

**Technology Integration and Financial Performance of Selected Deposit Money
Banks in Nigeria**

**Abimbola Japheth OSISANWO
LCU/PG/001739**

**Being a Post Field Presentation to the Department of Management and
Accounting, Faculty of Management and Social sciences, Lead City University,
Ibadan, Oyo State, Nigeria**

**In Partial Fulfillment of the Requirements for the Award of Master of Science
Degree (M.Sc) in Finance**

Certification

This is to certify that Abimbola Japheth OSISANWO with Matriculation number LCU/PG/001739 carried out this research work titled “Technology Integration and Financial Performance of Some Selected Deposit Money Banks in Nigeria” in Department of Management and Accounting, Faculty of Management and Social Sciences, Lead City University, Ibadan, Oyo state, for the award of Master Degree(M.Sc) in Accounting and that this has not been previously submitted.

Dr.J. A. Adejuwon

Supervisor

Date

Dr. T. M. Akinbo

Head of Department

Date

Dedication

This thesis is dedicated to my loving wife, Bukonla and also to my wonderful children, Anuoluwa, Ifeoluwa and Ayooluwa.

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Acknowledgement

This research work would not have been completed without the support of many individuals whose inputs at various stages of the study added academic value to the whole work. All the management and staff of Lead City University, Ibadan are acknowledged for their contribution towards the successful completion of the study.

Special appreciation goes to Prof. A.O. Oredein and all members of the Department of Management and Accounting starting with my supervisor Dr. J.A. Adejuwon, Prof. G.E. Oyedokun, Dr. T.M. Akinbo who is the Head of the Department, Prof, K.A. Adeyemo, Dr. O. Olaleye, Dr. O.J. Oladejo, Dr. A. Onamusi, Dr. O.T. Oreagba, Dr. O.O Adeshina, all of whom have contributed in varying degree towards the successful completion of this study. I also acknowledge and appreciate the effort and contributions of my niece and my course mate, Olusayo Erinoso, and my course mate, Opeyemi Fatola, and other course mates in the department of Management and Accounting and other departments who contributed in one way or the other towards the success of this work.

Finally, this acknowledgement would be incomplete if I fail to appreciate the motivation I received from my loving wife, Dr. Bukonla Osisanwo and my wonderful children, Anuoluwa, Ifeoluwa and Ayooluwa. I am deeply appreciative for all they sacrificed towards ensuring the success of this programme. I laso appreciate the encouragement that I received from all my siblings during the course of this programme

In conclusion, I acknowledge that even though the above-mentioned institution and persons have assisted in the process of this research work, I alone stand responsible for the errors, if any, found in this work.

Abstract

The aim of this study is to examine the effect of Technology Integration on Financial performance of Deposit Money Banks in Nigeria. There is rapidly increasing integration of technology in the banking sector among developing economies. In order to achieve these objectives, this study collected data using questionnaire administered to 150 participants from 11 selected deposit money banks in Nigeria, out of which 112 responses were retrieved. The collected data was analyzed using SPSS version 26. The study employed descriptive statistics, exploratory factor analysis as well as ordinary least square and found out that technology have been integrated to a large extent among deposit money banks in Nigeria. The regression result indicated that there is a positive and significant impact of financial technology on the financial performance of deposit money banks in Nigeria ($B= 0.224$, $t= 2.320$, $p < 0.05$), while constraints to technology integration exhibits a negative and insignificant impact on financial performance of deposit money banks in Nigeria ($B = -0.016$, $t = -0.164$, $p > 0.05$). It was concluded that financial technology tools and financial technology as a whole are significant predictor of financial performance of deposit money banks in Nigeria. It was recommended that banks should embark on aggressive campaign and re-orientation of clients to create awareness for the customers to patronize the facilities especially in the area of use of ATMs, USSD, Internet banking, POS, mobile banking and others. This is because increasing acceptance and use of these financial technology tools will consolidate the gains from investing in them and improve the financial performance of these DMBs.

Keywords: Financial Technology, Technology Integration, Financial Performance.

Word Count: 262

Table of Contents

Content	Page
Title Page	i
Certification	ii
Dedication	iii
Acknowledgement	iv
Abstract	vi
Table of Contents	vii
List of Tables	xi
List of Figures	xii
Chapter One: Introduction	1
1.1 Background to the Study	1
1.2 Statement of the Problem	5
1.3 Aim and Objectives of the Study	6
1.4 Research Questions	6
1.5 Hypotheses	7
1.6 Significance of the Study	7
1.7 Scope of the Study	8
1.8 Limitation of the Study	8
1.9 Operational Definition of Terms	9
Endnotes	10
Chapter Two	11
2.1 Conceptual Review	11
2.1.1 Financial Technology (Fintech): Evolution and Definition	11
2.1.1.1 Transition from Traditional Banking to Financial Technology (Fintech)	15

2.1.1.2	Delivery Channels for Banking Services	16
2.1.1.3	Potentials and Success of Financial Technology (Fintech) in Nigeria	17
2.1.1.4	Worldwide Application of Financial Technology (Fintech)	19
2.1.1.5	Risk Involved in Financial Technology Integration	23
2.1.1.6	Digitalization for Banking Industry	25
2.1.1.7	The Opportunities and Challenges of Financial Technology (Fintech)	27
2.1.1.8	Future Challenges for FinTechs	30
2.1.1.9	Financial Technology Integration Process	31
2.1.1.10	The Growth Drivers of the Fintech in Nigeria	35
2.1.2	Bank Performance	38
2.1.2.1	Determinants of Performance of Commercial Banks	38
2.1.2.2	Performance Measurement	41
2.1.2.3	Fintech Integration and Bank Performance	48
2.1.2.4	Financial Technology Integration On Bank Performance	50
2.1.2.5	Financial Technology (Fintech) and Efficiency	52
2.1.2.6	Financial Technology (Fintech) Use-Cases	55
2.1.2.7	Financial Technology (Fintech) and Banks	64
2.1.2.8	Banking on Fintech in Emerging Markets	69
2.2	Theoretical Review	73
2.2.1	Technology Acceptance Model	73
2.2.2	Diffusion of Innovation Theory	75
2.2.3	Legitimacy Theory	76
2.3	Review of Empirical studies	77
2.3.1	Studies outside Nigeria	77
2.3.2	Studies within Nigeria	82

