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BANKING SERVICE INNOVATION AND CUSTOMER SATISFACTION: A SURVEY OF BANK CUSTOMERS IN ILORIN METROPOLIS

A M.Sc. THESIS SUBMITTED AND PRESENTED

BY

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DECLARATION

I hereby declare that this thesis titled "Banking Service Innovation and Customer Satisfaction: A Survey of Bank Customers in Ilorin Metropolis" is a record of my research. It has neither been presented nor accepted in any previous application for higher degree.

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APPROVAL

This is to certify that this thesis by Emmanuel Semilore Tinuoye has been read and approved as meeting the requirements of the Department of Accounting and Finance for the award of the degree of Masters (M.Sc.) in Finance.

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DEDICATION

This research work is dedicated to my Late Grandmother; Madam Lydia Arinola Aweke OGUNBIYI. (Nee FATUMBI)

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ABSTRACT

Customer satisfaction has been one of the main concerns of banks in recent time as it has been necessitated by the stiff competition in the banking industry. Banks are striving hard to offer quality services and products in a bid to maintain existing customers and woo new ones. On the other hand, customers want the best value for their money and for this reason, they are always searching around to get the best services. The main objective of this study is to examine the impact of banking service innovations on customer satisfaction by surveying Deposit Money Bank customer in Ilorin metropolis. To achieve this broad objective, the specific objectives were to; examine the effect of envelop deposit usage on customer satisfaction; estimate the influence of customer interaction and communication through telephone banking on customer satisfaction in Ilorin metropolis; determine the extent at which the emergence of cardless Automated Teller Machine services affects customer satisfaction; and investigate the effect of phygital banking on customer satisfaction in Ilorin metropolis. The study employed survey research design and the population consist of bank customers residing in Ilorin metropolis only in which three hundred and eighty four (384) customers were drawn as sample through convenience sampling technique. Descriptive and Partial Least Square Structural Equation Model (PLS-SEM) estimation techniques were employed in the analysis of data collected from structured questionnaire distributed to elicit information in order to address the specific objectives. The study revealed that envelop deposit (t-value = 1.726, p-value = 0.085) and telephone banking (t-value = 1.909 and p-value = 0.057) are insignificant predictors of customer satisfaction at 5% level of significance. The insignificant outcome may be as a result that there is no adequate evidence to show the significance of these innovations to customer satisfaction. It could as well be that banks are not providing envelope deposit service adequately or the process of using it is a bit technical for users. The study also found that, cardless ATM service (t-value = 5.650, p-value = 0.000) and phygital banking (t-value = 6.175 and p-value = 0.000) have significant effect on customers satisfaction at 5% level of significance. Thus, the study concluded that banking service innovation such as envelop deposit and telephone banking have no significant effect on customer satisfaction at 5% level of significance among Deposit Money Banks' customers in Ilorin metropolis while cardless ATM and phygital banking are significant innovations that have effect on customer satisfaction. Based on the findings, this study therefore recommends that managements of DMBs should provide more ATMs with cardless operation options at bank premises or other commercial points in the metropolis. the study also recommend that DMBs' management should design more user friendly digital bank applications that can enable customers to efficiently access virtually all bank services even without visiting any branch.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Continuous escalating competitive environments across the world and persistent increase in customers' expectations have been parts of the factors responsible for making customer satisfaction targets extremely challenging in any business. This is because customers are becoming difficult to be pleased, smarter, more conscious of cost of services, and are approached by many more companies with same or improved offers (Kotler & Armstrong, 2010). In addition to that, customer expectations are increasing in relation to service provider's speed of response, breadth and depth of interaction and communication, customization of product and service offerings as well as the rapid change in the needs, wants and expectations of customers. Hence, what would have pleased and amazed them a short while back, might not satisfy them now at present (Jones, Brown, Zoltners, & Weitz, 2005; Richards & Jones, 2008).

Globally, bank customers' satisfaction has been at the center of attention of researchers and bankers, as it represents an important marketing variable for most companies, especially those working in more competitive markets. Banking practice confirms that achieving a reasonable level of customer satisfaction is an extremely difficult task for a bank and is a permanent process with varied results. Customers in many countries show significant level of dissatisfaction and many banks recognise the fact that there is a need to increase the level of customer relationship towards making them satisfied with services offered to them (Chochoľáková, Gabčová, Belás & Sipko 2015).

In Nigeria, prior to the "Consolidation exercise" i.e the bank re-captalization carried out by the Central Bank of Nigeria (CBN) in 2005, customer relations department were carved out

in banks to cater for the need and welfare of customers and saddled with responsibilities of improving customer satisfaction. But unlike other departments like 'Operations and Marketing,' customer relations department was put to total less important and attitude showed that they have nothing more to do with customers aside issuance of deposit/withdrawal slips (Onyike, 2012). The consolidation exercise led to the end of many banks where 89 banks in 2004 were reduced to 24 banks in 2006 as well as the establishment of more exciting ones. Such banks as First Bank, United Bank for Africa (UBA), and Union Bank are among the old generation banks that survived the CBN's hit, while the new generation banks (also called the post consolidation banks) may include Guaranty Trust Bank (GTB), Keystone Bank, Zenith Bank, Access Bank and others. Afterward, upon the increased competition among banks, they had no survival means in the industry than to start aggressive marketing alongside healthy customer relationship creation which solely aimed to satisfy, retain and increase their customers (Onyike, 2012).

While some banks cashed in on the aforementioned survival strategies, others may have took it less and underestimated their importance to their corporate existence as this was evident after the consolidation, where bank PHB, Spring Bank, Oceanic Bank, Intercontinental Bank and Afri Bank were either sold or compelled to merge with other banks. Experts then argued that the problem of these mentioned banks was not only inadequate capital or asset base but bad orientations on customer relations and customer satisfaction (Onyike, 2012). Therefore, for individual Deposit Money Banks to stay afloat and ahead of competition which remained a major task to surviving in a dynamic banking industry, the need for them to persistently improve their relationship with customers and researching in more innovative ways of serving them arose (Tran, Nguyen & Taikoo 2015). Although, according to Ejike, (2018), banks in Nigeria have been generally slow in adopting new and modern innovative ways of improving service delivery to their customers, and three

reasons may be attributable to their lackadaisical attitude toward the development of new service innovations. Firstly, the payback period for the initial capital outlay may be longer and unacceptable to management and shareholders, secondly, these innovations may not have a positive correlation with financial performance in terms of efficiency and profitability and thirdly, the innovations may, nevertheless have their peculiar problems like computer and internet frauds, frequent breakdowns of the system and lack of personnel with requisite skill and commitment, which the banks needed in order to satisfy their customers, stay in business and effectively compete. However, these have not erased the fact that the banks that are holistically embracing innovative practices are making banking services more efficient and convenient to their customers as never before as customers can now conduct banking transactions virtually anytime and anywhere without physical presence at the bank counters through the use of innovations such as ATM, envelop deposit or drop box, point of sales, mobile/telephone banking etc.

The adoption of these innovative channels in serving customers is paramount because for any bank to be relevant in the banking industry, the key to success is to improve the quality of services channelled to meeting customers' needs innovatively. After all, the survival and profitability of banks in Nigeria depends mainly on the extent to which they have been able to satisfy the specific needs of their customers because of the presence of stiff competition among banks within the industry (Tran, *et al*., 2015; Alegbe, Onyike & Okoye, 2019).

At this technology advanced and competitive age, satisfying customers on all possible service dimensions is becoming increasingly challenging to achieve and at the same time, it is extremely important for DMBs to daily render safe, cheap, fast and reliable innovative banking services which are necessary in giving better banking experiences to customers anytime, earn customer loyalty which possibly determine more patronage and as well

improves bank's financial performance (Khan, 2016). It is on this context that this study investigates the impact that banking service innovation has on customer satisfaction in Ilorin metropolis of Kwara state, Nigeria.

1.2 Statement of Problem

Traditionally, cash and cheque deposit are have been largely made only on the counter during the banking services hours. This sometimes give rise to excessive waiting and delays in their transactions. The need to deposit cash with other means such as envelope deposit or cash deposit machine during banking service hours or even at weekends arose. When customers are unable to save or transfer their money when necessary, they are exposed to risks of theft or misplacement. Iluno, Farouk and Saheed (2018) revealed that waiting for service in many business service organizations such as financial institution is unavoidable because transaction must be prudently cross checked. However, excessive waiting leaves customers with bad service experience and causes gradual dissatisfaction. The implication therein is that a dissatisfied customer will most likely not recommend the provider to other customers and this can cause the bank to lose customers to other competitors.

Telephone banking aimed at enabling customers in banks to perform their transactions via telephone, instead of a visit to the branch and helps customers to reduce the cost to visit a branch (Bzhar, 2018) but it is generally discovered and personally experienced that DMBs do not give their customers immediate update on their defects accounts through telephone calls or SMS in order to draw their attentions to the banking hall as the case may be to resolve any irregularity on their accounts which might have been on some restrictions such Place No Debit (PND) or other forms of transaction restrictions. Unfortunately, affected customers only get to know that their accounts have been placed on some restrictions when they may probably need to transact for emergency purpose. Such issue usually often arise

from incomplete record or inadequate customer information which violates the Central Bank of Nigeria (CBN) Know-Your-Customer directives or suspected or fraudulent transactions.

Furthermore, according to Sashi (2012), customers expect more than using their mobiles phones to transfer funds via USSD codes. They have higher demands from their banks through mobile phones, such as getting timelier, valuable and meaningful information about the current status of their accounts. By implication, Hamidi and Safareyeh, (2018) in their study pointed out that various customers' complaints and disappointments arising from these communication gap and poor customer interaction problems decrease emotional bonds as well as customer willingness for future transaction with such bank.

More so, some challenges in the usage of ATM cannot be overlooked, although ATM usage improves bank's efficiency and effectiveness and directly has the role to decrease the cost for both of bank and customers (Bzhar, 2018). Since the emergence of ATM, there cannot be access to it without card but the cardless operation of ATM has been what many customers clamouring for. On many occasions customers have been rendered disappointed and helpless in an urgent situation where they are unable to use their card as a result of misplacement or card damage especially after banking hours or non-banking days. Issue concerning the use of ATM such as this has been giving customers bad experiences in their banking activities.

In addition, the complains of customers about the excessive charges on their transactions, stress and time being wasted on visiting bank branch and persistent high demand in more personalised banking experience are the emerging problems in these present time. With the fact that the world is experiencing rapid advancement in technology across all service oriented institutions including banks. Customers are desiring more efficient personalised banking with zero cost which are not offered by conventional banks.

Essentially, the overall implication in general and empirical evidences in literatures have shown that customers' dissatisfaction can lead to decline in performance of any business organization operating in the competitive market in which banking industries are not exempted. According to Mary (2016), patronage will definitely reduce for a bank which is known for disappointing its customers and consequently, low patronage will lead to reduction in sales volume and damage bank reputation and to the extent of reducing their profitability. More so, a decline in bank performances especially in financial performance like profitability tends to have negative impact on the economy such as economic instability, unemployment, reduction in investor's earnings, and bankruptcy among others economic challenges (Iluno, *et al.,* 2018).

There are various related studies on bank innovations, technology and electronic banking in Nigeria, such as (Agboola 2003; Dogarawa 2005; Ilo, Ani and Chioke 2014; Mary, 2016; Obikeze, Okolo, Okolo, Mmamel and Okonkwo 2017; Lawrence, Alexander, Johnson, Isibor 2018; Isibor, Omankhanlen, Okoye, Achugamonu, Adebayo, Afolabi and Ayodeji 2018; Aremu, Onifade, Aremu and Mustapha, 2018; Iluno *et al.,* 2018; Joseph, Tshepiso and Gladness 2018; Okoli and Adedire 2018; Alegbe, *et al.,* 2019). However, on the compilation of this study and literature at disposals there are little of no study on envelop deposit or drop box and card-less ATM as service innovation in order to check their impacts on customer satisfaction. Therefore, to fill the gap in the literatures and to add to the body of knowledge this study further included envelop deposit and cardless ATM service as banking innovation variables which are emerging service innovation in Nigeria banking industry. Thus, this study focuses specifically on the impact of banking services innovations on customer satisfaction in Ilorin metropolis, Kwara state.

1.3 Research Questions

The following research questions are raised from the study:

i. How does envelop deposit usage affects customer satisfaction in Ilorin metropolis?
ii. What is the influence of customer interaction and communication through telephone banking on satisfaction of customers in Ilorin metropolis?
iii. What extent does cardless ATM service influences satisfaction of customers in Ilorin metropolis?
iv. How does phygital banking usage affects customer satisfaction in Ilorin metropolis?

1.4 Research Objectives

The general objective of this research work is to examine the impact of banking service innovations on customer satisfaction in Ilorin metropolis. The specific objectives of this study are to:

i. examine the effect of envelop deposit usage on customer satisfaction in Ilorin metropolis.
ii. estimate the influence of customer interaction and communication through telephone banking on customer satisfaction in Ilorin metropolis.
iii. determine the extent at which cardless ATM usage influences customer satisfaction in Ilorin metropolis.
iv. investigate the effect of phygital banking on customer satisfaction in Ilorin metropolis.

1.5 Research Hypotheses

In conformity with the specific objectives stated above, the following research hypothesis stated in null form were tested to give answer to the research questions and to achieve the objectives:

$Ho_{1:}$ There is no significant effect between envelop deposit adoption and customer satisfaction in Ilorin metropolis.

$Ho_{2:}$ Customer interaction and communication through telephone banking has no significant influence on customer satisfaction in Ilorin metropolis.

Ho_{3}: There is no significant influence between cardless ATM service usage and customer satisfaction in Ilorin metropolis.

$Ho_{4:}$ Phygital banking has no significant effect on customer satisfaction in Ilorin metropolis.

1.6 Justification for the Study

From the conceptual, empirical and methodological point of view, this study contributes to the existing body of knowledge on bank innovations and customer satisfaction. Conceptually, the study finds out the impact of banking service innovation on customer satisfaction focusing on four innovations which are; Envelop deposit, Telephone banking and Cardless ATM service and Phygital banking. Contribution to conceptual knowledge was the inclusion of envelop deposit, cardless ATM and phygital banking as innovations affecting customer satisfaction, to the best of literature searched on Nigeria studies, it seemed no study had used these three variables as banking service innovations in a study.

Empirically, to the extent of literature searched in Nigeria such as such as Agboola (2003); Dogarawa, (2005); Onyike, (2012) Ilo *et al.,* (2014); Mary, (2016); Obikeze *et al*., (2017); Lawrence, *et al.,* (2018); Isibor *et al*., (2018); Ejike, (2018); Aremu *et al.,* (2018); Iluno *et al.,* (2018); Joseph *et al.,* (2018); Okoli *et al* (2018); Hamidi *et al*, (2018) there are no empirical findings on the use of envelop deposit, cardless ATM and phygital distributions as variables of banking innovations. Therefore, the study seems to be the first to adopt these

three variables in Nigeria and thereby adding to the existing literatures of service innovations and customer satisfactions.

Methodologically, the existing literatures in Nigeria such as (Agboola 2003; Dogarawa 2005; Onyike, 2012; Ilo *et al.,* 2014; Mary, 2016; Obikeze, *et al*., 2017; Lawrence, *et al.,* 2018; Isibor *et al*., 2018; Ejike, 2018; Aremu *et al.,* 2018; Iluno *et al.,* 2018; Joseph *et al.,* 2018; Okoli and Adedire 2018) used various estimation techniques such as Ordinary Least Square (OLS) regression, multiple regressions. OLS regression yields unstable result as a result of increasing standard error of their estimated coefficient Field, (2000). However, Campbell and Ntobedzi, (2007) listed Partial Least Square as possible solution to severe multicollinearity as it reduces the numbers of predictors to a smaller set of uncorrelated components. In analysing data sourced through questionnaire, this current study eliminated the observed methodological weakness in previous studies and employed Partial Least Square-Structural Equation Modelling (PLS-SEM) which reduces the problem of multicollinearity among the construct of the model. Also, PLS SEM has more predictive focus on explaining the variance in the dependent variable and gives more robust result through a bootstrapping method and factor loadings in testing the significance of the path coefficients (Hair, *et al.,* 2014). In addition, the PLS-SEM methods are designed not be overly affected by violations of assumptions by the underlying data generating process such as normality test and serial correlation (Hair, *et al*., 2019). To the best of researcher's knowledge, it seems none of these studies in Nigeria has used PLS-SEM.

