cases and the Amount Involved from 2013-2017	No of fraud cases	Amt. Involved (₦ 'B)	No of fraud cases	Amt. Involved (₦ 'B)	No of fraud cases	Amt. Involved (₦ 'B)	No of fraud cases	Amt. Involved (₦ 'B)	No of fraud cases	Amt. Involved (₦ 'B)
	3,786	21.8	10,621	25.61	12,279	18.02	16,751	8.68	26,182	12.01

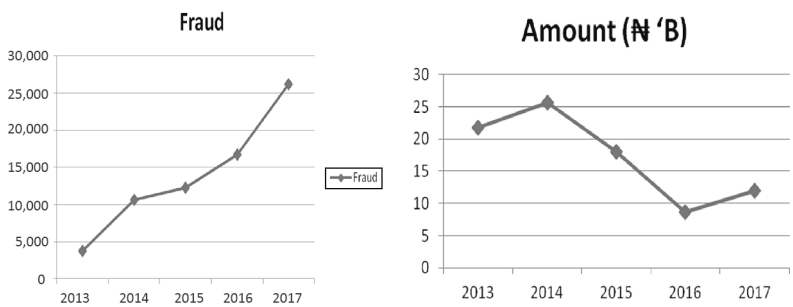

Figure 2.
Trend analysis table for fraud cases in the Nigerian Banks from 2013 to 2017

Source: Nigeria Deposit Insurance Corporation (NDIC) Annual Report (2013–2017)

15 years followed by 5-10 years with 34.7%, respondents with 21 years and above recorded 8.1%, while the remaining 6.4%, of the respondents have 16-20 years' experience in bank services. This has established the fact that customers have good years of experience with banking operations in Nigeria.

4.3 Hypotheses testing

Table 2 presents relationship between the variables with key notes: BCT = Bank competiveness, INA = Innovation adoption, UMBP = Usage of mobile banking products, FIB = Frauds in banks, IBCS = Intention of bank customers to switch, SERVQ = Service quality, PCOSB = Perception of customers towards online services of banks, CBC = Cyber crime.

Table 2 reveals the relationship among the variables tested as stated in the hypotheses of this study with the Pearson correlation significant value within the ranges of 0.000 to 0.005. Table 2 indicates a significant relationship between innovation adoption and bank competitiveness with significant value of 0.000 and correlation of 0.416**. However, there is no significant relationship between frauds in banks and the rate at which customers make use of mobile banking with significant value of 0.297 and correlation of 0.007. Table 2 further reveals that there is a significant relationship between bank service quality and customers' intention to switch bank with significant value of 0.000 and correlation of 375**. Also, there is a significant relationship between cyber crime and the perception of customers towards online services of banks with significant value of 0.000 and correlation of 381** as illustrated in the Table 2.

Characteristics	Status	Frequency	Valid (%)	Cumulative (%)
No. of e-banking platforms operated by the customers	1	144	48.5	48.5
	2-5	130	43.8	92.3
	6-10	23	7.7	100.0
	Total	297	100.0	
Frequency of e-banking channels used by the customers	Quite often	112	37.7	37.7
	Often	140	47.1	84.8
	Not often	45	15.2	100.0
	Total	297	100.0	
No. of banks operated by the customers	1	91	30.6	30.6
	2-5	167	56.2	86.9
	6-10	39	13.1	100.0
	Total	297	100.0	
No. of years the customers have been operating bank account(s)	5-10	103	34.7	34.7
	11-15	151	50.8	85.5
	16-20	19	6.4	91.9
	21 and above	24	8.1	100.0
	Total	297	100.0	

Source: Fieldwork 2019

Table 1. Respondents characteristics responses

	Sig.	*N*	BCT	INA
BCT	0.000	297	1	0.416**
INA	0.000	297	0.416**	1
			UMBP	FIB
UMBP	0.910	297	1	0.007
FIB	0.910	297	0.007	1
			IBCS	SERVQ
IBCS	0.000	297	1	0.375**
SERVQ	0.000	297	0.375**	1
			PCOSB	CBC
PCOSB	0.000	297	1	0.381**
CBC	0.000	297	0.381**	1

Note: **Correlation is significant at the 0.01 level (2-tailed)
Source: Researcher's field survey (2019)

Table 2. Pearson correlation table

5. Discussion of findings and conclusion

Innovation adoption has greatly influenced the competitiveness of banks in Nigeria with the rate at which e-banking transactions have taken over manual transactions as evidenced in the CBN reports (2013-2017). One of the arguments of this study is based on prospect theory with the assumption that bank operators may decide not to take the risk of spending huge costs on technology adoption, while bank customers may decide to use bank services that are less risky. It was therefore statistically found out in this study that banks in Nigeria have actually taken the risk of adopting technology in the system, and this has contributed positively to the activities of banks in Nigeria. This finding corroborates Taiwo and Agwu (2017), Babatunde and Salawudeen (2017) who submit that the operational efficiency of banks in Nigeria has improved since the adoption of e-banking. However, the fraud cases in the banking system have no significant relationship with the usage of e-banking products because bank customers see these platforms as better options against the traditional methods. This also supports the study of Udeh and Ugwu (2018) who argue that the high profits declared annually by banks in Nigeria in their annual reports indicate that frauds do not significantly influence the usage of e-banking services by the bank customers.

The theory of reasoned action is also considered in this study to emphasize the reactions of customers towards bank services since most of these services are supported by the IT firms or third party. Again, the intention of customers to fully use the potentials of e-banking services could be hampered because of the rate of cyber crime. It is therefore found out in this study that the service quality of banks in Nigeria through the kind of technology they have adopted has significant relationship with the intention of customers to switch. The finding of Kenney *et al.* (2016) states that service satisfaction has positive relationship with switch intention of bank customers. This is evident in the behavioural pattern of bank customers in Nigeria as established in this study whereby quite numbers of respondents operate between two and five different banks; the implication of this is that they can switch to any bank. It is also indicated in the outcomes of this study that cyber crime has significant relationship with the perception of bank customers. Some educated persons still prefer doing their transactions across the counter in Nigeria to avoid their account details being exposed to the fraudsters and this actually reflected in the report of CBN (2017) whereby over ten million transactions were made through cheques in the year 2017, though decreased compared to the previous years. The findings that emanated from this study show that technology innovation has improved the operational efficiency of banking system in Nigeria, though influencing high rate of frauds and cyber crimes.

6. Implication for practice

The findings of this study have established the buying behaviour of bank customers in Nigeria regarding e-banking services. It is established in this study that the adoption of technology has improved the services of banks, and customers are moving away from manual transactions to the digital. However, the major concern is that, the sector has not adequately explored the opportunities in a country of over 200 million population because of the fear of high rate of cybercrime. Though, some customers still prefer e-banking despite the frauds because they see the platform as a better option than "cash across the counter approach". In some other parts of the world particularly in advanced countries, the protection of customers is a major priority in the course of achieving profitability. Therefore, there is need to strengthen the security of customers account because larger populations of Nigeria (both educated and non-educated) are still engaging in orthodox methods for fear of cyber crimes.

However, bank services have been improved with the adoption of technology, and this has contributed to the reasons why customers often decide to switch over to a particular bank that can offer them better services. Therefore, the intention of customers towards using alternate channels could be encouraged to minimize queuing issue in the banking halls. The nature of banking services in Nigeria also demands that the activities of service providers could be properly checkmated because customers will only transfer their angers to the bank staff when there is a network failure.

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Further reading

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