2.4	Summary of Gaps Found in Literature	85
2.5	Theoretical Framework	85
Chapter Three:Methodology		99
3.1	Research Design	99
3.2	Population of the Study	99
3.3	Sample Size and Sampling Technique	99
3.4	Description of Research Instrument	100
3.5	Validity of Research Instrument	100
3.6	Reliability of the Research Instrument	101
3.7	Data Collection	101
3.8	Model Specification	101
3.9	Method of Data Analysis	103
3.10	Apriori Expectations	103
3.11	Ethical Consideration	104
Chapter Four:Results and Discussion of Findings		106
4.1	Demographic Data Analysis	106
4.2	Data Analysis and Interpretation	109
4.2.1	Examination of the Extent to which Deposit Money Banks	109
4.2.2	Analysis of the Constraints to Integrating Technology into Financial	117
4.2.3	Exploratory Factor Analysis (EFA)	120
4.2.4	Correlation	120
4.2.5	Kaiser-Meyer-Olkin (KMO) and Bartlett's Test	121
4.2.6	Extracted Factors and Percentage of Variance	122
4.3	Hypothesis Testing	126
4.3.1	Hypothesis One: Investigation of the Effect of Financial Technology	127

4.3.2	Hypothesis Two: Assessment of the Effect of Constraints to Technology	129
4.4.	Discussion of Findings	130
	Endnotes	136
	Chapter Five: Conclusion	137
5.1	Summary of Findings	137
5.2	Conclusion	142
5.3	Recommendations	143
5.4	Contribution to Knowledge	144
5.5	Suggested Areas for Further Research	145
	Bibliography	147
	Appendix	159
	Bio data	198
	University Compliance Certification	199

List of Tables

Table	Title	Page
4.1.1	Demographic Characteristics of Respondents	106
4.2.1	Financial Services Provided by Deposit Money Banks in Nigeria	110
4.2.2	The Extent to which Deposit Money Banks uses Technology to Provide	111
4.2.3	The Extent to which Deposit Money Banks uses Technology to Provide	112
4.2.4	The Extent to which Deposit Money Banks uses Technology to Provide	113
4.2.5	The Extent to which Deposit Money Banks uses Technology to Provide	114
4.2.6	The Extent to which Deposit Money Banks uses Technology to Provide	115
4.2.7	The Extent to which Deposit Money Banks uses Technology to Provide	116
4.2.8	The Extent to which Deposit Money Banks Experience Constraints in	117
4.2.9	Financial Performance: Frequency Distribution of Respondents	119
4.2.10	The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test	121
4.2.10	Total Variance Explained: ATMs	122
4.2.11	Total Variance Explained: Internet Banking	123
4.2.12	Total Variance Explained: POS	123
4.2.13	Total Variance Explained: Mobile Banking	124
4.2.14	Total Variance Explained: USSD	125
4.2.15	Total Variance Explained: Constraints	125
4.2.16	Total Variance Explained: Financial Performance	126
4.3.1	Result of the Investigation of the Effect of Financial Technology Tools	127
4.3.2	Result of the Investigation of the Effect of Financial Technology on the	128
4.3.3	Result of the Assessment of the Effect of Constraints to Technology	130

List of Figures

Figure	Title	Page
2.1:	Conceptual Review	86
4.1.1:	Gender	107
4.1.2:	Marital Status	107
4.1.3:	Education	108
4.1.4:	Age	108
4.1.5:	Years of Experience in the Banking Industry	109

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Chapter One

Introduction

1.1 Background to the Study

The banking and financial industry has undergone several changes as a result of series of advancement in technology which has consequently influenced the structures and services in the banking industry. One of such technological advancement that has played a vital role in shaping the banking system is referred to as Financial Technology (FINTECH). It is no doubt that the integration of Financial Technology in banking industry has reinforced the indispensable and important role technology plays in the global banking industry. This is boldly expressed in how in recent years banking products and services are driven by innovative business models of which technology and digital intelligence plays active roles in causing innovative and creative disruption in the global banking industry.

Innovations and advancements in the integration of information communication technology (ICT) in the banking system in the past decades to a large extent played active and vital roles in transforming the way banks make their services available to their customers. Financial Technology is a result of ICT integration in the banking system also brought about the innovative technologies that are adopted in providing financial services which range from - online transfer payment, online financial planning services and online lending and borrowing through peer to peer system, amongst others. In the banking system, the disruptive capability of financial technology integration is largely responsible for the provision of creative strategies in meeting customer needs and satisfaction¹.

The globalization of the world economy has significantly changed the financial market development processes in general and commercial banks in particular, resulting into innovative focus. As the world becomes extremely global, the necessity of cross-border payments grows. The pace of changes accelerates with the tendency to speed, convenience and cheapness bringing completely new and revolutionary services into the scene. The need for innovation has driven the changes in the traditional world payment and these has made the network infrastructure to be ready enough to adapt and facilitate the expansion of such innovations in providing payments. Financial Technology has provided an opportunity to enhance the quality of payment services due to its high technology capabilities. Financial technology, with its focus on integration and the international market, can create a product that is relevant not only to an individual but also to the banking business/sector. Financial technology also offers innovation and disruptive technology through its integration and enables banking sector offers a real-time service on a regular basis.

The integration of technology in the banking industry has further brought about rapid development and innovative potentials in the banking sector. This sort of integration brought about the introduction of “Open Banking”². In the banking sector, there are a wide range of factors that influence the integration of financial technology in offering banking services. Some of these factors include the number of secure internet servers, mobile telephone subscriptions, research and development, training, collaboration with other firms, as well as size of the firm and that of the technical labor force. As a result of the varying potentials of financial technology, an overwhelming percentage of banks across the world have been adopting technology in order to optimize their services and gain competitive edge by either partnering or acquiring existing technology or creating a personalized technology to be used in their establishment.