More importantly, this study will serve as reference materials to researchers by adding value to the existing research work and serve as basis for other academic investigations by future academicians and researchers into the area of customer service and customer satisfaction among deposit money banks in Nigeria. The study will also provide further background

information to research organizations and scholars who will want to carry out further research in this area.

To the banking industry, the study will benefit the top management who will use it to make informed decisions on issues revolving on innovation and quality of service delivery. This study will also form as a baseline study, which can be used to measure progress in innovative service delivery of the banking industry in future.

1.7 Scope of the Study

In pursuance of the main objective of this study which is to investigate the impact of banking service innovations on customers' satisfaction in Ilorin metropolis in Kwara state. The scope of the study cut across variable, geographical and time scope. The service innovation variables covered in this study are envelop deposit, telephone banking, cardless ATM services and phygital banking only. Geographically, the study covered the DMBs customers that resides in Ilorin the capital city of Kwara state only. The choice of this metropolis is because it serves as the commercial hub of the state as well as the perceived availability of banking innovations services among other areas in the state. The period of time in which the study is completed and data were collected is between January 2020 to April 2021. This matches the time customers are encouraged to use other innovative channels for banking to avoid crowd in banking halls and slow the spread of corona virus pandemic.

CHAPTER TWO

LITERATURE REVIEW

This chapter focuses on the review of literature related to this study. The chapter include; conceptual review, conceptual framework, theoretical review, empirical review, gaps identified in the literature and theoretical framework.

2.1 Conceptual Review

This section reviewed the main concepts related to this study. They include; concept of banking service innovation, customer satisfaction and concept of customer loyalty.

2.1.1 Banking Service Innovation

Kotler and Keller (2009) define service as 'any economic act and performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything'. Schumpeter (2002) describes service innovation as a service product or service process that is based on some technology or systematic method that is carried into practice to provide benefit to its developer. Service innovations can for instance be new solutions in the customer interface, new distribution methods, application of technology in the service process, new forms of operation with the supply chain or new ways to organize and manage services.

According to Hall, Jaffe and Trajtenberg (2005) service innovation benefits both the service producer and customers and it improves its developer's competitive edge. Service innovation is a service product or service process that is based on some technology or systematic method. In services however, the innovation does not necessarily relate to the novelty of the technology itself but the innovation often lies in the non-technological areas. Service innovations can for instance be new solutions in the customer interface, new distribution methods, novel application of technology in the service process, new forms of

operation with the supply chain or new ways to organize and manage services. The service innovations covered by this study are explained below and accordingly.

2.1.1.1 Envelope Deposit

An envelope deposit is an "off the counter" Self-Service Technology (SST) which enables customers to make deposits and payment transactions by cash. This allows customers to lodge cash to a specific account on a real-time basis in a twenty four seven work window. Although some banks who don't have these terminals provide cash drop box in the banking all instead (Syed and Khaliquzzaman, 2016; Ruwan, Hashan, Chandima, Harin, Sithumini and Thanuja, 2020). Self-Service Technologies (SSTs) are considered more effective and innovative in satisfying the needs of customers. In some developing countries, Cash Deposit Machine (CDM) which is a non-personal service delivery mechanism and one of the latest self-service products which allows bank customers to conveniently make bank deposits without wasting their valuable time in queues are used. Ruwan *et al,* (2020).

In Nigeria, depending on the kind of facility a bank has to provide this off the counter deposit, some banks have terminal like big box outside the banking hall but within the bank premises, some have the cash deposit machine (CDM) while some have drop box inside the banking hall for customers to drop their enveloped cash without queuing. Envelop deposit is an alternative way of cash depositing into customers account instead of depositing on the counter. Some can be done in the banking hall which are commonly known as drop box in UBA. In Union bank, it is called envelop deposit and mostly situated around the ATMs terminal. In a bank like first bank, a CDM is available which allows customer to lodge in or transfer money by themselves without need the service of tellers at the counter. The uniqueness of envelop deposit or CDM (which you can find within the bank premises in

some banks) is its 24/7 service it renders like ATMs. This means deposit can be made on weekend days and not until a customer wait till regular banking time.

2.1.1.2 Telephone Banking

Telephone Banking is a service innovation that is considered as a form of remote or virtual banking. This is essentially the delivery of branch financial services via telecommunication devices where the bank customers can perform retail banking transactions by dialing a touch-tone telephone or mobile communication unit, which is connected to an automated system of the bank by utilizing Automated Voice Response (AVR) technology" (Byerlee, Alex & Echeverría 2002; Ejike, 2018).

Telephone banking allows customers to transact banking business over the phone and send vital information to customers on issues on their accounts. It has numerous benefits for both customers and banks. According to Lall (2001), telebanking has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks' perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services. It has almost all the impact on productivity of ATMs, except that it lacks the productivity generated from cash dispensing by the ATMs. This service innovation has enhanced customer satisfaction as it offers retail banking services to customers at their offices/homes as an alternative to going to the bank branch/ATM. This saves customers time, and gives more convenience for higher productivity.

According to Bzhar (2018), who in his work reviewed Technology Acceptance Model (TAM) propounded by Davis (1989) distinguished between telephone banking and mobile banking. Through telephone, banks communicate and interact with their customers to inform them about latest solutions and vital information on their accounts even without

customers visiting the banking hall. Also, using telephone banking help the customers to reduce the cost to visit a branch, telephone banking times can be longer than branch opening times, and a lot of the banks offer the 24 hours in 7 days' service to customers while mobile banking allowed the customers use for balance checks, account transactions, payments, credit, exchange money and other transactions via a mobile device. Mobile banking also let the customers use the mobile device (smartphone) to access for bank account or service provide by banks through USSD codes.

2.1.1.3 Cardless ATM

The automated teller machine was described by Auluck, (2002) as a device that combines a computer terminal, record-keeping system and cash vault in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a Personal Identification Number (PIN). ATMs are mostly located outside banks, and are also found at airports, malls, and places far away from the home bank of customers. They were introduced first to function as cash dispensing machines. However, due to advancements in technological innovations, ATMs are able to provide a wide range of services which include; cash withdrawal, fund transfers, airtime purchasing, cable and utility bills etc.

ATMs are known to be a banking device that cannot be used without a card (Master, Visa or Verve) and PIN but with technology advancement and efforts of banks to keep simplifying banking and making it more convenient, ATMs can now be used without inserting card to perform all aforementioned services. This cardless ATM services can be done through generation of paycode on the customer's mobile phone via the registered mobile number which will be imputed in the machine by the user in order to gain access. Another way cardless ATM is done is via thumbprint. Some ATMs already have an attached biometric device that grants access to the user when the users thumbprint matches the PIN code. So with card or no card, ATMs can still serve customers when needed and efficiently.

2.1.1.4 Phygital Banking

"Phygital" is a portmanteau of "physical" and "digital". Phygital banking is the concept of using banking technologies to bridge the digital world with the physical world for the purpose of providing a unique interactive banking experience to the customers. Phygital is about being inherently digital across all channels (physical and digital), operations and the very way banks are organized and manage their business. 'Phygital' bank interacts with their customers digitally across both physical and online channels. They provide all banking services digitally through internet (applications) and also physically like the brick-and-mortal banks. This means that a phygital banking still allows traditional visit to a bank office for those who cannot keep up with the digitization in banking operation and thus, bank can ensure the trust and comfort that eventually leads to customer satisfaction. All interactions are powered by digital to have intelligent context aware conversations with the customer as a bank. In each interaction, the phygital bank of today, embeds Artificial Intelligence (AI) powered robots and intuitive User Interface (UI) to break the cognitive, language and literacy barriers to increase end-to-end seamless interactions for all customers. (Kathari, 2019).

The licenced phygital bank in Nigeria which are licensed to operate under micro finance structure include Kuda bank, spakle bank, ALAT bank (owned by WEMA bank), eyowo, rubies, VFD as Deposit Money Banks also have virtually all the features of phygital banking in their respective mobile applications. This phygytal banks have the lowest cost in banking services charges due to their digitised operations in Nigeria (Daniel, 2020).

2.1.2 Customer Satisfaction

Customers are viewed as a group whose satisfaction with the enterprise must be incorporated in strategic planning efforts. Forward-looking commercial banks are finding

value in directly measuring and tracking customer satisfaction as an important strategic success indicator. Evidence is mounting that placing a high priority on customer satisfaction is critical to improved organizational performance in a global market place (Chiguvi 2016). With better understanding of customers' perceptions, companies can determine the actions required to meet the customers' needs. They can identify their own strengths and weaknesses, where they stand in comparison to their competitors, chart out the path of future progress and improvement. Customer satisfaction measurement helps to promote an increased focus on customer outcomes and stimulate improvements in the work practices and processes used within the company (Gupta, Donald & Jennifer, 2004).

Kotler (2003) also defined satisfaction as 'a person's feeling of pleasure and dissatisfaction as a disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations'. These two definitions all point to the fact that every bank customer has in one way or the other something he/she expects from his/her bankers. These expectations have come into play because a need that has to be satisfied. These expectations are not the same as there are many customers. Kotler and Armstrong (2002), goes on to say that the customer gets dissatisfied if performance is below expectation and vice versa. If performance goes beyond the expectation of the customer, the customer is highly satisfied and delighted. Motley, (2003), corroborates the idea of matching service performance with customers' expectations. He notes that the mission of a bank is the creation of satisfied clients who tend to favour the organization through time by patronising the financial services being delivered by the bank. He goes ahead to mention that banks can achieve this aim by understanding what satisfies and dissatisfies their customers or clients.

The key to remaining competitive and surviving in the market is the firm’s ability to provide services tailored to meet the needs of its customers. In a chain relationship, scholars have

suggested that the key to remaining competitive through meeting customer needs is innovation (Darroch and McNaughton, 2002), as trends, customer needs and perceptions keep evolving with the passage of time. In this respect, firms in attempt to produce superior value at all times have to adopt the practice and culture of innovation. This is to say that innovation explicably increases the chances of the firm producing to meet the very need of customers, consequently offering opportunity for the firm to satisfy its customers. Customer satisfaction is a pleasant fulfillment response while dissatisfaction is an unpleasant fulfillment response. It is well documented that customer satisfaction is perceived to be the main influencing factor when it comes to making informed decisions for future purchase intention (Tan, Chew & Hamid 2016).

Amin, (2016) pointed out that customer satisfaction serves as an exit barrier to help an organisation retain its customers and lower its switching rate. In the same way, Kaura, Prasad and Sharma (2015) assert that a satisfied customer's affect toward a service provider could motivate the customer to patronise the provider again and recommend them to other customers. In addition, a satisfied customer is of great importance for the bank. Keeping a current customer faithful requires five times less effort, time and money than getting a new one. Such a customer is willing to pay higher prices, is a free form of advertising for the bank, and is inclined to purchase further products. He or she raises in bank employees a sense of satisfaction and pride in their work and business (Titko and Lace, 2010).

Musiime and Bayaki (2010) suggest that banking innovation is directly related to the degree to which a bank's customers are satisfied. In contrast, a dissatisfied customer will most likely not recommend the provider to other customers. Therefore, strong customer satisfaction will naturally influence the customers to remain loyal to the bank (Alsaaggaf and Althonayan, 2018). So, in order to remain competitive and stay ahead of competition,

most commercial banks have introduced many technologically enhanced services and products with the sole aim to attract, satisfy and retain customers (Jan & Abdullah, 2014).

2.2 Theoretical Review

This study reviewed four theories to develop an empirical framework to investigate the impact of banking service innovation on customer satisfaction.

The theories include: expectancy disconfirmation theory, domestication theory, technology acceptance model and transaction cost innovation theory.

2.2.1 Expectancy Disconfirmation Theory (EDT)

Oliver (1977), drawing on the adaptation level theory (Helson, 1964), developed the Expectancy- Disconfirmation model for the study of consumer satisfaction, which received the widest acceptance among researchers, and proposed the Expectancy Disconfirmation Theory (EDT) as the most promising theoretical framework for the assessment of customer satisfaction. EDT further provides explanation to how customers become satisfied with an introduction of a new product or service offering. Disconfirmation theory argues that 'satisfaction is related to the size and direction of the disconfirmation experience that occurs as a result of comparing service performance against expectations. Expectancy disconfirmation theory is built on the base of cognitive dissonance theory definition, which was developed by Leon Festinger in 1957, to explain how dissonance between an individual's cognition and reality influence his/her subsequent cognition and/or behavior (Bhattacherjee and Premkumar, 2004).

The EDT is premised on the assumption that consumers purchase goods and services with pre purchase expectations about anticipated or perceived performance. The expectation level then becomes a standard against which the service is judged or evaluated. That is, once the service has been used, outcomes are compared against expectations. If the outcome

matches the expectation, confirmation occurs. This means that the actual performance of the service is exactly what the customer expected to experience. On the other hand, disconfirmation occurs where there is a difference between expectations and outcomes that is the actual performance of the service is different from what the customer expected to experience. A customer is either satisfied or dissatisfied as a result of a positive or negative difference between expectations and performance. Thus, when the performance of service innovations are better than initially expected, there is a positive disconfirmation between expectations and performance which results in satisfaction, and when service performance is same as what was expected, there is a confirmation between expectations and performance that results in satisfaction. In contrast, when service innovations performance are not as good as expected, there is a negative disconfirmation between expectations and perceptions, which causes dissatisfaction (Atila & Fisun, 2001).

Furthermore, Mahmoud, *et al.,* (2017), emphatically further explains the basic premise of EDT that customers form expectation before the purchase or use of an offering. These expectations are used as a frame of reference in the evaluation/judgment of the actual performance perception. Just as in the study of Atila and Fisun, (2001) customer satisfaction emerges after the comparison between the perceived performance and pre-purchase/use expectations. Mahmoud, Robert *et al.*, (2017) identified a neutral outcome which is a situation where there is no positive or negative disconfirmation, that is, the performance is same as the expectation. This means that at this state, there is neither satisfaction nor dissatisfaction. The other two possible outcomes are: the customer becomes satisfied or dissatisfied toward the new product or service offering.

The limitation identified with EDT is that the use of expectations might be less meaningful for experiential services than for tangible consumer goods that are easy to evaluate prior to

purchase (Hill, 1985). The EDP predicts that customers will be satisfied (dissatisfied) when their initial expectations are met (unmet); however, this may not necessarily be the case in every consumption situation. Depending on the situation, some customers may be satisfied with the service experience even when the performance falls short of their predictive expectations but above the minimum tolerable level. Another limitation is that relates to the fact that the EDT cannot accommodate the dynamic nature of expectations. Consumers' initial expectations of a product or service might be substantially different from their expectations if measured after a service experience that involves several encounters, as in the case of many hospitality and tourism services. If consumers are using these retrospective expectations in their post purchase evaluations, then the reliability of suggesting the occurrence of a positive or negative confirmation/disconfirmation of initially measured expectations is disputable (Atila & Fisun, 2001).

This theory is relevant in this theory because it explains the need for any service oriented firm such as bank to ensure they provide quality services that exceeds customers' prior expectations which brings satisfaction. This is essential because a satisfied customer is a happy customer and a happy customer recommends their bank to others and this can serve as a clear means of expansion of customer base for the bank as well as earning them competitive advantage within the industry.

2.2.2 The Domestication Theory

The domestication theory was propounded by Roger Silverstone Hirsch in 1992 to help understand the adoption and use of new technologies and how technology becomes a part of everyday households. New technologies become domesticated, a process of transformation that goes from seeing an artifact (new technology) as radical, exciting, unfamiliar or possibly even dangerous, to seeing it as routine, mundane and an ordinary part of life. It studies the process that causes technology to become an essential part a person's

daily habit. Domestication theory describes how particular technologies or technological artifacts become integrated into daily routines and lifestyles, how they enter people's lives, and what symbolic meaning they come to possess (Haddon, 2011). Manueli, Latu and Koh, (2007) opined that this approach is usually affected by demographic factors such as age and gender. Peoples' age usually influences how they embrace innovations as younger people tend to embrace easily innovations as compared to older people. Women also tend to easily adjust to new things as compared to men.

Furthermore, the theory is useful for its emphasis on the 'moral economy of the household', a special space where technologies are mediated and adapted within the home, in contrast with larger technological systems (Silverstone, 2006). According to Haddon, (2011) the theory can examine the catalysts that make people to adopt or use a technology in a particular way as well as constraints and pressures that inhibit adopting the technologies.

Weaknesses of the Domestication Theory include a tendency toward narrowing. As Silverstone and Haddon (1996) comment, 'Design and domestication are the two sides of innovation. Domestication is anticipated in design and design is completed in domestication'. This takes the limited view that adoption can be reduced to the two dimensions of technical design and user adoption, and it ignores broader, more structural elements of political environment and infrastructures such as electricity (which enhances the use of technological innovations). Furthermore, Domestication Theory's focus on households is inhibited by the fact that the home is not the only place where sociotechnical change occurs. Technologies that bridge the public-private division, such as computers at the office or public phones, don't fit neatly with the theory.

Domestication theory is relevant to this study so as to know how the demographic factors pointed out in the theory which are gender and age (Manueli *et al*, 2007) influence the use

of banking innovations by customers. Also, this theory is relevant to this theory because it examines the factors that encourage people to accept and use a technology alongside the factors that prevent adopting the technologies.

2.2.3 Technology Acceptance Model

Continuing along the theme of opinions and attitudes impacting innovation adoption,Davis' (1985) Technology Acceptance Model (TAM) asserts that it is in fact a potential adopter's attitude and expectations of the innovation that affects the chances for its adoption (Davis, 1985). Two focus concepts in TAM are how the innovation is perceived by the potential adopter related to its ease of use – how easy the innovation will be to learn and implement – and its potential usefulness – the degree to which the innovation will improve the user's personal or job-related performance (Straub, 2009). Of the two elements, Davis believed that ease of use has a direct impact on perceived usefulness as, the easier an adopter perceives an innovation to be able to use, the greater chance they will use it and experience higher productivity thus proving to be useful to the adopter (Davis, 1985). In a later study, Davis concluded that there was a higher correlation between perceived usefulness and technology adoption than between perceived usefulness and adoption. From his test results, he surmised that it would not matter how easy a technology is to learn; people would not adopt it if they did not perceive it to be useful in increasing their productivity (Davis, 1989).

From this model, usefulness and user friendliness affect users' attitudes towards any technological or innovative service such as Envelope deposit, Cash deposit machine, ATM, Telephone banking, "Phygital" banking. service. Davis (1989; 1993), thus suggest that it is important to value user requirements based on perceived usefulness and the user friendliness of the technology rather than other objective measure.

Critiques of this model are directed to its inclination to the technological/technical aspects of the technology in question ignoring other factors such as social aspect of the users. In practice, constraints such as limited ability, time, environmental or organizational limits and unconscious habits will limit the freedom to act.

2.2.4 Transaction Cost Innovation Theory

The main proponents of this theory are Hicks and Niehans (1983). The theory looks at the relationship between reduction in transaction costs and technological advancement. A transaction cost is a cost that is incurred in the exchange of a good or service. According to Hicks and Niehans, transaction costs are varied and include quality of service or good, durability, communication charges, legal fees, informational cost of finding the price and transportation costs. This theory holds that the dominant factor in financial related innovation is the response to advancement in technology which causes the transaction cost to reduce. Consequently, the cost reductions stimulate financial innovations as well as efficiency in service delivery.

Juhakam, (2003) also describes the theory of cost reduction as a driver of financial innovation. He cites examples as reduction from improvements in payments, processing or reduction resulting from new ways meant to deliver services electronically to customers. However, regulatory restrictions and requirements are also a cost and some innovations are aimed at avoiding or reducing that cost. According to Colombo (2003), the theory discusses financial innovation from the perspective of microscopic economic structure change.

However, the major weaknesses of this theory is that the theory overemphasizes individual party's minimization of transaction costs while holding other factors constant.

The relevance of transaction costs innovation theory to this study is that the use of internet-connected technologies can substantially reduce a firm's transaction costs as it enables efficient coordination, management and use of information. Telephone and other internet-connected innovations may further lower transaction costs as it provides also offsite access to the bank's internal database and other relevant sources of information. Consequently, reduction of operation costs on the side of the bank and cost of using these innovations on the side of customers through envelop deposit or CDM, internet banking and mobile/telephone banking, phygital distributions, P.O.S etc. may influence efficient service delivery, customer loyalty and satisfaction.

2.3 Empirical Review

This section reviewed studies that have investigated banking service innovation and customer satisfaction in the developed, developing economies and Nigeria in order to identify existing work and to come out with the contribution of this study.

In several reviewed studies, innovation comes in different forms, where some authors referred to it as ICT in banking, financial innovation, technology, electronic banking, online or web banking and other angles in which innovation is seen. Therefore, this section reviews the empirical results of the previous studies on banking service innovation, customer satisfaction as well as banking service innovation and customer satisfaction in developed economies, developing economies and Nigeria so as to identify the gap in the literatures.

2.3.1 Empirical Reviews on Developed Countries

Anesti (2004) in the United States, explained the cost operation in traditional brick and mortar banks are higher than internet banking providing by banks. And it means that providing service via online is cheaper than the traditional branch. As data below from United States banks for processing cost for full service by banks and estimated services cost

via internet banking is $0.27 for ATM service and $0.54 for mobile banking service, but for transactions via traditional branch is $1.07 is cost.

Also, Amoah-Mensah (2010) compared the perceptions of customers regarding the quality of banks' services in Spain and Ghana. A sample size of 1400 people from twenty-four communities in both countries was used. One set of questionnaire was administered in both countries based on the five dimensions of SERVPERF. The principal component analysis was used to reduce the initial 21 items of SERVPERF. The main findings of the study included the following: (i) the factor analysis produced 4 dimensions namely reliability, convenience, tangibles and empathy. On the whole, customers in both countries were highly dissatisfied about the services and products of the banks. Recommendations made also included the following; (i) banks should make conscious efforts to be reliable in Ghana and Spain so that customers' confidence and trust will increase. (ii) More banks' branches should be opened and products like internet banking and Automated Teller Machines must be (ii) introduced throughout Ghana (iii) customers' interest must be a priority for banks in Spain and Ghana.

More so, Wadud, (2012) measured the current level of the customer satisfaction in a case company called Moon Travel Ltd, in Finland to better understand customers' needs from the company's point of view in order to improve customer service. He also analyzed the reasons and factors that might obstruct efforts to affect satisfaction levels. The research was done using a quantitative research approach by means of a questionnaire and small interview conducted with the company owner. The research revealed that the current service level of Moon travel can be judged as positive and customers are very satisfied with the service they have received. However, several areas were found that need to be improved. In order to improve the level of customer satisfaction, it is recommended that the company should improve its' service environment, implement staff training, and adjust the price of the

service, as well as conducting regular advertising campaigns to attract new customers and to inform exiting customers about special offers and upcoming events.

Similarly, Zhang and Lu (2012) examined the relationship between customer participation, customer satisfaction and service innovation performance in China. Through 278 valid questionnaires, confirmatory factor analyses, correlation analyses, structural equation modeling analyses were carried out to select the model and test the hypotheses. The results of the study indicate that customer participation has significantly positive impact on customer satisfaction and service innovation performance and customer satisfaction has significantly positive impact on service innovation performance.

Chochoľáková, Gabčová, Belás and Sipkoaimed (2015) examined bank customers' satisfaction, customers' loyalty and additional purchases of banking products and services in Czech Republic. Based on a qualitative analysis found that satisfied customers were significantly more likely to recommend their bank to their friends, they often considered that they would use their bank in the future and they were more resistant to offers from other banks. According to the results, loyalty of customers with different intensities transforms into a potential purchase of additional banking products.

Mashood (2015) examines the perception of customers towards internet banking in the United Kingdom using respondents' survey technique. The data were analyzed using descriptive statistical tools like simple correlation. The result reveals that customer's perceived internet banking services as reliable and secured. However, the study focused on the perception of customers towards internet banking in UK but did not assess the implication of E-banking on customers' satisfaction. Also, this study is limited to the United Kingdom which may not be applicable to Nigeria due to economic and diverse cultural differences.

Similarly, Santiago Rafael and Francisco (2017) in Spain, analysed the relationships between financial intermediation and economy and also incorporates the effects of a set of banking innovations for the regions in spain. The results show that product and service delivery innovations contribute positively to regional GDP, investment and gross savings growth.

Down to Poland, Małgorzata and Przemysław (2019) aimed to systematise the approach to innovation in the economic theory and to define the indicators used to measure the innovativeness of world economies. They focused on innovation in the banking sector as it is one of the most innovative sectors worldwide. They identified stages of innovation development, along with the description of its economic and legal determinants. They concluded that although the banking industry will likely have to undergo significant changes and modifications, will survive because of the banks' ability to adapt and because of strong customer trust and high security level, to name just a few and that the customer trust can only be further strengthen through safe innovations and by providing their customers with access to the appropriate financial education from an early age.

2.3.2 Empirical Reviews on Developing Countries

Some related studies were also done in various less developed nations and also reviewed in this studies.

In Kenya, Martha (2012) studied the influence of service innovation practices on customer satisfaction in the commercial banking sector using descriptive survey design and questionnaire to collect data. Sampled 15 commercial banks out of 43 and 10 respondent from each sampled bank making total of 150 respondents. The result from regression and correlation analysis showed that respondents were moderately satisfied in RTGS services and telephone banking services. Respondents were slightly satisfied with relationship

banking as a service innovation practice. Findings also indicated that respondents were not at all satisfied with innovations in Internet banking services and automated teller machine. Generally, the result also show that there exists a significant and positive correlation between service innovation practices in Commercial banks in Kenya and customer satisfaction.

Also, Gupta and Dev (2012) studied the factors impacting customer satisfaction in Indian banks and their effects on customer satisfaction. A questionnaire was given to 400 customers of 13 retail banks in India. Five factors were suggested driving customer satisfaction in banks namely: service quality, ambience, client participation, accessibility and financials.

More so, Choudary (2013) in his studies about the impact of internet banking system on customer satisfaction explained those factors have an influence on customer to be satisfied, also the case of the study in Chennai, India and the author uses a quantitative data to collect information from customers, and he was distributed 250 questionnaire form to responders and determined four dimensions of service quality such as interface, responsiveness, fulfillment and security. also based on one of the question that face to customers about the most satisfied internet banking channel and they answered as follow 55% of them agreed with that mobile banking is most satisfied channel and 28% chose branches, 13% selected ATM is satisfied for them, also 2% for online channel and call center is 2%. However, according to the results as shown that there is a significant and positive correlation between variables and all dimensions has a significant effect on customer satisfaction, however, the customer satisfaction and internet banking have a significant effect on customer loyalty.

Similar to Choudary (2013), Toor, Hunain, Ali and Shahid (2013) examined the impact of electronic banking on customer satisfaction in Pakistan. Data was gathered by administering questionnaire on a sample of 264 bank customers. The questions were designed to elicit

information on the following dimensions of service quality: reliability, responsiveness, assurance, tangibles and empathy. The study shows momentous relationship between service quality and customer satisfaction with the strongest impact from reliability, responsiveness and assurance in that order.

Conversely, Nimako, Gyamfi, Wandaogou (2013) discussed and examine the internet banking with customer satisfaction in the banking sector in Ghana, authors use a questionnaire survey to collect a primary data from customers and they distributed 200 to responders, and the responders' users in two banks such as Merchant Bank and Ghana Commercial Bank, also according to the result as the customers were dissatisfied with those two banks due to limited speed to response customers' request, customers have problems with fee and charge by banks and less satisfying with quickness of website during using internet banking.

In Pakistan, Muhammad, Atif, Attia, Rubab, Sunia, Uzma and Bilal (2014) measured customers' satisfaction towards the development in the banking services due to the innovative technology and it also discusses the different kinds of modern banking services which are useful to enhance customer satisfaction. The approach of structured questionnaire was used to collect the data from the sample size of 120 bank users. Sample was consisting on different groups based on age, income, occupation and gender group. The collected data from sample was then analyzed by using SPSS. Regression and correlation tools were used to test the all hypothesis. The results indicate that there is significant relationship between all the independent variables and dependent variable but the intensity of each relationship is different. Responsiveness and reliability have strong relationship with customer satisfaction while the rest of the variables as security, awareness, ease of use and trust have moderate relationship with the customer satisfaction.

More so, Korir, William, Adam and Charles (2015) established the effect of financial innovations on financial performance of commercial banks in Kenya. This study relied on secondary data. It adopted a census where all the 44 banks were used in the study and there was no sampling since the population size was small. The study found out that there is a strong relationship between financial innovations and financial performance. The study concludes that financial innovations positively affect financial performance.

Rameshkumar and Shanmugananda (2015) studied customer satisfaction level towards cash deposit machine services provided by state bank of India. Their paper attempts to find out the Satisfaction level customers using Cash Deposit Machine Service in Coimbatore district of India. Primary data was collected from 200 respondents through a well-structured questionnaire prepared and distributed to the customers in Coimbatore district at the ATM terminals. The data collected was analyzed through Percentages, frequencies and chi - square tests are applied for the analysis of data. They find out that the overall performance of cash deposit machine service is satisfied by most of the respondents.

Additionally, Addai, Ameyaw, Ashalley and Quaye (2015) used purposive sampling method to select a sample of 150 bank customers from 3 banks in Ghana. The study was designed to determine the link between electronic banking and customer satisfaction. The study produced strong evidence of empirical support of positive impact of availability, reliability and, convenience of electronic banking on customer satisfaction.

Worku, Tilahun, and Tafa (2016) investigated the impact electronic banking has on customer satisfaction in comparing with traditional brick and mortar banking service, its relationship with that of age, occupation and education, its impact on branch visits, the level of customer understanding about e-banking and the opportunities and challenges of e-banking. The paper tried to see all the above among 402 properly filled and returned

questionnaires of e-banking customers and interview with four branches of the two commercial banks which have started e-banking service in Gondar city when this study was conducted. They study used tables, percentages, chi-square independency test to see the relationship between demographic characteristics and e-banking, independency t-test to see the visits of branches before and after e-banking by customers is significant or not and regression analysis test has been conducted to explain the variables which determine customers' satisfaction in e-banking. The results of their study implied that majority of users of e-banking are the young, the educated, salaried and students, business men and women are not actively using the service of e-banking and there is also a relationship between e-banking and demographic characteristics, e-banking currently provided for saving and current accounts holders only, e-banking has improved customer satisfaction, reduced frequency of bank hall for banking service, reduced waiting time for customers, there are customers who don't know the fee charged for being e-banking users, the bank customers' satisfaction increased after being e-banking users.

In Oman, Syed and Khaliquzzaman, (2016) Gauged the customer satisfaction of ATM and CDM users using six dimensions-accessibility, convenience, efficiency, responsiveness, security & privacy, and reliability. These dimensions were selected based on the literature review and experts' suggestions. Questionnaire, having closed ended questions only and duly tested in a pilot study, was used for primary data collection. A research model has been developed which consists of the six dimensions as response variables and customer satisfaction as latent variable. Descriptive statistics and structural equation modeling (SEM) technics were applied. The results revealed that all the selected dimensions are found to be significant in influencing the customer satisfaction level.