Financial technology can be referred to as computer software which works alongside digital intelligence to offer seamless and on-demand optimized banking service delivery. Financial technology is a technological based innovation that brought about the creative invention of new business models, processes, applications and products have significant positive influence on the financial market and services³.

The effect of integrating technology in the banking system has made banking services more optimized for prompt and user-friendly features. Financial technology offers a wide range of opportunities. First, it is important to note that a large percentage of banks desire to integrate technology into all facets of their businesses by setting up their own financial technology. This has led to a new possibility in the banking system whereby; banks in diaspora now provide banking services which can be accessed through mobile phones, which further supported innovative digital banking platforms amongst others.

Financial Technology is a field that has received popularity for innovative techniques, in addition to being considered as an emerging field that has offered to reduce costs and improve performance in any business in which it is involved. There are different perspectives that financial technology can be associated with, in particular, when it relates to finance and, more specifically, the banking industry⁴. Financial technology is currently being utilized and is being used by many individuals. Banks are now choosing this type of financing be it credits, stores, and business ventures. The application of financial technology requires infrastructure with advanced applications and sophisticated functions such as financial transactions, financial risk management. With these factors in mind, financial technology has contributed to the new phase of the global banking sector, which has brought many improvements. The banks now use Financial technology to catch up with the changing trends of the world by

continuously implementing and innovating the technology used for financial transactions⁵. Furthermore, financial technology adds to the bank's unique selling proposition, making it more desirable for customers around the world. The improvement in the Financial Technology has enabled the banking sector to solve issues and obstacles, which the consumers usually faced in their financial transactions. The rapid growth of Financial Technology Integration has steadily changed the business scene in the banking industry through innovative arrangements. These ongoing inclinations has enabled the banks to extend their involvement in Financial Technology and to re-examine their administration in addition to the distribution networks, in particular the business-to-purchaser models, and so on⁶.

Banks are known to play major role in the Financial Technology integration. Most technology products are generally inadequate to represent, sustain and replace the role of banking. They are seen as a means of supporting the banking sector, and hence the continuous creation and advancement of banking services with the aid of new technology is extremely important to build innovation for the global financial sector, which also contributed to the concept of online banking.

Financial Technology products used include Automated Teller Machine (ATMs,) credit cards, mobile phones and online banking services⁷. There is a rise in demand for financial services that are in line with the personal expectations of different customers. With the trends in digitalization, it is necessary for the banking sector to set up their financial technology companies with the creation of asset management as well as insurance companies.

Therefore, there is need to build up the success of financial technology in other to achieve efficient and effective bank performance in the financial industry. Consumers are benefitting from this advancement and the banks needs to keep up with the

evolving technology to provide the best service for its consumers in the long run⁸. This study therefore seeks to investigate Financial Technology Integration and Bank Performance on some selected deposit money banks in Nigeria.

1.2 Statement of the Problem

All systems have a similar structure based on the interaction with the Central Bank of the respective countries and connecting thousands of banks in its network. Banks have been considered to be the backbone of payment transactions, however nowadays, traditional banking systems has given way to financial technology in terms of the high cost of conducting transactions because of system peculiarities. Optimizing banking services has for long been the priority of financial organizations, as the needs of the customers are dynamic and insatiable⁹. The need for financial technology thus, became imperative simply because of its potential of improving banking services. Financial technology has dramatically transform the financial services industry and benefit society by replacing the outdated system of individual banks, improve processes, increase efficiency and strengthen control as well as providing opportunities for creating new products and services that benefit customers.

However, investment in the Financial Technology sector is rapidly increasing and the financial technology industry especially startups faces technological, legal and regulatory challenges and unexpected events. Notwithstanding the fact that the adoption of financial technology has become widespread in developed economies, little is known about this in developing economies, especially in sub-Saharan Africa, which has brought about a dearth of scientific and empirical research on financial technology integration and Bank performance in developing countries like Nigeria¹⁰. It is against this backdrop that the study seeks to examine Financial Technology Integration and Bank Performance: case study of some selected deposit money banks

in Nigeria and to ensure that financial technology professionals have analytical and critical thinking skills which help them find creative solutions to such problems.

1.3 Aim and Objectives of the Study

The aim of this study is to examine the effect of Technology Integration on Financial performance of Deposit Money Banks in Nigeria. In order to achieve this, the following objectives are intended to be achieved:

- i. examine the extent to which deposit money banks have integrated technology into financial services in Nigeria.
- ii. analyse the constraints of integrating technology into financial services among deposit money banks in Nigeria.
- iii. investigate the effect of financial technology on the financial performance of deposit money banks in Nigeria.
- iv. assess the effect of constraints to technology integration on financial performance of deposit money banks in Nigeria.

1.4 Research Questions

This study will provide answers to the following questions.

- i. To what extent have deposit money banks integrated technology into financial services in Nigeria?
- ii. What are the constraints of integrating technology into financial services among deposit money banks in Nigeria?
- iii. How does financial technology affect the financial performance of deposit money banks in Nigeria?

- iv. What effect do constraints to technology integration have on deposit money banks in Nigeria?

1.5 Hypotheses

This hypothesis will be formulated and tested in this research:

H₀1: Deposit money banks have not integrated technology into financial services in Nigeria.

H₀2: There are no constraints to technology integration into financial services in Nigeria.

H₀3: Financial technology has no significant effect on financial performance of banks in Nigeria.

H₀4: Constraints to technology integration has no significant effect on financial performance of deposit money banks in Nigeria.

1.6 Significance of the Study

The significance of this study thrives on its attempt to investigate the level of adoption of financial technology in Nigerian banks and to identify the varying effects of this integration on the banks' overall performance. This study is significant because it accentuates the importance of integrating financial technology to optimize banking services and also identify the gaps and challenges in achieving effective integration. This study proves useful to the government as it seeks to leverage on technology to grow the financial services sector and enhance financial access and inclusion.

Furthermore, the study proves to assist the government and its agencies particularly the Central Bank of Nigeria in policy formulation and implementation on the unbanked population. The study will also provide a guide on moral suasion and

directives to deposit money banks to enhance financial inclusion through financial technology. In conclusion, findings from the study can be adopted as basis for future empirical studies that examines similar issues this study addressed.