Mary (2016) conducted a research on the impact of impact of customer service on customer patronage in banking – the mediating effect of ICT adoption in Ghana. Primary data was gathered from the customers and staff of access bank in the metropolis using questionnaires and interview guide. The total population is 27,378 account holders and sample size of 395 using convenience and purposive sampling methods of non-probability methods of sampling. The result shows that most of the customers interviewed were either highly satisfied or satisfied with Access bank. Which implies that customer patronage as well as loyalty is high with the bank, as customer satisfaction usually affect customer patronage behaviour. The regression result show a significant positive effect of customer service on customer patronage. The coefficient of customer service was seen to be weak but it showed a statistically significant and positive effect on ICT adoption while the relationship between ICT adoption and customer patronage was found to be weak indicating ICT adoption alone cannot determine customer patronage of Access bank.

Malik, Amer and Tazeem (2016) explored the combined effects of automated service and traditional service quality (human interaction) on customer satisfaction. The research study was conducted through cross sectional field survey and self-administrated questionnaire was used in order to collect data in banking sector of Pakistan. Multiple regression analysis process was conducted to assess the effect of both services typology (automated and traditional) on customer satisfaction.

Toor, Hunain, Ali and Shahid (2016) discussed in their articles about the influence of internet banking on customer satisfaction a case study from various cities in Pakistan. Quantitative data is used also data has been collected through questionnaire form and they distribute 264 form to internet banking users, however, the authors they determined five dimensions of SERVQUAL such as reliability, responsiveness, assurance, empathy and

tangibles also according to the result of the study has been shown that all five dimensions have a significant effect on customer satisfaction on internet banking.

Similar to Toor *et al*., (2016), Ozatac, Saner and Sen., (2016) explained in their article and evaluate the determinations of customer satisfaction and impact of service quality the case study from Turkish Republic of North Cyprus, also they distribute 207 questionnaire forms to customers those clients in different banks, authors use SERVQUAL model and determined 10 dimensions of service quality.

Conversely to several positive results, Douglas, Lovemore and Roselight (2017) investigated the satisfaction level of customers in commercial banks in Botswana using the SERVQUAL model. To meet the objective of the paper, SERVQUAL model was used to determine the level of customer satisfaction in commercial banks customers in Botswana. Descriptive research design was used for this study, where the data was collected through the questionnaire. The results show that customers were not completely satisfied with the assurance, responsiveness, tangibles and reliability of commercial banks in Botswana.

In India, Jitendra (2017) studied finding the extent of customer satisfaction after computerization of operations in a branch of State Bank of India (SBI) and ICICI Bank in Bhopal city, using primary data, questionnaire, a non-probability sampling of 200 was selected for study, which included 100 customers each of largest branches of SBI and ICICI Bank in Bhopal. These banks were considered as representative banks since these were largest in their own segment (i.e. public sector and private sector). The respondents included current and savings account holders as well as other customers who apply for loan, demand drafts. He found out that there is a significant difference in terms of reliability, speed of transactions, empathy and overall performance between private and public sector banks

before and after computerization of operations. Automation has been an advantage to all the banks and everyone has felt its benefits.

Mahmoud, Robert and Patrick (2017) conducted a study on new service concept innovation, new service process innovation and new technological system innovation on customer satisfaction: the role of customer value creation in Ghana telecommunication industry. Survey design was used with a semi-structured questionnaire as the primary data collection instrument. Adopting a convenience sampling technique, the study sampled 510 registered adult customers. The result shows that service innovation influences customer satisfaction even without creating customer value. However, customer value creation improves the relationship between service innovation and customer satisfaction since it has a significant positive relationship with customer satisfaction.

Muhammad, Masood and Ume (2017) examined that how the technology based Services' impact the customer satisfaction, loyalty, and behavioral intentions in service sector of Pakistan. The data have been collected from the 238 Self- Service Technology (SST) users through the online survey. In order to test the model, Structural Equation Modeling is applied by using the LISREL program. The results of this study revealed positive and significant relationship between SSTs service quality, loyalty, and behavioral Intentions directly and indirectly via customer satisfaction.

More recently, Agolla, Makara and Monametsi, (2018) investigated the impact of banking innovations on customer attraction, satisfaction and retention: the case of commercial banks in Botswana. Descriptive and inferential statistics are utilised. The study offers evidence of antecedents of banking innovations from a developing country (Botswana). From random sampling technique to sample participants, the correlation and regression results indicate that, innovative banks are likely to attract and satisfy their customers. These findings offer

useful understanding of commercial banks, specifically when embarking on introduction of innovative practices that seeks to attract, satisfy and retain customers in the rapidly changing and competitive environment. The conclusion of the study emphasises the application of innovative practices as a way to increase commercial banks' clientele base, which, in turn, results in competitive performance. The research offers insights into commercial innovative practices, which have influence on customers' attraction, satisfaction and retention.
The results have shown three main findings. First, it was found that automated service and traditional service quality (human interaction) both have direct significant effect on customer satisfaction.

Also, Gomachab and Maseke (2018) in their articles explained the impacts of mobile banking on customer satisfaction and the case study from Namibia, Keetmanshoop and they distribute quantitative structure questionnaire to 60 responders, also in this study the authors disclose those factors of mobile banking that influence on customer satisfaction and this factors participate 75% on customers' satisfy and they are includes: reliability, convenience, cost, the system available in another's mobile networks, encouraging that advertisement to effect on customers, the service provides agree and comply with mobile devices, the incomes that customers received influence on mobile banking usability and those services by mobile banking are more secure that service provide by branches.

Similarly, Adam, Nabil and Mohanad, (2018) studied the impact of electronic banking services on customer satisfaction at Sudanese banks. Questionnaires were designed by the researchers. Data and information have been collected and analyzed from the internet users in the Sudanese banks clients. The study found that there are statistical significant differences of electronic services provided by the Sudanese banks on customer satisfaction. The study attempted to explain the various means of electronic banking services which

might lead to the customer satisfaction. They showed that the banking services over the internet has a positive impact on customer satisfaction. They recommended that the bank management should focus on spreading the knowledge of the electronic banking services to the customers. Their study emphasized the importance of the electronic banking services and recommended that the bank management should spread the technological awareness among current and prospective customers, and develop suitable infrastructure for electronic banking services in the Sudanese banking sector.

Furthermore, Hamidi and Safareyeh, (2018) analised the effects of using customer relationship management system in the adoption of m-banking on customer satisfaction and interaction, which is considered as the most important factor in the success of banking industry. The case studies of this paper are Iran top e-banks and the sample population chosen, are the customers of these banks, and a conceptual model is suggested to analyze the use of adoption of mobile banking on customer interaction and satisfaction. Factors that are introduced as influencing variables in this model on the customer satisfaction and interaction are: affective commitment, trust, loyalty, willingness to re-visit, number of visits, profitability, and Involvement. Collecting information in this article is performed by completing 243 questionnaires by staff of the communication with customers sector of these banks and their customers. The results of the statistical analyses conducted on these data indicate that all the variables addressed in the model, have a positive impact on the customer relationship and satisfaction except the trust.

More recently, Bzhar (2018) in Iraq, studied internet banking influence on customer satisfaction, in this study customer satisfaction is a dependent variable including the dimensions of service quality such as customer expectation, reliability, assurance, customer loyalty, risk, trust and security in another hand the independent variable is internet banking

including ATM, web banking, mobile banking and POS machine. Quantitative investigation was adopted by the researcher and primary data were collected in Sulaymaniyah city by using survey method and focus on the questionnaire and interview to get the specific data. 200 questionnaires randomly distributed among 9 banks customers and 191 were returned by customers which means that only 9 of them did not return. However, the data were analysed by the SPSS software version 23 and researcher used different statistical technique such as reliability test, cronbach's alpha, correlation and regression, based on the results internet banking has a positive and significant correlation with customer satisfaction, Therefore, the internet banking has a positive impact on customer satisfaction significantly.

Kathari (2019), identified phygital banking as an emerging area in banking and studied the importance of transformation, issues and challenges of digital banking. He concluded that a better model which provides the best of both worlds by combining physical interaction with digital services is needed.

More recently, Ruwan, *et al,* (2020) identified the factors that influence the customers' level of cash deposit machines (CDMs) usage. The study used primary data in the form of a structured questionnaire covering the variables of TAM. Correlational analysis was used to demonstrate the constructed hypotheses among the variables, and multiple linear regression was used to measure the impact of customer attitude towards the usage of CDM. Results from the analysis indicated that reliability, perceived ease of use, perceived risk and perceived usefulness were significant factors, whereas the security factor was considered less significant concerning the use of CDMs. The contribution of this research is related to the analysis from a theoretical and empirical perspective of the customer attitude towards the usage of CDM. The practical implications drawn from this study will be useful to bank managers, marketing experts and advertising executives in providing good quality services

promoting CDM, whilst developing grievance settlement to build trust among customers, enabling extensive usage.

2.3.3 Empirical Reviews on Nigeria

To support the mostly positive findings of the past researchers in developing counties, Agboola (2003) investigated the level of satisfaction derived by bank customers from the array of electronic banking products offered by banks. Data was collected through administration of questionnaire to a sample of ninety customers selected from six DMBs in Lagos, Nigeria. Dimensions of customer service evaluated in the study include convenience, speed of service delivery, accuracy, promptness and ease of service delivery outside the traditional banking hall. Evidence from the study indicates enhanced customer satisfaction derived from electronic banking.

On the contrary, Dogarawa (2005) used a sample of 180 bank (current account holders) drawn from branches of three deposit money banks (DMBs) in three major Nigerian cities of Lagos, Port-Harcourt and Kaduna to examine the impact of electronic banking on customer satisfaction. Sample selection was based on judgmental sampling technique while analysis was based on chi-square technique. The study shows low quality and inefficient service delivery, an indication of low level of or no satisfaction from electronic banking services.

Ilo *et al*., (2014) studied the relationship between technological innovations and Nigeria banks performance and the relationship between adoption of ICT and customers satisfaction. Data collected was analyzed using Pearson Correlation Statistics that were adopted in Statistical Package for Social Science (SPSS). They found out that positive relationship exists between technology innovation and banks employee's performance also their second

findings showed that introduction of ICT improves customer satisfaction and retention and has a significant relationship with technology innovations in service delivery.

Obikeze, *et al*., (2017) accessed the relationship between technology-based financial services and customers' perception of the quality of service delivery. A sample of 499 respondents drawn from five DMBs was used for the study. Sample size was determined using Freud and William's formula. Dimensions of service quality captured in the study are usefulness, ease of use and security. The result indicates strong positive impact of electronic banking on customer satisfaction.

Lawrence, *et al.,* (2018) studied the extent to which technology has impacted customer satisfaction in the Nigerian banking sector. Data analysis was based on responses obtained from 120 customers of three Deposit Money Banks within Ogun and Lagos States of Nigeria. Features of bank service evaluated in the study are time saving, convenience, crime reduction, reliability, risk reduction, and ease of use. The result showed significant positive impact of all the above service features on customer satisfaction, an indication that electronic-based banking has enhanced customer satisfaction in Nigeria.

Isibor *et al*., (2018) conducted a study on the impact of banking technology on customers' satisfaction and economic growth in Nigeria. The authors used a sample of 100 bank customers selected from four DMBs in Ota, Ogun State-Nigeria. Non-probability purposive sampling technique was used for the study. The result of the paired-sample t-test shows that electronic banking improved customer satisfaction and enhanced GDP growth.

Okoli and Adedire (2018) in their conceptual paper measured the impact of consumer satisfaction in the banking industry, inquire the effect of service quality on consumers' satisfaction, assessed the methods bank uses in satisfying their customers, and investigated

various challenges the customers encounter while carrying out transactions with the bank. They found out that the impact of service quality and the methods adopted in satisfying customers are related.

Also, Ejike, (2018) Identified the effect of bank innovations on the financial performance of commercial banks in terms of their income or revenue generation, liquidity, efficiency, profitability and the general patronage of banking services in Nigeria. This work is a survey of bank executives from fifteen (15) commercial banks in Nigeria. Questionnaires were administered to find out the opinions of bank executives on the effect of bank innovations on financial performance. It was discovered that most of the innovations have positive effect on the income generating potentials of the banks, they also improves efficiency, liquidity and profitability of the banks. It is recommended that corporate banks must make it a policy to establish an efficient and effective marketing department to oversee the publicity of all bank innovative products. Government through the Central Bank of Nigeria (CBN) must continue researching into innovations in the financial sector.

Aremu *et al.,* (2018) examined the effect of enhancing service quality dimensions on sustaining customer satisfaction in Nigeria. They administered 250 questionnaires to customers of Nigerian Banks. Techniques employed for data analysis are multiple correlation, descriptive analysis, and Multiple Regression. The study's findings show that there is relationship between enhancing service quality and sustain customer satisfaction. Tangibles, reliability and responsiveness dimensions have significant impact on customer satisfaction. The study concluded that since enhancing service quality dimensions have proved to be an important factors and the driving force behind sustaining customer satisfaction.

Similar to the above study, Iluno, *et al,* (2018) examined the impact of electronic banking on customers' satisfaction in Kaduna State, Nigeria. The study specifically examines the impact of E-banking services and E-banking products on customers' satisfaction. . This study adopts a survey research design. Both quantitative and qualitative data were collected through informal interview, focus group and a structured questionnaire administered on sample of 400 respondents in the study areas of which 360 sets of questionnaire were correctly filled and returned. To present and analyze the data from the respondents, frequency distribution table and multiple regression analysis were used. The result shows that electronic banking services, and electronic banking products have significant positive impact on customers' satisfaction in Kaduna State, Nigeria.

More so, Cynthia and Onyeiwu (2019) investigated the impact of financial innovation on economic growth in Nigeria over the period from 2012 to 2018. Data was sourced from the Central Bank of Nigeria (CBN), the Nigeria Interbank Settlement System (NIBSS) and the National Bureau of Statistics (NBS). During this study, three proxies of financial innovation (NIBSS Instant Payment, ATM and AGENT BANKING) was regressed on a growth indicator (RGDP). Regression analysis was performed using the E-views statistical package to find out whether the variables are related to each other in the model. Based on analysis, it was found that the regression coefficient of the value of transactions via the Nigerian Interbank Settlement System (NIBSS) and Agent banking are positively signed indicating that they positively influence economic growth, though not in a significant way during the period studied. However, the value of ATM transactions surprisingly showed a negative and significant relationship with economic growth. Based on the findings, the study concluded that financial innovation would increase economic growth.

Alegbe, Onyike and Okoye, (2019), examined the differences in customer relations practice between old generation and new generation deposit money banks. The study focused on First Bank, UBA, Guaranty Trust Bank (GTB) and Zenith Bank. They aimed at finding out the extent of knowledge of old and new generation deposit money banks' customer relations practices and to find out whether the preferences of new and old generation deposit money banks were based on the perception of their customer relations. Survey research method was the design while questionnaire was used as measuring instrument. Three hundred (300) respondents were purposively selected for the study. The selection of the 300 was based on their knowledge, experiences and or perception of banking in old and new generation money deposit banks. The findings showed that the impression the respondents had about the banks was that new generation banks were more dynamic and had better innovative drives, while old generation banks were more reliable in terms of liquidity. Hence, it is recommended that banks should periodically conduct opinion surveys to determine the perception of the customers about their operations rather than rely on their past glories.

2.4 Summary and Gaps Identified in the Literature

Different findings were revealed from previous researches on relationship that exist between banking service innovation and customer satisfaction. Many evidences in Nigeria and other countries revealed positive relationship between various banking innovations or technologies and customer satisfaction and other such as (Agboola 2003; Toor *et al*., 2013; Ilo *et al.,* 2014; Muhammad *et al*., 2014; Addai *et al*., 2015; Rameshkumar and Shanmugananda, 2015; Mary, 2016; Malik *et al.,* 2016; Obikeze, *et al*., 2017; Muhammad *et al.,* 2017; Mahmoud *et al*., 2017; Lawrence, *et al.,* 2018; Isibor *et al*., 2018; Aremu *et al.,* 2018; Iluno *et al.,* 2018; Joseph *et al.,* 2018; Okoli and Adedire 2018).