1.7 Scope of the Study

This study seeks to investigate the level of adoption of Financial Technology in some selected deposit money banks in Nigeria, case studies of Guaranty Trust Bank (GTBank), First Bank of Nigeria and Zenith Bank and to identify the varying effects of this integration on the banks' overall performance. Therefore, the scope of this study will be limited to a defined population – Guaranty Trust Bank (GTBank), First Bank of Nigeria and Zenith Bank, which this study seeks to adopt as its case studies. The rationale for selecting these three banks is because they are the major dominant players in Nigerian banking industry in terms capital base, customers base and branch network. Therefore, sampling materials will be extracted from GTBanks, First Bank of Nigeria and Zenith Bank in answering the set research questions of the study.

1.8 Limitation of the Study

The limitations to the findings of this study is as a result of questionnaire being used in gathering data for analysis. This is because the accuracy of the results will be limited to the information given by the respondents. In addition, the respondents that the questionnaire was administered also gave little attention because of their busy schedules and other important commitments, some of the respondents are not be willing to give the certain required information as a result there are some questions are be ignored and left unanswered.

1.9 Operational Definition of Terms

Banking Industry: is a network of financial organizations licensed to provide banking services.

Banking Performance: is the subjective measure of how well financial institutions use assets and how it affects their financial productivity.

Digital Banking: involves the process automation and web-based services that optimize banking services and products.

Financial Technology (Fintech): involves the use of technology to improve and automate the effective and prompt delivery and use of financial services.

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Endnotes

- ¹G. B. Navaretti; G. Calzolari; J. M. Mansilla-Fernandez & A. F. Pozzolo, *Fintech and Banking. Friends or Foes?* **European Economy, Banks, Regulation, and the Real Sector**, (2) 2017, 9–39.
- ² E. Iluba & J. Phiri, *The Fintech Evolution and its Effect on Traditional Banking in Africa- A Case of Zambia*, **Open Journal of Business and Management**, 9(2), 2021,838-850.
- ³ V. Xavier, *The Impact of Fintech on Banking*, **European Economy, Banks, Regulation, and the Real Sector**. (2) 2017 97-105.
- ⁴ J. An & R. Rau. *Finance, Technology and Disruption*, **The European Journal of Finance**, 27(4), 2019, 334-345.
- ⁵ R. Hendrikse; M. V. Meeteren & D. Bassens, *Strategic coupling between Finance, Technology and the State: Cultivating a Fintech Ecosystem for Incumbent Finance*, **Environment and Planning A: Economy and Space**, 52(8), 2020, 1516-1538.
- ⁶ K. Gai; M. Qiu & X. Sun, *A survey on FinTech*, **Journal of Network and Computer Applications**, 103, 2018 262-273.
- ⁷ I. Goldstein; W. Jiang & G.A. Karolyi, *To FinTech and Beyond*, **The Review of Financial Studies**, 32(5), 2019 1647-1661.
- ⁸ A. Banerjee, *FinTech Revolution in the Gulf Countries and MENA Region*, In *Entrepreneurial Finance in Emerging Markets*, 2020, 335-344.
- ⁹ S.E. Hidayat; B. Omar; H.Nadiahi; A.S.Citra & G. Dewandaru, *Value Drivers of Startup Valuation from Venture Capital Equity-Based Investing: A Global Analysis with a Focus on Technological Factors*, **Borsa Istanbul Review**, 22(4), 2022, 653-667.
- ¹⁰PWC , *Nigeria Fintech Survey, 2017*, Available at:
<https://www.pwc.com/ng/en/publications/nigeria-fintech-survey-report.html>

Chapter Two

Literature Review

This chapter discusses the review of related literature on the links technology and financial performance of deposit money banks in Nigeria. The discussion focuses on the following areas: conceptual review, theoretical review, empirical review, and gaps identified in the reviewed empirical literature. Also, relevant theories and empirics were discussed as well as the gaps in literature were identified.

2.1 Conceptual Review

2.1.1 Financial Technology (Fintech): Evolution and Definition

In the widest sense, the word Financial Technology is formed from the coinage of two words, namely financial and technology. The banking industry since its inception has experienced landmark changes that brought about paradigm shifts in delivering banking services to the general public. One of these changes is the introduction of electronic banking, which can also be referred to as digital or virtual banking.

The introduction and integration of electronic banking in the banking system, brought about an increase in the demand for banking services. Electronic or digital banking offers bank users access to a wide range of bank products and services virtually and seamlessly. With the introduction of digital banking, bank customers can now access their bank details through the use of their smart phones and on personal computers. One of the varying reasons for the high preference for digital banking is because it can be used anytime and anywhere without having to have a physical face-to-face contact with a bank official. This therefore, brought about a shift in the traditional banking system to a digital banking era¹.

In the past recent decades, the banking system especially the payment methods have experienced a wide range of digitalization and evolution. This evolution prompted the transition of the traditional banking system from a branch-oriented to a branch-less and mobile-oriented approach. The digitalization that is responsible for the adoption and integration of digital banking in the banking system can be characterized as a disruptive innovation, considering that it creates new markets and networks by disrupting the existing ones. When compared to the traditional banking system, electronic banking can be referred to as an attractive trend in the modern society, with more potential to drive and incite satisfactory customer experience. This is as a result of the resourcefulness and advantages of digital banking services. Due to the fact that customers are expecting limitless access to more personalized banking services, the integration and introduction of financial technology in the banking system brought about an enabling digitalized banking environment where even non-banking institutes have gained the opportunity to become key players in the financial markets².

In a similar vein, banking products and services offered by banks are generic and the banking ecosystem is driven by customers' needs as they are regarded as indispensable stakeholders in the banking system. As a result, the changes witnessed in the banking system, since its inception were in alignment with the dynamic changes in customers' needs and behaviour. These changes in customers' needs and behaviour to a large extent have forced financial institutions - commercial banks in particular to bring about new and more efficient online delivery payment platforms³. While it has been almost impossible to agree on a single and generally accepted definition of financial technology, a scholar defined it as "the new sector in the finance industry, that incorporates the whole plethora of technology that is

used in finance to facilitate trades, corporate business or interaction and services provided to the retail consumer". A common pattern amongst most Fintech startups is that, a large percentage of these Fintech organizations usually consists of start-up companies driven by the objective of causing a disruptive innovation in the current financial industry which largely relies on technology to optimize the delivery of banking products and services.

Officially, World Economic Forum defines fintechs as "companies that provide or facilitate financial services by using technology. In its current form, fintech is marked by technology companies that dis-intermediate formal financial institutions and provide direct products and services to end users, often through online and mobile channels". Another definition for fintech by PwC is "a dynamic segment at the intersection of the financial services and technology sectors where technology-focused start-ups and new market entrants innovate the products and services currently provided by the traditional financial services industry. As such, Fintech is gaining significant momentum and causing disruption to the traditional value chain"⁴. Further Gartner defines as "fintechs are startup technology providers that deliver emerging digital technologies that approach financial services in innovative ways or can fundamentally change the way bank products and services are created and distributed, and generate revenue. The term may also refer to the technologies these providers offer"⁵. Other definitions such as fintech integrates finance and technology together, traditional financial structures combined with today's technology-based processes and simple one fintech refers to the application of technology in financial service.

Financial Technology (Fintech) has successfully automated a range of financial services such as insurance banking, lending, and portfolio management. Recently, the

FinTech startups have continually received huge investment from a sum of \$17.4 billion in 2016 to about \$83.8 billion in 2017 with a move of disrupting the traditional banking activities in the world. Presently, there are 26 Unicorn FinTech globally valued at \$83.8 billion as at 2017⁶.

To this end, FinTech innovations areas revolve around the followings:(i) Cryptocurrency and digital cash (ii) Blockchain technology including Ethereum, a distributed ledger technology (DLT) that maintain records on a network of computers but has no central ledger. (iii) Smart contracts, which utilize computer programmes (often utilize the blockchains) to automatically execute contracts between buyers and sellers. (iv) Open banking , a concept that leans on the blockchain and posits that third-parties should have access to bank data to build application that create a connected network of financial institutions and third-party providers. An example is the all-in-one money management. (v) Insurtech, which seeks to use technology to simplify and streamline the insurance industry. (vi) Rentech, which seeks to help financial service firms meet industry compliance rules, especially those covering Anti-Money Laundering and know-your customer protocols to fight frauds. (vii) Cybersecurity, given the proliferation of cybercrime and the decentralized storage of data, cybersecurity and FinTech are interlocked. Third and the last financial technology phase tagged FinTech 3.0 was developed to consolidate on more advance technologies such as block chain, Crypto currency and others, aimed to disrupt the traditional banks, and thus, a new business models is established through massive investment in the millions of start-up companies⁷.

Financial Technology (Fintech) now includes different sectors and industries such as education, retail banking, fundraising and nonprofit, and investment management to name a few”.The Financial Technology (Fintech) integration across the globe

continues to disrupt status quo as it brings solutions that are helping organizations improve their service and operations while enjoying the benefits of cost savings and operational efficiencies. This integration is committed to delivering the next level banking experience to the client, one that will bring forth a paradigm shift. A researcher further explained that there has been increased collaboration between Fintech companies and banks seeking to enhance their product offering⁸.

It's safe to say Fintech's and banks complement each other in that the former rely on banks to provide back-end transaction details, risk management and regulatory compliance support for their solutions to work. Furthermore, there has been a notable trend in financial institutions making investments in modern technology to support their businesses while partnering with Fintech's and Mobile Network Operators. "It's no secret that mobile, card and automated clearing house (ACH) transactions are growing while cash use is decreasing. As at 2018, the United Nations Capital Development Fund (UNCDF) reported at least 25 Fintech's providing solutions for sectors which included health, agriculture and financial services.

2.1.1.1 Transition from Traditional Banking to Financial Technology (Fintech)

The transition of the banking industry from the traditional banking systems to the newly adopted financial technology innovations can be defined as such that had gone through several landmark developments and challenges. The history of banking can be traced to some of the earliest civilizations such as, Italy, Egypt and the Middle East. In discussing the evolution of banking systems, it is imperative to begin from the 1950s which was characterized as the customer-driven era, where commercial banks shifting their focus and organizational objectives from producing and selling only, to a more customer-driven business model. This shift which prioritizes customers' needs

was as a result of the increasing competition in the banking industry, and as a result led to banks offering various products to target new customer groups⁹.

In order to sustain satisfactory customer experience in the banking industry, keen competition among financial institution led to the adoption and use of computers in 1954 to optimize banking services. This however, led to the next transition in the banking industry which was during the 1960s, where commercial banks mainly in the European countries started shifting their priority towards product delivery quality. This implies that during this era of bank evolution, banking services and products provided were broadened, the quality was improved, and the delivery channels used for the delivery of services were expanded to reach more customers¹⁰.

Financial technology was not integrated in the banking system until 1836 with the introduction of telegraph and the construction of transatlantic cable in 1866. These innovations paved way for subsequent financial technology integration in the banking system and often referred to as the backbone of what we call Fintech today. The development of the World Wide Web (WWW) during the 1990s also improved the potential of internet banking, which further strengthened the connection between financial institutions and technology. The second stage of Fintech integration in the banking system lasted until the third quarter of 2008, while at the last quarter of the same year the third stage of Fintech 3.0 started which subsequently set the standard for further future evolution of financial technology.

2.1.1.2 Delivery Channels for Banking Services

There are different delivering channels the banking industry adopts in delivery of specific banking products and services. These delivery channels include; retail banks, Automatic Teller Machine (ATM), mobile banking, internet banking and phone

banking. All these delivery modes offer specialized banking services and products. Although some scholars argued that security and bank users' personal information is vulnerable and can be compromised with the use of sophisticated devices such as cameras or scanners that thieves can install to the machines to clone a person's card or espy the card's PIN during queuing while using the ATM and other modes of Internet banking. While there is not much difference between mobile banking and internet banking, as they both operate similarly and adopt the use of portable devices like smart phones and tablets to access banking services and products. The mobile banking sector however, has both financial and non-financial entrants such as FinTech companies, BigTech (Facebook, Paypal, Google, Apple), telecommunication companies, merchants amongst several others.