On the other hand, Martha (2012) revealed negative relationship as respondents were not all satisfied with innovations like Internet banking services and automated teller machine and Dogarawa (2005) study showed low quality and inefficient service delivery which is an indication of low level of or no satisfaction from all electronic banking services. Also, Nimako, *et al.* (2013) result showed that customers were dissatisfied with the two banks under their study due to limited speed to response customers' request, customers have problems with fee and charge by banks and less satisfying with quickness of website during using internet banking. However, customer satisfaction can be influenced by other variables apart from banking innovations and technologies used to serve customers. In the light of the above summary of findings from previous literatures, this research work intend to breach the lacuna below.

Methodologically, the existing literatures in Nigeria such as (Agboola 2003; Dogarawa 2005; Ilo *et al.,* 2014; Mary, 2016; Obikeze, *et al*., 2017; Lawrence, *et al.,* 2018; Isibor *et al*., 2018; Aremu *et al.,* 2018; Iluno *et al.,* 2018; Joseph *et al.,* 2018; Okoli and Adedire 2018) used ordinary least square (OLS) in their researches as research technique. OLS regression yields unstable result as a result of increasing standard error of their estimated coefficient (Field, 2000). However, Campbell and Ntobedzi, (2007) listed Partial Least Square as possible solution to severe multicollinearity as it reduces the numbers of predictors to a smaller set of uncorrelated components. In analysing data sourced through questionnaire, this current study eliminated the observed methodological weaknesses in previous studies and employed Partial Least Square-Structural Equation Modelling (PLS-SEM) which reduces the problem of multicollinearity among the constructs of the model. Also, PLS SEM has more predictive focus on explaining the variance in the dependent variable and gives more robust result through a bootstrapping method and factor loadings in testing the significance of the path coefficients (Hair, *et al*., 2014). In addition, the PLS-

SEM methods are designed not be overly affected by violations of assumptions by the underlying data generating process such as normality test and serial correlation (Hair, *et al*., 2019). To the best of researcher's knowledge, it seems none of these studies in Nigeria has used PLS-SEM.

On the variable gap, various researchers in Nigeria such as (Agboola 2003; Dogarawa 2005; Ilo *et al.,* 2014; Mary, 2016; Obikeze *et al*., 2017; Lawrence, *et al.,* 2018; Isibor *et al*., 2018; Aremu *et al.,* 2018; Iluno *et al.,* 2018; Joseph *et al.,* 2018; Okoli *et al* 2018; Hamidi *et al*, 2018) studied various bank innovations (also referred to as electronic/alternative channels by some researchers) such as POS, ATM (with card), Mobile banking and Internet banking. To the extent of literature search, it seems no researcher has proxy innovations with envelop deposit/CDM, cardless ATM service and phygital distribution. This study further included envelop deposit/CDM, cardless ATM service and phygital distribution as banking innovations as variables which are among the emerging service innovations in Nigeria banking industry.

Geographically, several researchers have conducted some studies in the area of service innovation both internationally and locally such as (Agboola 2003; Dogarawa 2005; Martha 2012; Toor *et al*., 2013; Ilo *et al.,* 2014; Muhammad *et al*., 2014; Addai *et al*., 2015; Mary, 2016; Malik *et al.,* 2016; Obikeze, *et al*., 2017; Muhammad *et al.,* 2017; Mahmoud *et al*., 2017; Lawrence, *et al.,* 2018; Isibor *et al*., 2018; Aremu *et al.,* 2018; Iluno *et al.,* 2018; Joseph *et al.,* 2018; Okoli and Adedire 2018; Małgorzata and Przemysław, 2019) however, to the extent of researcher's knowledge and literature search, it seems there is no study on banking service innovation in relation to customer satisfaction in Ilorin metropolis. Therefore this study aim to fill these gaps.

2.5 Theoretical Framework

This study is anchored on Technology Acceptance Model and Expectancy Disconfirmation Theory (EDT) as theoretical background to develop an empirical framework in investigating the impact of banking service innovation on customer satisfaction.

Focusing on the innovative technological issues, Davis, (1989) advanced the Technology Acceptance Model (TAM). This model relates the individuals' behavioural intentions and his/her technology use. It is suggested that, the actual behaviour of a person is determined by his behavioural intention to use, which is in turn influenced by user's attitude toward and perceived usefulness of the technology. However attitude and perceived usefulness are both determined by ease of use. Adopting the TAM model requires the understanding of end-users requirements regarding usefulness and user friendliness (Pedersen, Leif, Methlie and Thorbjornsen, 2002). From this model, usefulness and user friendliness affect users' attitudes towards any technological or innovative service such as Envelope deposit, Cash deposit machine, ATM, Telephone banking, "Phygital" banking. Davis (1989; 1993), thus suggest that it is important to value user requirements based on perceived usefulness and the user friendliness of the technology rather than other objective measure. Critiques of this model are directed to its inclination to the technological/technical aspects of the technology in question ignoring other factors such as social aspect of the users. In practice, constraints such as limited ability, time, environmental or organizational limits and unconscious habits will limit the freedom to act.

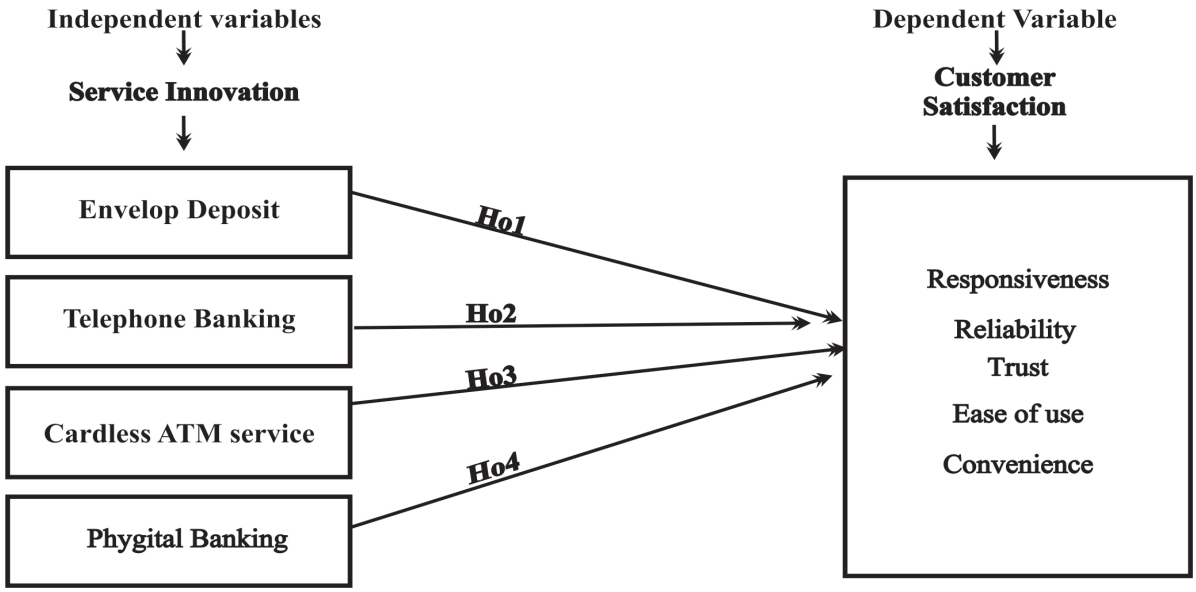
According to Oliver, (1977) EDT is the best predictor of customer satisfaction as the framework implies that consumers or customers purchase goods and services with pre-purchase/use expectations about the anticipated performance and the expectation level then becomes a standard against which the product is judged. This means that once the product

or service has been used, outcomes are compared against the initial expectations. If the outcome matches the expectation then confirmation occurs but disconfirmation occurs where there is a difference between expectations and outcomes. In a clearer sense, satisfaction is the result of direct experiences from products consumed or services received and it occurs by comparing outcome against a standard which is expectations and dissatisfaction towards service often occurs when users or customers' experience is not same as their expectations and on the other hand, satisfaction occurs when customer's experience is better than pre expectation.

2.6 Conceptual Framework

The conceptual framework below explains the relationship between the independent variables and dependent variable. The dependent variable is the customer satisfaction while the independent variables are envelop deposit, telephone banking, cardless ATM service and phygital banking.

Figure 2.1: *Conceptual Framework*



Author's Conceptualization, (2021)

CHAPTER THREE

METHODOLOGY

This chapter discuss the research design, population, sample technique and sample size, sources and method of data collection, data analysis and estimation techniques, model specification and definition of variables.

3.1 Research Design

The study used descriptive survey design which according to Churchill (1991) is appropriate where the study seeks to describe the characteristics of certain groups, estimate the proportion of people who have certain characteristics, describes what exists and considers the existing conditions or relationships, common believes, current processes, tangible developing effects. Its' attention is primarily the present time, however, often investigates the past events and effects which are related to the existing conditions and make predictions.

In terms of survey method, this study use a cross-sectional survey research. The cross-sectional method is conducted in this study in order to collect data about several features in a section of time through sampling from the population. According to Mugenda and Mugenda (1999) the purpose of descriptive survey research is to determine and report the way things are and it helps in establishing the current status of the population under study. Also, a survey design is appropriate for this study because it allows collection of information for both independent and dependent variables using questionnaires (Orodho, 2005).

Through descriptive survey, the researcher was able to answer questions relating to what, why and how the phenomenon of service innovations affect customer satisfaction.

3.2 Population

The study was designed to investigate the impact of banking service innovation on customer satisfaction within Ilorin metropolis. Therefore, the population of the study comprises customers of Seventeen (17) DMBs residing in Ilorin metropolis only.

3.3 Sample Size and Sampling Technique

In this study, three hundred and eighty four (384) customers of DMBs residing in Ilorin metropolis were given questionnaires. They are selected from seventeen branches of DMBs in Ilorin metropolis to constitute sample size for this study. For unknown population size or a very large population size, the sample size could be determined using the formula given below.

$$\text{Necessary Sample Size} = (\text{Z-score})^2 \times \frac{\text{StdDev} \times (1-\text{StdDev})}{(\text{Margin of error})^2}$$

Where,
SD= Standard of Deviation, and margin of error same as confidence interval.

Assuming a 95% confidence level, the equivalent Z-score is 1.96; 0.5 standard deviation, and a margin error of +/- 5%.

$$\frac{(1.96)^2 \times 0.5(0.5)}{(0.05)^2}$$

$$\frac{(3.8416 \times 0.25)}{0.0025}$$

$$\frac{0.9604}{0.0025}$$

384.16

384 respondents are needed

For sample size considerations in PLS-SEM, according to Hair, Hult, Ringle and Sarstedt, (2011), a common rule of thumb for appropriate sample size for testing PLS-SEM models is the rule of ten, which suggests ten times the largest number of structural paths in the

structural model. In this study, the highest number of structural paths (independent variables) directed a latent construct (customer satisfaction) at a time was four. Therefore, four multiplied by ten gives forty (40) cases which is the minimum sample size required for this; thus, the sample of 425 respondents could be described as adequate for PLS-SEM analysis in this study.

3.4 Sources and Method of Data Collection

Primary data was used to conduct this study which was based on the administration of a structured questionnaire because it gives wider range of information on the main subject in the study and made respondents' views to be clearly known. The questionnaire administered has 5-point Likert scale that is measured with five response scaling starting from strongly agreed to strongly disagreed. Likert scale is scaling technique used in quantitative in both real and hypothetical situation (Joshi, Saket, Satish & Pal, 2015). The mode of distribution is Paper-and-Pencil administration as the items are presented on the paper. The questionnaire was adapted and modified from the works of Bzhar, (2018) and Adam, Nabil and Mohanad, (2018).

3.5 Data Analysis and Estimation Techniques

The inferential and descriptive statistical techniques were employed as a form of quantitative analysis on the collected data. The descriptive statistics used are the mean, standard deviation, minimum and maximum values to summarize the administrated and collected questionnaires from the respondents. In order to confirm or reject the hypotheses stated in chapter one of this study, the hypotheses were tested with Partial Least Square Model-Structural Equation Model (PLS-SEM) at 5% level of significance.

PLS-SEM was deemed most appropriate because of the predictive focus of the study (Chin, 2010). Also, Campbell and Ntobedzi, (2007) listed Partial Least Square as possible solution

to severe multicollinearity as it reduces the numbers of predictors to a smaller set of uncorrelated components. More so, it is appropriate for this study to select PLS-SEM because the analysis is concerned with testing theories from a prediction perspective and because the structural model in this study includes many constructs, indicator variables (items/questions), structural paths (independent variables) without imposing distributional assumptions on the data (Hair, *et al.,* 2019). Although, the data of the study is still tested for normality to confirm the distribution nature of the data.

3.6 Model Specification

To achieve the purpose of this study, Iluno, Farouk and Saheed (2018) model was adopted and modified. This was modified because the researchers studied the banking electronic channels (ATM, POS, Mobile banking and online banking) as independent variables and customer satisfaction as their dependent variable. Iluno *et al,* (2018) model is stated thus;

$$CS = \beta_0 + \beta_1 ATMi + \beta_2 POSi + \beta_3 MBi + \beta_4 OLBi + \varepsilon_i \quad \text{.....(Eq3.1)}$$

Where;

CS= customer satisfaction

ATM= Automatic teller machine

POS= Point of sales

MB= Mobile banking

OLB= Online banking

β_0 = constant. β_1, β_2, β_3 and β_4 are the parameters estimate.

ε = Measurement error.

i = crossetional (individual)

Aprori expectations: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$ and $\beta_4 > 0$

3.6.1 Modification to Model

This model was adopted due to the fact that the four variables in the model are all banking innovations and has two similar variables in common which mobile banking and ATM service. This study used telephone banking and also looked at the development about ATM which is cardless operation. This study further went ahead to add two variables which are envelop deposit/CDM and phygital distribution which are not in Iluno *et al,* (2018) model. Since the objective of this study is to find out the impact of banking service innovations on customer satisfaction, therefore, Iluno *et al,* (2018) models is modified thus;

$$CS = \beta_0 + \beta_1 EDi + \beta_2 TBi + \beta_3 CATMi + \beta_4 PBi + \varepsilon_i \text{.....(Eq3.2)}$$

Where: CS = Customer satisfaction,

ED = Envelop deposit

TB = Telephone Banking Service

CATM = Cardless ATM Services

PB= Phygital Banking

β_0 = constant. β_1, β_2, β_3 and β_4 are the parameters estimate.

ε = Error Term

i = Crossetional (individual)

Aprori expectations: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$ and $\beta_4 > 0$

3.7 Definition of Variables

In this study, two (2) main categories of variables are used: Dependent and Independent variables. The dependent variable for the study is customer satisfaction while the independent variables are banking innovations.

3.7.1 Dependent Variable

The dependent variable of this study is customer satisfaction. This study used service quality model to measure customer satisfaction based on their relevance to this study. The extraction of these qualities is traced to the Service Quality Model which is set to be the best measurement of customer satisfaction in service oriented industries (Parasuraman, Zenithal & Berry, 1988; 1991; Douglas *et al*, 2017; Aremu *et al*, 2018). The dimensions are; responsiveness, reliability, ease of use, trust and convenience.

Table 3.1: Measurement of Dependent Variable

This table shows the measurement of the dependent variable and related studies conducted

Variable	Definition	Type	Measurement	Previous/Related studies
CS	Customer Satisfaction	Dependent	Service Quality Model (SERVQUAL model); Responsiveness, Reliability, Trust, Ease of use and Convenience.	Amoah-Mensah (2010); Muhammad *et al*., (2014); Syed and Khaliquzzaman, (2016); Bzhar (2018); Aremu *et al,* (2018); Muhammad, *et al*., (2014); Ruwan *et al,* (2020); Mary, (2016).