2.1.1.3 Potentials and Success of Financial Technology (Fintech) in Nigeria

Financial Technology (Fintech) is a term often used as an identifier for an organisation driving the provisioning of the financial services aggressively with the use of technologies. As a result of Fintech's focus on development and delivery of a wide range of banking and financial products and services, made it to deliberately adopt vast technological tools in attaining and sustaining customer satisfaction, thus making it more customer-centric. In the past decade Fintech have been defined by various scholars and have attracted various scholarly discourses and debates. A more recent and sophisticated definition of Fintech is that it is "the process or hybridisation of technology with the traditional method of finance" to drive various approaches in delivering specific financial services like payment processing, deposit accounts, credit, life insurance amongst others, in such a way that replaces the traditional systems and ways of banking through the adoption of new technologies. Therefore, it is no doubt

that Fintech drives financial innovation by heavily relying on the adoption of new technologies to bring about new financial services, products and business models, digital applications, as well as processes with overall tendency to cause disruption in the traditional markets and institutions of financial services¹¹.

With the possibility of Fintech and its varying optimization potentials in the financial industry, a notable number of banks in Nigeria are reported to leverage on Fintech startups through collaborations to achieve their digitalization goals and to sustain a competitive level of customer satisfaction. Previous empirical reviews ascribed Fintech development and evolution to the aftermath of the 2008 global financial crisis, which further led to the integration and introduction of more rigorous policies and regulations that guided the activities and practices among both financial and non-financial banks in the banking industry.

In Nigeria, the Fintech was introduced in the financial industry in order to critically address some unmet expectations of the financial services consumers, most of which had no longer had confidence in the traditional financial institutions as a result of their inability to provide the required convenience and accessibility to financial services, which was as a result of the absence of financial technology in the banking system. Nigeria having a vast and a dynamic financial performance and different key stakeholders in the financial industry, it is imperative to note here that the development and transitions of Fintech in Nigeria has a significant contribution from varying factors and policies.

The positive developments in the telecommunication sector coupled with the growth in the diffusion of mobile technologies, including the proliferation of mobile devices together with smart phones are no doubt justifiable complementary factors that played mutually inclusive roles aiding the seamless and effective development of Fintech

activities and also aided the seamless and productive integration of Fintech integration among banks. The recent population record of Nigeria revealed that about 115 million people, of a total population of 200 million, are belonging to the young millennial with age below 35 years. The financial inclusion potential is high with approximately 60 million Nigerians that are without a bank account. These among several other statistics are indicators of great opportunities for Fintech growth in Nigeria.

2.1.1.4 Worldwide Application of Financial Technology (Fintech)

Financial Technology (Fintech) makes the world more inclusive regardless of whether transactions are C2C (customer-to-customer) or B2B (business-to-business). Fintech integration has made international money transfers easier than ever. Thus, Fintech companies attract enormous venture capital investment worldwide to develop and create new financial technology products (FTPs)¹². Financial Technology (Fintech) provides companies with cutting-edge technology and helps them thrive in the fast-changing competitive business environment¹³. Digital transformation is considered a vehicle for exceeding customer demands – a competitive advantage most companies require to survive the COVID-19. It also changes the way companies interact with their customers services¹⁴. For example, in the wake of the COVID-19, customers of all ages quickly learned to use online banking services when the bank branches closed with short notice. Many customers are digitally savvy, especially the millennials and Generation Z. Customers have increased their expectations – they prefer greater convenience, lower costs, rapidity and reliability when choosing financial services. Indeed, many Financial Technology Products (FTPs) have made an incredible impact on people's daily life activities, such as low cost and real-time remittance, real-time payment and loan approval, and remote account opening. In

more detail, the use of video and face recognition technology in the remote account opening function allows customers to open bank accounts on mobile devices without visiting a branch. The experience with COVID-19 teaches the world that digital banking is the way forward. Fintech has always been associated with the terms “advanced” and “competitive” in the financial industry.

The purpose of Financial Technology (FinTech) is to enhance service quality and work efficiency of financial services by using information technology applications. Fintech can also be used in P2P (peer-to-peer) lending, distributed ledger technology and third-party payment¹⁵.

The Financial Stability Board (FSB) defined Fintech as new frontier technologies, including AI (artificial intelligence), block chain and big data that promote emerging business models, new technology applications and advanced product services. Following this definition, FinTech products (FTP) are one form of FinTech leading the financial sector towards digital banking and suppressing the traditional banks¹⁶. The application of Financial Technology (Fintech) can be evident in the following:

Transaction Processing

Transaction processing practice focuses on helping companies find, develop and maintain best-in-class service by using Financial Technology products (FTP). With the help of Fintech, transaction processing becomes swifter and more cost-effective¹⁷. Banks can also continue their services during the COVID-19 crisis. For example, the blockchain cuts down on the need for trusted third-party banks to verify transactions and, therefore, lower or avoid the banks' charge fees in a transaction. Additionally, the invention of FTPs for digital payment methods (i.e.,

Alipay, WeChat and Apple Pay) has become the public domain trend. Perhaps unsurprisingly, such digital payment methods appealed to generations with cash flow and raised on cell phones, not to mention how COVID-19 sped up the adoption of digital payments.

Investment and Risk Management

Regardless of the type of investment, there will always be some risk involved. Fintech can help banks improve risk management significantly through big data¹⁶. Big data allows banks to collect and analyze data to identify customer behavioral patterns, thus allowing them to personalize responses, products and services through a tailored marketing experience. In responding to the COVID-19 challenge, the growth of remote working implies that an incredible amount of online data and information are being collected and shared across networks. Data analytics can be used to explore and analyze big data to mitigate risks and inform better investment decisions with consistent returns for banks. Big data can also be used to enhance cybersecurity, detect fraud and prevent potential malicious actions¹⁸. In principle, FTPs should provide further opportunities for banks while their services are in higher demand during COVID-19.

FinTech has had a huge impact not only on financial activities (e.g., transactions, investments, risk management, insurance, financing and budget applications) but also on regulations and compliance processes. The bigger the data, the higher the risk the companies will face¹⁸. The COVID-19 is creating a need for banks to process personal data for a variety of specific purposes (e.g., managing and protecting their workforce, customers and the public) while accumulating user data. Data security regulations are,

therefore, becoming more stringent. For example, the European Parliament approved and introduced the GDPR (general data protection regulation) to place certain restrictions on businesses worldwide that want to collect and apply users' data. Council of Europe issued a Data Protection Report (2020) to ensure greater respect of the rights to privacy and data protection in the use of digital contact tracing applications and monitoring tools during the fight of COVID-19. Additionally, in China, selling personal data can be punished by fines and up to seven years in prison, while personal information buyers can be sentenced to up to three years in jail and a fine¹⁹.

Compliance Processes

The 2008 financial crisis impacted the financial industry by spawning new regulatory actions internationally to improve and strengthen the resilience of the financial system. The real-name financial transaction system is one of the tools that can effectively prevent money laundering because it allows the source of funds to be traced. Traditionally, all financial institutions manually verified the real name of an individual customer or legal entity. This system was subject to human error and bribery. However, with the emergence of FinTech, big data, AI and facial recognition make the verification process more reliable with less human error, thus boosting the bank's transaction volumes and saving time for both the bank and customers¹⁹. More importantly, such a verification process helps banks maintain "business as usual" during COVID-19 even the branches have reduced hours or closures.

Mobile Banking

Mobile banking is the most mature FTP in internet finance, but its demand and growth for financial services among customers are far from slowing. Customer

interaction and affinity are expanding, and online-to-offline mobile banking functions through smartphones have become another combat zone where banks are competing fiercely for market shares, including traditional financial institutions. In 2019, mobile banking sites averaged 326 million visits per month in China²⁰ – a 10.9 percent increase compared to 2018²¹. There was a 200 percent jump in new mobile banking registrations.

In comparison, mobile banking traffic rose 85 percent when the government-imposed lockdown in April 2020 due to COVID-19, according to Fidelity National Information Services (FIS). Mobile banking allows customers to access various financial services via smartphones. For example, in the Bank of China mobile app overseas version, apart from the common services (e.g., branch finder, balances, transfer and remittance and accounts overview), the app also provides lifestyle services (e.g., prime student service, financial consultation, mortgage information and tips to avoid coronavirus scams) and wealth management (e.g., global accounts and currency converters)²².

These services provide opportunities for customers to understand their financial position and tips for managing their funds and hunting for higher investment returns internationally^{23, 24}. Moreover, customers can interact with their banks via mobile banking, regardless of time and location. Customers can also access details of their accounts whenever and wherever necessary. Mobile banking is rapidly becoming the preferred digital channel. Mobile banking will replace traditional banking – it is just a matter of time²⁴. Furthermore, the way to log in on mobile banking is fairly secure – a password, a one-time e-token password and verification code are required to log in.

2.1.1.5 Risk Involved in Financial Technology Integration

Financial technologies industry (fintech) is rapidly developing around the world. Under the “finance tech”, the Basel Committee on Banking Supervision (BCBN) understands “financial innovations generated by technologies that can lead to the creation of new business models, applications, processes or products that will subsequently affect the financial markets, institutions or the production of financial services.” According to the Report on the development of the Fintech industry in Russia in 2017, prepared by the Fintech Observatory, about 250 organizations operating in the financial technology sector are registered in Russia at present. At the same time, according to the data in September 2017, 2.3 billion rubles were invested in the Fintech industry, as well as 10.3 billion rubles for solutions in business. The penetration rate of financial services in Russia’s megacities reached 43%, with an average penetration rate of services in the world of 33%. The penetration rate in China is 69%, India - 52%, and in the UK - 42%. These are the results of the survey”. The penetration of financial and technological services in Russia and the world”²⁵.

Proceeding from the foregoing, it can be concluded that fintech is rapidly penetrating all spheres of economic relations, which entails the emergence of new risks. According to the FATF recommendation, it is necessary to identify and assess the risks that may arise in connection with the development of new products and new business practices. In addition, the FATF recommends that a risk-based approach has to be used (recommendation 1) so that risk mitigation measures are consistent with the identified risks. Therefore, the risks that financial technologies bear are considered. The most influential may be the risks that affect the economic aspect. After all, rapid development of fintech leads to a reduction in barriers to entry the financial services market and stimulates the emergence of new business projects that can exist autonomously from banks, providing a certain narrow segment of services at an

affordable price. This is a negative factor for banking sector and for banks to maintain a level of competitiveness, it is necessary to change business models rapidly, and this is rather time consuming and expensive process. If measures that support a high level of competitiveness are not implemented, existing financial institutions will lose a significant part of their market share or profits, as new participants will be able to make better use of innovations and provide less expensive services that better meet the expectations of customers.

To counteract this risk, banks need to have modern IT; good risk management, effective internal control, as well as monitor the appearance of new technologies and apply them in their activities. To date, the legislative framework, which determines and regulates all aspects of the activities of fintech companies, is not enough. Because of this level, there are certain risks. In the event that fintech companies occupy a certain share of the banking services market, this will reduce the influence of the Central Bank, as a rule, on the activity of this market and, as a result, on the economy as a whole. This risk can be reduced through the introduction of various licenses, quotas, registrations for the provision of services for financial companies, while these measures should be outof-date, as this may hinder the development of innovations. A good example is the People's Bank of China, which established a committee to study the influence of fintech on monetary policy and financial markets. The new committee will conduct an indepth study of the impact of financial and technological changes on monetary policy, financial markets and their stability and, as a result, develop an effective regulatory mechanism.

2.1.1.6 Digitalization for Banking Industry

Financial technology integration has come in the system due to the innovation by various parties from various areas all in a quest to improve the financial system

starting from security, profitability as well as ease of access. It is through digitalization and innovation that FinTech was birthed and continuously developed and improved. Digitalization in the banking sector opens up a whole world full of possibilities both for the institutions themselves and for consumers. Until recently, it was almost impossible to obtain credit online or for there to be banks that only carry out transactions through their mobile platforms. Today, the trend towards digitalization is increasing.