Source: Author's computation, (2021)

3.7.2 Independents variables

Independent variables (banking service innovations) in this study are; Envelop deposit, Telephone banking, Cardless ATM services and phygital banking.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

This chapter discuses analysis, presentations and interpretation of the data obtained through the administered questionnaire distributed to the sampled population. It provides and discuss the result for both the descriptive statistics (Mean, Minimum, Maximum, Standard Deviation), measurement model (diagnostics test) (Normality, Reliablity, Multicollinearity test) and structural model (inferential statistics) employed in the study (Partial Least Squares Structural Equation Model PLS-SEM).

The chapter goes further to discuss the hypotheses tested in study as it is consistent and/ in disagreement with others studies. Statistical Package for Social Science (SPSS 20.0) was used to analyse descriptive statistics and Smart Partial Least Square (SmartPLS 3.0) software was used to carry out the two-staged analytical procedure recommended for Structural Equation Model (SEM) model (Hair, Hult, Ringle & Sarstedt, 2013); and the two stages are the measurement model and structural model.

4.1 Response Rate of the Distributed Questionnaire

The targeted respondent number was three hundred and eighty four (384) bank customers. According to Mugender and Mugender (2003), 50% response rate is an adequate representative for analysis as well as discussion and 70% rate of response of respondents is considered excellent. As revealed in table 4.1. below, three hundred and fifty four questionnaires were collected back from respondents and this represents 92.2%. This is considered sufficient for the nature of this study.

Table 4.1 *Response rate of the questionnaire*s

Response	**Frequency**	**Percentage**
Returned	354	92.2%
Not Returned	30	7.8%
Total	**384**	**100%**

Source: Author's computation, (2021)

4.2 Descriptive Statistics

4.2.1 Demographic Information of the Respondents

This section shows the demographic information of the respondents. The examined demographic features examined in the study include gender, age, educational status and occupation.

This table shows the demographic characteristics of respondents. They include; Gender, marital status, age education status and occupation

Table 4.2: Demographic Information of Respondents

Characteristics		**Frequency**	**Percentage%**
Gender	Male	136	38.4
	Female	218	61.6
	Total	**354**	**100.0**
Marital status	Single	190	53.6
	Married	156	44.1
	Divorced	8	2.3

		354	**100.0**
Age	Below 20 years	18	5.1
	21-30 years	252	71.2
	31-40 years	68	19.2
	41-50 years	12	3.4
	51-60 years	4	1.1
	Total	**354**	**100.0**
Educational status	SSCE	1	0.3
	NCE	7	2.0
	Diploma	80	22.6
	HND/B.Sc.	157	44.4
	M.Sc./MBA/Ph.D.	109	30.7
	Total	**354**	**100.0**
Occupation	Student	179	50.6
	Trading/ Entrepreneurship	134	37.8
	Civil/Private/Corporate works	27	7.6
	Artisan	13	3.7
	Others	1	0.3
	Total	**354**	**100.0**

Source: Author's Computation, (2021)

The results shown in the table 4.2 above revealed that males accounted for one hundred and thirty six (136) respondents, while females accounted for two hundred and eighteen (218). Also table 4.2 shows that most of the customers are in their youthful ages as 71.2 percent of

the respondents are between the ages of 21 and 30, 19.2% are between the ages of 31 and 40 and 1.1% are 60 and above. These show that people between the age range of 21 and 30 is the largest population as this is consistent with Manueli, Latu and Koh, (2007) findings that younger people tend to easily embrace innovations as compared to older people. The marital status of respondents was included in the context information of respondents. According to the data, approximately 54 percent of the respondents which is 190 respondents are single, while 156 respondents that represents 44 percent are married while 8 respondents representing 2.3% are out of their wedlock. The study revealed that people who are yet to marry are more than others.

Educational level of people has a great influence on their behavioural attitudes and also their perception about things is affected by how much knowledge they possess. From Table 4.2, it was deduced that out of the 354 respondents, 69 percent with a total number of 244 respondents had education up to the tertiary level such as; NCE, ND, B.Sc. 109 respondents representing 30.7% hold postgraduate degrees. Also, 1 respondent which represents 0.3% is a SSCE holder. The results showed that most of the customers (respondents) are holders of higher institutions certificate. Generally, it shows that the respondents are literate and could easily understand and operate various technological used in banking.

One's income level and patronage behaviour are normally determined by the type of economic activities they engage in. Economic influences appear to shape people's intentions and behaviours, because it has an effect on their pace of acceptance of technology innovations. According to the survey, 179 respondents representing 50.6% are students, 134 respondents representing 37.9% were involved in some form of trade, such as sellers, retail shop operators, and others. Respondent who are engage in civil services, private and corporate works are 27 in number and represents 7.6%. 13 respondents that represents 3.7% are artisans while 1 person that represents 0.3% engaged in other occupation. The overall

outcome of the survey shows that respondents have necessary requirement to give the needed answers to the questionnaire.

4.2.2 Mean and Standard deviation of Envelop Deposit

This table presents the mean and standard deviation of items of envelope deposit.

Table 4.3: *Mean and Standard deviation of Envelop Deposit (ED)*

Construct	Items	Mean	Std. D	Min	Maxi
Envelope Deposit	Using envelop deposit or drop box is efficient and reduces stress than queuing for long time on the banking.	3.824	0.950	1	5
	Envelop deposit is fast in making and saves time.	3.994	0.964	1	5
	Envelop deposit is easy in making	4.124	0.973	1	5
	I feel secured when I make my deposit through envelop deposit.	3.875	0.907	1	5
	My bank provides envelop deposit/drop services in weekends days.	3.920	0.810	1	5
	Even if not monitored, envelop deposit/drop box service can be trusted just as normal deposit.	3.613	1.069	1	5
	Envelop deposit/Drop box is free of errors	4.149	1.160	1	5
	I will continue making use of envelop deposit/drop box.	3.977	1.023	1	5

Source: Author's Computation, (2021)

The mean and standard deviation of envelop deposit is shown in table 4.3 The highest mean score of items for envelop deposit is 'envelop deposit/drop box is free of errors' (M=4.149, Std. D = 1.160) but 'even if not monitored, envelop deposit/drop box service can be trusted just as normal deposit' has the lowest mean in the range (M= 3.613, Std.D = 1.069) respectively. This shows that 'envelop deposit/drop box is free of errors' is the main characteristics which represents envelop deposit.

4.2.3 Mean and Standard Deviation of Telephone Banking

This table shows the mean and standard deviation of items of telephone banking.

Table 4.4: *Mean and Standard Deviation of Telephone Banking (TB)*

Construct	Items	Mean	Std.	Min	Max
Telephone Banking	Telephone banking is efficient and allows me to know the situation of my account at	4.226	1.157	1	5
	Banks respond to my personal needs via telephone banking.	4.135	0.966	1	5
	With telephone, banking is easy.	3.968	1.03	1	5
	I feel secured in providing sensitive information to my bank through my	3.898	1.156	1	5
	I often get information on issues on my account via my mobile phone.	4.146	1.083	1	5
	If there is any issue with my account, it can be quickly addressed and rectified through telephone communication and interactions between me and my bank instead of placing No Debit on my account.	4.225	0.996	1	5
	Sending financial services through the phone to me will increases the trust on my	4.014	0.932	1	5
	Receiving messages about new promotions increases my loyalty to my bank.	4.033	0.983	1	5

Source: Author's Computation, (2021)

The mean and standard deviation of telephone banking is shown in table 4.2.3. The highest mean score of items for telephone banking is 'telephone banking is efficient and allows me to know the situation of my account at any time' (M=4.226, Std. D = 1.157) but 'I feel secured in providing sensitive information to my bank through my telephone' has the lowest mean in the range (M= 3.898, Std.D = 1.156) respectively.

4.2.4 Mean and Standard deviation of Cardless-ATM Service

This table depicts the mean and standard deviation of items of cardless ATM.

Table 4.5: *Mean and Standard deviation of Cardless-ATM Service (CATM)*

Construct	Items	Mean	Std. D	Min	Maxi
Card-less ATM Service	Card-less ATM services is convenient for me as it cancelled the problem of ATM card misplacement.	3.635	0.854	1	5
	Operating ATM without card is easier than operating ATM with card.	4.279	0.920	1	5
	Card-less ATM service is fast as operating ATM with card.	4.177	1.037	1	5
	Operating ATM without card is as fast as operating ATM with card.	4.132	1.030	1	5
	I have more confidence in using ATM services without card.	4.048	1.035	1	5
	I can now efficiently access ATM service through fingerprint or paycode.	3.943	1.085	1	5
	My privacy is still ensured with when operating ATM without card.	3.946	0.909	1	5
	I will continually make use ATM without card and recommend it to other people.	4.064	0.854	1	5

Source: Author's Computation, (2021)

The mean and standard deviation of cardless-ATM Service is shown in table 4.5. The highest mean score of items for telephone banking is 'operating ATM without card is easier than operating ATM with card' (M=4.279, Std. D = 0.920) but 'card-less ATM services is convenient for me as it cancelled the problem of ATM card misplacement.' has the lowest mean in the range (M= 3.635, Std.D = 0.854) respectively.

4.2.5 Mean and Standard Deviation of Phygital Banking

This table presents the mean and standard deviation of items of phygital banking.

Table 4.6: *Mean and Standard deviation of Phygital Banking (PB)*

Construct	Items	Mean	Std.	Mini	Max
Phygital Banking	I can successfully register an account without visiting the bank.	3.884	1.072	1	5
	The service cost is very low.	3.881	1.033	1	5
	I feel secured in using my phygital banking applications.	3.983	1.001	1	5
	Phygittal banking saves time and reduces stress in banking.	4.161	1.026	1	5
	Phygital banking is convenient and easy to use.	4.121	0.976	1	5
	Phygital banking has a very friendly interactive and understandable interface.	4.045	0.923	1	5
	I will continually make use of Phygital banking and recommend it to other people.	4.062	1.134	1	5

The mean and standard deviation of phygital banking is shown in table 4.6. The highest mean score of items for phygital banking is 'Phygittal banking saves time and reduces stress in banking' (M=4.161, Std. D = 1.026) whereas 'The service cost is very low' has the lowest mean in the range (M= 3.881, Std.D = 1.033) respectively. This shows that 'Phygittal banking saves time and reduces stress in banking' is the main characteristics which represents phygital banking.

Table 4.7 Mean and Standard Deviation of Customer Satisfaction

This table shows the mean and standard deviation of items of customer satisfaction.

Table 4.7: *Mean and Standard deviation of Customer satisfaction (CS)*

Construct	Items	Mean	Std. D	Min	Maxi
Customer Satisfaction	Responsiveness: Envelop deposit/drop box, telephone banking, card-less and phygital banking are responsive and fast**.**	3.957	1.033	1	5
	Trust: The use of innovations like envelop deposit/drop box, telephone banking, card-less and phygital banking increase the trust on my bank.	4.129	1.001	1	5
	Reliabity: Envelop deposit/drop box, telephone banking, card-less and phygital banking are reliable.	4.028	1.026	1	5
	Ease of use: Envelop deposit/drop box, telephone banking, card-less and phygital banking are easy to use.	3.906	0.976	1	5
	Convenience: With envelop deposit/drop box, telephone banking, card-less and phygital banking, banking is more	3.991	0.923	1	5

Source: Author's Computation, (2021)

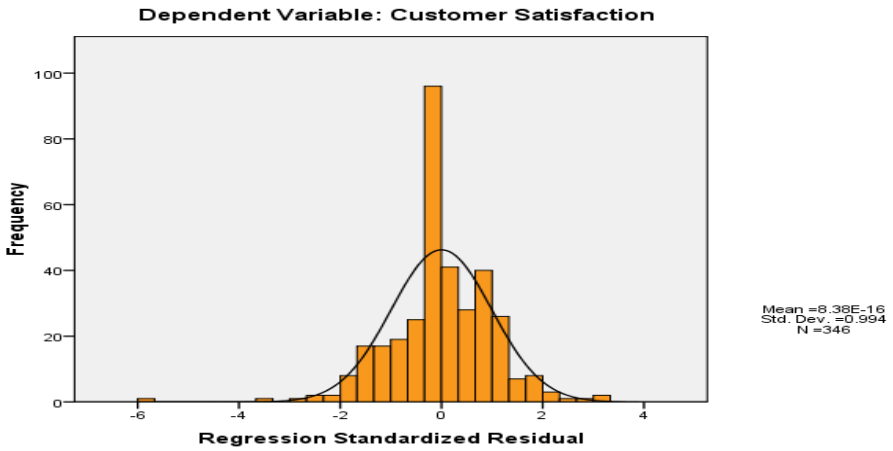
The mean and standard deviation of customer satisfaction is shown in table 4.7. The highest mean score of items for customer satisfaction is 'the use of innovations like envelop deposit/drop box, telephone banking, card-less and phygital banking increase the trust on my bank'. (M=4.129, Std. D = 1.001) whereas 'Envelop deposit/drop box, telephone banking, card-less and phygital banking are easy to use' has the lowest mean in the range (M= 3.906, Std.D = 0.976) respectively. This shows that 'the use of innovations like envelop deposit/drop box, telephone banking, card-less and phygital banking increase the trust on my bank' is the main characteristics which represents customer satisfaction.

4.3 Measurement Models (Preliminary Diagnostic Tests)

4.3.1 Test for Normality

The normality of the data used for SEM was tested so as not to violate the assumption of normality. According to Das and Imon, (2016), the frequency distribution in which the observed values are plotted against their frequency states a visual estimation whether the distribution is bell shaped on the normal probability distribution curve or not. Field, (2009) recommended that if a sample is 200 or more, it is important to only mind the shape of the graphical distribution instead of the numerical value of skewness and kurtosis statistics because larger sample decreases standard error and a decreased standard error will inflate the value of skewness and kurtosis statistics which may mislead in determining whether the data is normally distributed or not.

Figure 4.1. Histogram: Normality Diagnostic Test



Taking this into consideration, the bell-shaped normal probability distribution curve in Figure 4.1 implies that the data analysed is normally distributed.

4.3.2 Reliability and Validity

4.3.2.1 Convergent Validity

The validity and reliability of the instrument used in this study were investigated and assessed by Convergent Validity (CV) and it is assessed through item factor loadings which are coefficients that show the ratio at which each item is loaded in their respective constructs. In other words, it shows how each item represents their respective constructs (Straub *et al.,* 2004; Hair, *et al*, 2010; Hair, *et al*, 2011).

Table 4.8 Convergent Validity and Reliability Test

Constructs	Items	Factor Loadings	VIF	AVE	CR
Envelope Deposit	EDI	0.74	1.615	0.396	0.838
	ED2	0.688	1.600		
	ED3	0.638	1.372		
	ED4	0.594	1.387		
	ED5	0.684	1.495		
	ED6	0.498	1.195		
	ED7	0.568	1.325		
	ED8	0.592	1.290		
Telephone Banking	TB1	0.734	1.566	0.384	0.831
	TB2	0.609	1.353		
	TB3	0.464	1.343		
	TB4	0.618	1.294		
	TB5	0.537	1.252		

	TB6	0.679	1.515		
	TB7	0.582	1.427		
	TB8	0.692	1.695		
Card-less ATM Service	CATM1	0.655	1.457	0.437	0.86
	CATM2	0.473	1.182		
	CATM3	0.71	1.553		
	CATM4	0.699	1.684		
	CATM5	0.733	1.655		
	CATM6	0.60	1.381		
	CATM7	0.705	1.569		
	CATM8	0.68	1.692		
Phygital Banking	PB1	0.662	1.475	0.416	0.831
	PB2	0.532	1.175		
	PB3	0.739	1.731		
	PB4	0.705	1.870		
	PB5	0.533	1.319		
	PB6	0.63	1.393		
	PB7	0.681	1.769		
Customer Satisfaction	CS1	0.682	1.446	0.473	0.843
	CS2	0.76	1.662		
	CS3	0.669	1.421		
	CS4	0.676	1.387		
	CS5	0.595	1.292		
	CS6	0.733	1.516		

The results in Table 4.8 shows that the items' loadings were satisfactory as thirty four (34) items' factor loadings exceed the acceptable threshold of 0.50 (Hair, *et al*, 2011). However, Hair, *et al*, (2016) further recommended acceptable range of 0.40 to 0.70. In this study, items' factor loadings coefficient that exceeded 0.70 include; ED1, TB1, CATM3, CATM5, CATM7, PB3, PB4, CS2 and CS6 shows that they are strongly loaded and contributed to their own respective construct. Although, any item below 0.40 loading coefficient may be removed as suggested by Hair, *et al.*, (2017). For this study, no item was removed because they all met the recommended range and this implies that convergent validity can be assessed.

4.3.2.2 Composite Reliability and Average Variance Extracted

In the work of Ylinen and Gullkvist (2014), it was indicated that convergent validity can further be examined by evaluating Composite Reliability (CR) as well as Average Variance Extracted (AVE). Composite Reliability which is also called Construct Reliability is a measure of internal consistency in scale items, much like Cronbach's alpha (Netemeyer, 2003) and AVE usually measures the amount of variance attributed to the construct in relation to the amount due to measurement error (Hair, *et al.,* 2014). According to Hair, *et al.,* (2014) the minimum recommended value of CR in PLS-SEM analysis is a threshold of 0.70. As shown in Table 4.8, the composite reliability values range from 0.831 to 0.860. These values exceeded the acceptable requirement of 0.70 and this confirms the convergent validity of measurement instrument in this study. Although, the obtained AVE values were lesser than the recommended value of 0.5. But, according to Fornell and Larcker (1981), despite AVE being lesser than 0.5, and the composite reliability is higher than 0.70, the constructs' convergent validity is still adequate. In support of this, Peterson and Kim, (2013) in their study on the relationship between coefficient alpha and composite reliability also stated that composite reliability (CR) is a better estimate when comparing with Average

Variance Extracted (AVE). Based on these results, the research instrument employed by this study and the measurement items adequately explained their respective constructs and by implication, has a high and satisfactory level of internal consistency.

Furthermore, table 4.8 also depicts multicollinearity statistics in terms of variance inflation factors (VIF) which are all below 5.0 suggesting that multicollinearity will not be a problem among the constructs (Chin, 2010; Hair, *et al.,* 2011).

4.3.3 Multicollinearity Test

According to Hair, *et al.,* (2014), in Structural Equation Model, multicollinearity arises as a result of presence of high correlation between more than two indicators (multi). The implication of the presence of multicollinearity is that it tends to increase the size of standard errors which often leads to misleading results because it changes estimates of the coefficient of regression and the statistical significance test. A correlation coefficient of 0.09 and above shows multicollinearity between the exogenous variables. As shown in Table 4.9 below, the correlation between the variables were below 0.9 which is the suggested maximum coefficient Hair, *et al.,* (2014). This then reveals that banking service innovations and customer satisfaction variables are independent and not highly correlated.

Table 4.9 *Pearson Correlation Analysis between Variables*

	ED	**TB**	**CATM**	**PB**	**CS**
Envelope Deposit	1				
Telephone Banking	.763**	1			
Cardless ATM	.753**	.745**	1		
Phygital Banking	.615**	.688**	.741**	1	
Customer Satisfaction	.677**	.695**	.759**	.749**	1
****. Correlation is significant at the 0.01 level (2-tailed).**					

Source: Author's Computation, (2021)

4.3.3.1 Variance Inflation Factor (Independent variables)

To further strengthen the test for multicollinearity, as suggested by Tabachinick and Fidell (2007); Hair, *et al*., (2017), VIF and Tolerance should be computed. VIF is used to test for colinearity (between two variables) or multicollinearity (between more than two variables). It describes the percentage by which standard error is inflated or increased for each regression coefficient as a result of presence of multicollinearity. The higher the value of VIF, the larger the standard errors which shows evidence of multicolljinearity and renders the variables insignificant to the model. A rule of thumb commonly used in practice is if VIF is greater than 10.

Table 4.10 *Variance Inflation Factor and Tolerance*

Predictors	**N**	**Tolerance**	**VIF**
Envelop Deposit	354	0.336	2.972
Telephone Banking	354	0.323	3.098
Cardless ATM	354	0.292	3.419
Phygital Banking	354	0.411	2.434

Source: Author's Computation, (2021)

As shown in Table 4.10, the VIF values are less than 10 and also below the critical level of 5. (Hair, *et al*., 2017). Thus, this means that there is no evidence of multicollinearity among the independent variables.

4.3.3.2 Tolerance

Tolerance is the amount of variance of an independent variable not explained by other independent variables in a structural model. A tolerance of 0.10 or lower indicates a multicollinearity problem Tabachinick and Fidell (2007). As shown in Table 4.10, the

tolerance values are greater than 0.1. This implies that there is no evidence of multicollinearity between the independent variables.

4.4. Structural Model Assessment

The structural model was analysed using SmartPLS 3.0 (Ringle, Wende and Becker, 2015; Kong and Masud, 2019) to perform Partial Least Squares Structural Equation Modelling (PLS-SEM) to test the hypothesized relationships among the constructs in the proposed model depicted.

According to Hair, *et al*., (2013), it was argued that in order to assess the structural model; R^2, beta and its equivalent T-values must be examined as well as the P-values. It was also suggested that predictive relevance (Q^2) and the effect sizes (f^2) should also be stated alongside the measures mentioned. Most importantly, the assessment of structural model is to estimate and test the relationship between the latent independent variables and dependent variable (Customer satisfaction). The estimated parameters used to test the four null hypothesis earlier stated in this study are reported below in the Figure 4.2 and Table 4.6 respectively below.

Figure 4.2. *Summary of Structural Equation Model Diagram*

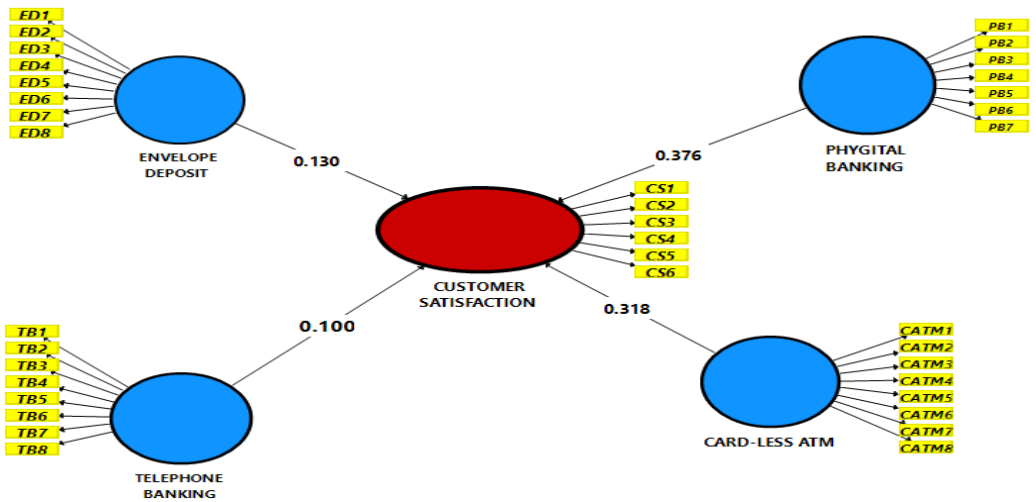


Table 4.11 Summary of Structural Equation Model

This table shows the estimated parameters used to test the hypothesis of this study at 5% level of significance.

Hypothesis	Beta	Std. Error	T-Value	P-value	Remarks	Decision
Ho_1: Envelope Deposits ➡ Customer Satisfaction	0.13	0.074	1.726	0.085	Not Supported	Accepted
Ho_2: Telephone Banking➡ Customer Satisfaction	0.10	0.052	1.909	0.057	Not Supported	Accepted
H_{o3}: Card-less ATM ➡ Customer Satisfaction	0.318	0.056	5.65	0.000	Supported	Rejected
H_{o4}: Phygital Banking ➡ Customer Satisfaction	0.376	0.062	6.175	0.000	Supported	Rejected

Source: Author's Computation, (2021)

The table 4.11 presents the result of the Partial Least Square Structural Equation Model (PLS-SEM) shows the model employed in the study which was used to test the hypotheses earlier stated in the study.

4.4.1.1 Restatement and Test of Hypothesis One

H_{01}: There is no significant effect between envelop deposit adoption and customer satisfaction in Ilorin metropolis.

Based on the result shown in table 4.11 the findings show that envelop deposit usage has negative effect on the customer satisfaction as shown by ($\beta = 0.13$, t-value = 1.726 and p-value = 0.085) at 5% significance level. Since the regression remark from table 4.11 did not support envelop deposit as an important predictor of customer satisfaction, this then

provides a basis to accept the null hypothesis which states that envelop deposit usage has no significant impact on customer satisfaction.

4.4.1.2 Restatement and Test of Hypothesis Two

H_{02}: Customer interaction and communication through telephone banking has no significant influence on customer satisfaction in Ilorin metropolis.

From the result shown in table 4.11 similar to the above findings, it shows that telephone banking also have no significant influence on customer satisfaction as shown by ($\beta = 0.10$, t-value = 1.909 and p-value = 0.057) at 5% significance level. Since the regression remark from table 4.6 did not support telephone banking as a significant predictor of customer satisfaction, this then provides a basis to accept the null hypothesis which states that customer interaction and communication through telephone banking has no significant impact on customer satisfaction.

4.4.1.3 Restatement and Test of Hypothesis Three

H_{03}: There is no significant influence between cardless ATM service usage and customer satisfaction in Ilorin metropolis.

Contrary to the above findings from the results shown in table 4.11 cardless ATM service has significant effect on customer satisfaction as shown by ($\beta = 0.318$, t-value = 5.65 and p-value = 0.000) at 5% significance level. Since the regression remark from table 4.11 supported cardless ATM as a significant predictor of customer satisfaction, this then provides a basis to reject the null hypothesis which states that cardless ATM service has no significant impact on customer satisfaction. This result means that cardless ATM service has influence on level of customer satisfaction.

4.4.1.4 Restatement and Test of Hypothesis Four

H_{04}: Phygital banking has no significant effect on customer satisfaction in Ilorin metropolis. Based on the result shown in table 4.11 the findings show that phygital banking has positive and significant effect on the customer satisfaction as shown by ($\beta = 0.376$, t-value = 6.175 and p-value = 0.000) at 5% significance level. Since the regression remark from table 4.11 supported phygital banking as a significant predictor of customer satisfaction, this then provides a basis to reject the null hypothesis which states that phygital banking has no significant impact on customer satisfaction. This result means that phygital banking did explained the variation in the level of customer satisfaction.

4.4.2 Effect Size (f^2)

According to Chin, (1998) the f^2 is the change in R^2 value when a particular exogenous (independent) variable is omitted from the model. It indicates the contribution of each exogenous latent variable (services innovations) to the prediction of the endogenous or dependent construct (customer satisfaction). It is derived by removing an exogenous construct from the model and re-specify the structural model to ascertain the new R^2 on the endogenous construct. The difference between the R^2 when a particular exogenous construct is removed and R^2 when that same exogenous construct is in the model reveals the impact of such exogenous construct in the prediction of the endogenous construct being investigated. Using the Cohen (1988) recommendation that 0.02, 0.15, 0.35 have small effects, medium effects, and large effects respectively.

Table 4.12: Effect size (f^2)

This table reveals the contribution of each independent variable to the prediction of the dependent variable (customer satisfaction).

Variables	Effect size (f^2)	Decision
Envelop Deposit	0.019	Small
Telephone Banking	0.01	Small
Cardless ATM	0.093	Medium
Phygital Banking	0.187	Medium

Source: Author's Computation, (2021)

The examined effect sizes (f^2) as shown in Table 4.12 indicated that card-less ATM and phygital banking (exogenous constructs) had a medium effect on customer satisfaction (endogenous construct) with 0.093 and 0.187 respectively. While envelope deposit and telephone banking had small effect on customer satisfaction with value of 0.019 and 0.01 respectively.

4.4.3 Coefficient of Determination (R^2)

The coefficient of determination R^2 is the exogenous constructs' integrated effect over the endogenous latent construct. It other words, the R^2 depicts the percentage at which the independent variables explain the variation in the endogenous (dependent) variable. Cohen (1988) suggested that R^2 of 0.67 is substantial, 0.33 is moderate while R^2 0.19 is weak.

Table 4.13 Coefficient of Determination R^2

This table presents the degree of variance which banking service innovations explain in customer satisfaction.

Variable	R^2	Adjusted R^2
Customer Satisfaction	0.693	0.689

Source: Author's Computation, (2021)

As shown in Table 4.13, the R^2 is 69.3% and the Adjusted R^2 is 68.9%. This implies that the exogenous latent constructs of this study; envelope deposits, telephone banking, card-less ATM and phygital banking (banking service innovations) explain 69.3% of variance in customer satisfaction and as the value is higher than that of Cohen, (1988) recommendations, this means that envelope deposits, telephone banking, card-less ATM and phygital banking explains about 69% of the variations in customer satisfaction, while the rest of 31% are caused by other innovations or factors not included in the model of this study.

4.4.4 Predictive Relevance (Q^2)

Chin, Peterson and Brown (2008); Sarstedt *et al.,* (2017) opined that the predictive samples reuse techniques (Q^2) can efficiently show the predictive accuracy of the structural model. The blindfolding procedure from SmartPLS 3.0 shows that data can be empirically reconstructed with PLS features. As a guideline, according to Sarstedt *et al.,* (2017), Q^2 values should be higher than Zero (0) for the endogenous construct to indicate predictive accuracy of the structural model for those constructs, a Q^2 less than 0 insinuates that the model has small predictive relevance. Q^2 of 0.25 insinuates medium predictive relevance while Q^2 of 0.5 indicate large predictive relevance. This implies that the endogenous variable indicates high predictive accuracy of the structural model. As indicated in Figure 4.2, Q^2 is 0.316 and this shows an acceptable predictive power.

4.5 Discussion of Findings

Based on the empirical analysis and hypotheses tested above, the empirical results showed that banking service innovations which was proxy with cardless ATM and phygital banking are significant factors determining customer satisfaction, while other innovations like envelop deposit and telephone banking have no significant influence on customer satisfaction among bank customers in Ilorin metropolis. Generally, the analysis gave mixed evidences on customer satisfaction which is the subject matter and two of the outcomes deviated from the model's aprori expectations.

4.5.1 Envelop Deposit and Customers Satisfaction

The first objective of this study was to establish the effect of envelop deposit usage on customer satisfaction in Ilorin metropolis. The study revealed that envelop deposit is negatively related and not statistically significant at 5% to customer satisfaction among bank customers in Ilorin metropolis ($\beta = 0.13$, t-value = 1.726 and p-value = 0.085). This may be as a result of participants in this study paying less attention or emphasis to their satisfaction with the use of envelop deposit. It could also be that the envelope deposit is not available for use mostly by customers. This then gives support to the null hypothesis (Ho) on the impact of envelope deposit usage on customer satisfaction. This implies that enveloped deposit usage does not have a strong impact on customer satisfaction. This contradicts the findings of Syed and Khaliquzzaman, (2016); Muhammad *et al,* (2017); Ruwan *et al*, (2020); Rameshkumar and Shanmugananda (2015) who all reported a positive relationship between envelop deposit and customer satisfaction.

4.5.2 Telephone Banking on Customers Satisfaction

The second objective was to find out the effect of customer interaction and communication through telephone banking on customer satisfaction. The study showed an insignificant

effect of telephone banking interaction on customer satisfaction (β = 0.10, t-value = 1.909 and p-value = 0.057). This may be as a result of inadequate evidence to show the significance of telephone banking to customer satisfaction such as the sample size of the study. The fear of telephone (Telephobia) by participants in this study could be another reason as some people have little or no interest in technologies in banking. This gives support to the null hypothesis (Ho) on the impact of telephone interactive banking on customer satisfaction. Also the result disagrees with the previous findings of Bzhar, 2018; Isibor, *et al*., (2018); Iluno, *et al*., (2018); Lawrence, *et al.,* (2018); Hamidi and Safareyeh, (2018); Adam, *et al.,* (2018); Gomachab and Maseke (2018) who found that positive relationship exists between telephone banking and customer satisfaction.

4.5.3 Cardless ATM Service and Customer Satisfaction

The third objective of this study was to determine the extent at which the emergence of cardless ATM services affects satisfaction of customers in Ilorin metropolis. From the empirical analysis and hypothesis conducted, cardless ATM service is positively related and statistically significant at 5% to customer satisfaction among bank customers in Ilorin metropolis. This is evidenced by (β = 0.318, t-value = 5.65 and p-value = 0.000). This rejects the null hypothesis (H_0) on the impact of cardless ATM service on customer satisfaction. This implies that cardless ATM service has a strong impact on customer satisfaction and that items of cardless ATM service explained the variation in the level of customer satisfaction to a large extent. The result is consistent with a-prior expectation of the study because the researcher expects a positive relationship between cardless ATM service and customer satisfaction among bank customers in Ilorin metropolis. The result is also consistent with the findings of Choudary, (2013), Bzhar (2018), Iluno *et al.,* (2018), Cynthia and Onyeiwu (2019). Thus show that customers give their positive opinions and confirmed that using ATM without card is reliable, responsive, easy to use and convenient. It In

conclusion, it revealed that customers are satisfied using this particular innovative medium as it showed a positive disconfirmation between expectations and performance which results to satisfaction as suggested by Expectancy Disconfirmation Theory. That is, the service performance of cardless ATM after using it is as good as they initially expected.

4.5.4 Phygital Banking and Customer Satisfaction

The last objective of this study was to investigate the customers' satisfactory level on phygital banking in Ilorin metropolis. In pursuit of this, empirical results from the hypothesis tested found that phygital banking is positively related and statistically significant at 5% to customer satisfaction among bank customers in Ilorin metropolis. This is evidenced by (β = 0.376, t-value = 6.175 and p-value = 0.000). With this, the null hypothesis (Ho) on the impact of phygital banking on customer satisfaction is rejected. This implies that phygital banking as an innovation which is characterised with low transaction cost in banking has a strong impact on customer satisfaction and that items of phygital banking explained the variation in the level of customer satisfaction to a large extent. The finding is consistent with Hicks and Niehans (1983) that posit in Transaction Innovation Cost Theory that cost reductions stimulate innovations and enhance efficiency in service delivery to customers or users (Juhakim, 2003; Colombo, 2003). The result is also consistent with a-prori expectation of the study as the researcher expects a positive relationship between phygital banking and customer satisfaction among bank customers in Ilorin metropolis. Thus, show that customers give positive opinions on phigital banking in relation to their satisfaction status with the use of phygital banking. Based on Expectancy Disconfirmation Theory premises, this finding revealed a positive disconfirmation. This must have been that the performance of phygital banking as a banking innovation is better than initially expected and rendered customers satisfied with the service.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter discusses the summary, conclusion and recommendations of the study. This chapter begins with introduction, followed by the summary of the study, the conclusion, recommendation, suggestion for future studies and problems encountered in this study.

5.1 Summary

In today's banking environment, despite the huge advancement in banking operations, yet customers are still more demanding, they want new interactive technology and more quick response of services. When customers are satisfied, it has a measurable impact on their patronage, loyalty to their respective banks as well as the financial performance of the banks. So, in this dynamic and competitive environment, many banks are seeking new strategies that enhance their services. One of these competitive strategies is the commitment to efficient service delivery with the use of technological innovations (Muhammad, *et al*., 2014).

In Nigeria, unhealthy customer relationship and less satisfactory services to customers caused the fell and forceful merger of some banks after the consolidation era (Alegbe *et al.,* 2019) and in recent time, the continuous rampant customers' complaints on their daily experiences about bank services is indicating that bank performance is going below customer expectations. These banks would not have gone in extinction if they have not taken customer satisfaction less and underestimated its importance to their corporate existence. Also, the fall of those defunct banks would have been avoided if they have priotised customer satisfaction measures and delivery of satisfactory services through introduction and adoption of innovation or technologies in their operations and relationship with their customers. In light of this, this study examined the impact of some innovations which

include envelop deposit, telephone banking, cardess ATM service and phygital banking on customer satisfaction. To achieve this broad objective, four (4) specific objectives were established to give answers to the research questions, these includes; to establish the effect of adoption of envelop deposit on customer satisfaction; to find out the effect of customer interaction and communication through telephone banking on customer satisfaction; to determine the extent at which the emergence of cardless ATM services affects customer satisfaction and to investigate the customer's satisfactory level on phygital banking usage.

The study reviewed several literatures on service innovations and customer satisfaction. The reviews were done covering conceptual review, theoretical review and empirical review. The study examines the various concept of innovations and customer satisfaction. More so, the study reviewed theories such as domestication theory, expectancy disconfirmation theory, technology acceptance model and transaction cost innovation theory. In addition, the empirical findings of the previous studies were also reviewed and divided into studies on developed, developing and Nigeria. Some numbers of gaps identified in the reviewed literatures were pointed out. The gaps include; variable gap, methodological gap, geographical gap.

The study adopted descriptive survey research design. The study was designed to establish the impact of banking service innovation on customer satisfaction within Ilorin metropolis. Therefore, the population of the study comprises all customers of DMBs operating in Ilorin metropolis while the sample size which was three hundred and eighty four (384) customers of DMBs operating in Ilorin metropolis. The data was sourced from the distributed 5-point likert scale structured questionnaire and was analysed through descriptive and inferential statistics. The four hypotheses formulated were tested using Partial Least Square (Structural Equation Modeling). Iluno *et al.,* (2018) model was adopted and modified in order to include the variables of this study. Customer satisfaction (dependent variable) was measured using

some service quality dimensions as used by some researchers which include; Muhammad, *et al*., (2014); Syed and Khaliquzzaman, (2016); Bzar (2018); Aremu, *et al.,* (2018); Mary, (2016); while the innovations (independent variables) are; envelop deposit, telephone banking, cardless ATM services and phygital banking.

The study found out that customers are not satisfied with the use of envelop deposit or CDM in Ilorin metropolis. The reason for this result may be that customers could not operate envelop deposit or CDM in making deposit or may be it is not available as expected by costumers and for the telephone interactive banking which is not significant to customer satisfaction as revealed in this study could be that customers still prefer to make physical appearance in bank for any of their banking activities or due to the cost of communicating with their respective banks. On the other hand, the study revealed that cardless ATM service and phygital banking are significant to customer satisfaction. This means that customers are pleased with these innovations functions vis-à-vis their reliability, how responsive they are, trustworthiness, ease of use and convenience.

5.2 Conclusion

Based on the empirical results of the hypotheses tested in chapter four, the following conclusions were made:

i. The study concluded that envelop deposit usage is not an important predictor of customer satisfaction and does not influence customer satisfaction in Ilorin metropolis.

ii. Similar to the first conclusion, the study also concluded that interaction and communication through telephone banking has no influence on customer satisfaction in Ilorin metropolis.

iii. Furthermore, the study reached a conclusion that cardless ATM service is an important predictor of customer satisfaction as the empirical analysis reported that cardless ATM service has influence on customer satisfaction in Ilorin metropolis.

iv. Lastly, the study concluded that phygital banking is also an important predictor of customer satisfaction and this implies that it has influence on customer satisfaction in Ilorin metropolis.

5.3 Recommendations

Based on the above findings, the study recommended the following in order to keep customer satisfied with banking innovative services.

i. Based on the finding that shows that envelope deposit usage does not have significant influence on customer satisfaction in Ilorin metropolis, the study recommends that the management of DMBs should come up with guidelines and directives that ensures envelop deposit is more available for use, reliable, safe and fast to use by customers.

ii. The study found out that cardless ATM has significant influence on customer satisfaction in Ilorin metropolis. In light of this, this study recommends that management of Deposit Money Banks to provide more ATMs with cardless operation options at bank premises or other commercial points in the metropolis.

iii. More importantly, based on the findings, DMBs' management should employ or redeploy more support staff who will be saddled with the responsibilities to orientate customers on the usage and advantages of accessing ATM without card.

iv. Furthermore, based on the findings, phygital banking also has significant effect on customer satisfaction in Ilorin metropolis. This study then recommends that the DMBs should design more user friendly, personalised and less costly digital bank applications which can enable customers to efficiently access virtually all bank services even without visiting any branch.

v. This study also recommends that the management of DMBs should ensure maximum internet security over their various digital banking applications to give more confidence to users.

5.4 Limitations and Delimitation

The study was limited to customers of DMBs only because they are expected to have more adequate information on banking innovations due to the fact that DMBs use several innovative channels in serving their customers. Microfinance bank customers are not included in the study. Secondly, the study was also limited to Ilorin metropolis. Thirdly, the study used primary data fetched through structured questionnaire (quantitative) only. Lastly, the study also did not to get the opinions from bank employees on the issues under study. However, with all these limitations, the main objective and specific objectives of the study were achieved and the findings made in this study are useful for future researches.

5.5 Contributions to Knowledge

The study investigated the impact of banking service innovation on customer satisfaction, from the previous studies in Nigeria such as; Agboola (2003); Dogarawa (2005); Ilo, *et al.,* (2/014); Mary, (2016); Obikeze, *et al.,* (2017); Lawrence, *et al.,* (2018); Isibor, *et al.,* (2018); Aremu, *et al.,* (2018); Iluno, *et al.,* (2018); Joseph, *et al.,* (2018); Okoli and Adedire (2018); Alegbe, *et al*., (2019) and to the best knowledge of the researcher and literature searched it seems there is no study conducted on envelop deposit or cash deposit machine, cardless

ATM and phygital banking. Hence, this study seems to be the first to investigate their impacts on customer satisfaction.

5.6 Suggestions for Further Studies

To improve on the study based on the limitation stated above, the findings suggest the following for future researchers:

i. In future research, the researchers could expand the scope of this study to cover the whole Kwara state, north central region and Nigeria to perform an analysis across many states and regions of the country.

ii. This study investigated the impact of service innovations on customer satisfaction. Future researchers should go further in including customers of micro finance banks so that their level of satisfaction or dissatisfaction with various means of serving them can also be ascertained.

iii. Lastly, in future studies, other measurements of customer satisfaction such as empathy and tangibility (as in service quality dimensions; Parasuraman, Zeithaml and Berry, 1988) should be considered as it will require bank employees to also be captured in the source for data through interview (qualitative) or questionnaire (quantitative).

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Appendix

Questionnaire

Accounting and Finance Department,
Faculty of HMSS,
Kwara State University Malete,
Kwara State.

To the Respondent

Dear Sir/ Madam

REQUEST TO COMPLETE THE QUESTIONNAIRE

I am a student at Kwara State University, Malete pursuing a Masters degree in Finance. I am carrying out a research for the partial fulfillment of the university requirements. The broad objective of the research is to find the impact of bank service innovations on customer satisfaction (a survey of some selected Deposit Money Banks i.e. Commercial Banks) in Ilorin metropolis.

I am therefore kindly requesting for your assistance in completing the questionnaire provided to enable me to complete the study. Participation in this survey is voluntary and the information provided will be treated as highly confidential and will be used for academic purposes only.

For any observation or complaints on any aspect of the questionnaire can be sent to tinuoyeemma@gmail.com or call 08038531254.

Your co-operation in completing the questionnaire will be highly appreciated.

Yours faithfully,

Tinuoye Emmanuel Semilore

M.Sc. Finance Student, Kwara State University, Malete.

Part A

(Respondent Information)

1. Gender of respondent

a. Male ( ) b. Female ( )

2. Age of respondent
a. Below 20
b.21-30 years c. 31- 40 years
d. 41-50 years 3. 51-69 years f. 70 and above

3. Occupation
a. Student ( ) b. Trading/Entrepreneurship ( ) c. Civil/Private/Corporate works ( )
d. Artisan ( ) e. Others ( )

4. Marital status
a. Single ( ) b. Married ( ) c. Divorced ( )

5. Educational level
a. SSCE ( ) b. NCE ( ) c. Diploma ( ) d. HND/BSc
e. M.Sc/MBA/P.hd

6. Bank (Tick)
a. First Bank ( ) b. Union Bank ( ) c. UBA ( )
d. GTbank ( ) e. Access Bank ( ) f. Sterling bank ( )
g. Fidelity bank ( ) h. Polaris bank ( ) i. Zenith ( )
j. Stanbic IBTC ( ), k. FCMB ( ), l. Ecobank ( )
m. Wema bank ( ) n. Unity bank ( ) o. Heritage Bank ( )
p. Jaiz Bank ( ) q. Keystone.

Part B

(Service Innovation)

Please tick on the appropriate box (On a scale of 1 to 5 where 1 represents Strongly Disagree and 5 represents Strongly Agree)

S/N	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
	Objective 1					
	(Envelop Deposit/Drop Box/CDM)					

1	Using envelop deposit or drop box is efficient and reduces stress than queuing for long time on the banking.					
2	Envelop deposit is fast in making and saves time.					
3	Envelop deposit is easy in making.					
4	I feel secured when I make my deposit through envelop deposit					
5	My bank provides envelop deposit/drop services in weekends days.					
6	Even if not monitored, envelop deposit/drop box service can be trusted just as normal deposit.					
7	Envelop deposit/Drop box is free of errors.					
8	I will continue making use of envelop deposit/drop box					
	Objective 2					
	(Telephone Banking)					
1	Telephone banking is efficient and allows me to know the situation of my account at any time.					
2	Banks respond to my personal needs via telephone banking.					
3	With telephone, banking is easy.					
4	I feel secured in providing sensitive information to my bank through my telephone.					
5	I often get information on issues on my account via my mobile phone.					
6	If there is any issue with my account, it can be quickly addressed and rectified through telephone communication and interactions between me and my bank instead of placing No Debit on my account.					
7	Sending financial services through the phone to me will increases the trust on my bank.					
8	Receiving messages about new promotions increases my loyalty to my bank.					
	Objective 3					
	(Cardless ATM service)					

1.	Card-less ATM services is convenient for me as it cancelled the problem of ATM card misplacement.					
2.	Operating ATM without card is easier than operating ATM with card.					
3	Card-less ATM service is fast as operating ATM with card.					
4.	Operating ATM without card is as fast as operating ATM with card.					
5.	I have more confidence in using ATM services without card.					
6.	I can now efficiently access ATM service through fingerprint or paycode.					
7.	My privacy is still ensured with when operating ATM without card.					
8.	I will continually make use ATM without card and recommend it to other people.					
	Objective 3					
	(Phygital Distribution)					
1.	I can successfully register an account without visiting the bank.					
2.	The service cost is very low compare.					
3.	I feel secured in using my phygital banking applications.					
4.	Phygittal banking saves time and reduces stress in banking.					
5.	Phygital banking is convenient and easy to use.					
6.	Phygital banking has a very friendly interactive and understandable interface.					
7.	I will continually make use of Phygital banking and recommend it to other people					

Part D

(Customer Satisfaction)

Please tick on the appropriate box (On a scale of 1 to 5 where 1 represents Strongly Disagree and 5 represents Strongly Agree)

CS	Customer satisfaction		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
			1	2	3	4	5
CS1	Responsiveness	Envelop deposit/drop box, telephone banking, card-less and phygital banking are responsive and fast.					
CS2	Trust	The use of innovations like envelop deposit/drop box, telephone banking, card-less and phygital banking increase the trust on my bank.					
CS3	Reliability	Envelop deposit/drop box, telephone banking, card-less and phygital banking are reliable.					
CS4	Ease of Use	Envelop deposit/drop box, telephone banking, card-less and phygital banking are easy to use.					
CS5	Convenience	With envelop deposit/drop box, telephone banking, card-less and phygital banking, banking is more convenient.					