Digital transformation is describe as a process of constant technological evolution, where companies must be up to date in the tools available for the improvement and efficiency of processes to achieve greater profitability, such as Big Data or Machine Learning²⁶. That is why it is essential to determine the benefits of digitalization for banking institutions as it further points out the following advantages:

User experience: The advance of digitalization has enabled institutions to improve the user experience in a comprehensive manner and to improve canal banking in its evolution towards a customer-centric model. This implies having analytical technology solutions to offer products and services tailored to users. To do this, it is necessary to take into account the knowledge of their preferences, purchasing behavior and attitudes to risk and financial health.

Increase in the number of clients: Faced with the loss of confidence by traditional banking and the growth in the use of banking apps and online banking by consumers, financial institutions have recently increased the number of customers. With the emergence of Fintech in the sector, it is clear that banks will have to change the way they conduct their business in order to avoid losing customers.

Greater efficiency in processes: With the implementation of different cutting-edge technologies such as the electronic signature or the creation of banking applications for the smartphone, banks aim to improve the efficiency of their manual processes. In this way, they seek to reduce human errors in dealings with customers. According to the company, it is estimated that correcting this type of error is usually between three and four times more expensive than creating a digital process. Digitalization in the processes grants very important improvements, since all the data and signatures are captured correctly the first time.

Cost reduction: Another advantage of digitization in banks is cost savings, both for institutions and customers, through the use of new means of payment and cashless transactions. An example could be Challenger Banks, which are those Neobanks that have a banking license to offer savings products, financing and cards in the same way as a traditional bank, but with a 100% digital operation.

Better decisions based on data: With the increasing digitalization of banks, data becomes one of the most important assets when making dynamic decisions, based on large volumes of information available to institutions. Technologies such as Big Data allow banks to base their decisions or improve processes on the data available to their customers. In recent times, the arrival of large technology companies has been a great challenge for banks, as they have a greater amount of data and have a deep knowledge of the technological solutions they offer.

2.1.1.7 The Opportunities and Challenges of Financial Technology (Fintech)

“FinTech firms considered as a real rival for the traditional banking system”²⁷, which means that the FinTech companies are the main competitors for banking sector in specific and for the financial sector in general in many foreheads, because the

FinTech companies allow to adjust the traditional loans or services to be more personalized, and they offer a reduction in the use of intermediaries during providing the financial services. Indeed, the adoption of new technology (blockchain) shortens the transaction period, which means that significantly curtail the risk of counterparty and settlement risks⁴³. FinTech companies do not offer a lower interest rate than the banks³⁹. The scholar based almost entirely on the Financial Stability Board (FSB) and Basel committee on Banking Supervision (BCBS), epitomize the opportunities and threats of FinTech companies. Indeed, these studies suggest that FinTech companies open the door for more opportunities for clients, financial institutions or the financial sector, which are as following⁴³:

1. FinTech companies make the loans and equity instruments more accessible to new types of borrowers who are previously unable to obtain funding. For example, SMEs that use P2P or ECF.
2. FinTech companies have the ability to reach different locations that were previously unseen, which increase financial inclusion for the traditional financial services by serving the unserved part of society and for the new asset.
3. The technology of blockchain helps to improve the security, since it is effortless to attack the central database than attack the blockchain nodes.
4. RegTech provides banks with tools to make their processes of compliance and risk management more effective, at the same time it aids them to meet the regulatory requirements and address the changes in the regulatory environment with low cost.

5. The FinTech companies as new players in the financial sector cause to break up the financial services market and lessen the systematic risk, which means support the financial stability through increase the competition .
6. It is clear that the services provided by FinTech companies are faster than traditional services and less expensive.
7. The services of FinTech companies have a better experience with customers as they are more tailored to customers' needs, which will benefit customers and banks alike.
8. Beside of the opportunities, the threats posed by FinTech companies arising from the technology elements and the new financial sector practice are⁴³:
9. The market share of banks and their profit margin are under pressure because the FinTech companies try to attract substantial part of their customers.
10. The FinTech companies provide the customers an open space to move between different services fastly which leads to increase the volatility of customers deposit, so the customers in this case are not totally loyal to a specific bank.
11. The FinTech company service is platform-based and threats arise from both the possibility of a platform collapse and fraud of an application user.
12. FinTech companies typically use IT to deliver their services, which increase the reliance on IT between market players (banks, insurance companies, FinTech companies) and market infrastructure. Thus, this means that FinTech companies have a high IT risk because the experience or ability to control IT risk is limited and contemporary.
13. The FinTech company services have maximized the importance of sensitive issues such as anti-money laundering, countering the financing of terrorism

AML/CFT obligations and compliance requirements. These issues are hard to match due to the level of automation, less transparency (how transactions are executed and who has compliance responsibilities) and FinTech services have a lack in standardization.

14. The risk of protecting the data privacy and its compliance, because the increasing of outsourcing that is compatible with FinTech companies.
15. Cyber-risk, the increasing dependence on the application interface and cloud computing puts the system of financial institutions at risk.

2.1.1.8 Future Challenges for Fintechs

The main challenge seems to be to create a unique environment for banks and non-bank providers under an adequate regulation and supervision. The introduction of digital technology allows for direct matching between borrowers and investors. However, as discussed above, financing is more than this. Given the complexity of financial services, the control of risk after lending or investment have taken place, the trading of claims if investors need to access liquidity, the management of non-performing loans, and systemic importance of start-ups are aspect to be considered for scholars and regulatory authorities²⁸. Digitalization and Fintech represents an opportunity to reduce marginal costs and gain productivity. They may imply a large accumulation of intangible assets which would be difficult to value in capital markets, thus blurring industry boundaries, and creating significant privacy, regulatory and law enforcements. Furthermore, the Internet generates a single marketplace -where individuals can engage numerous economic activities- which might raise serious questions of federalism and international coordination²⁹. The lighter regulation of FinTech will have important implications for competition

between banks and new entrants such as payment systems and crowdfunding platforms. FinTech are encroaching on the traditional business of banks, despite banks are adapting to the new environment. However, new competitors are able to use ‘hard-information’ to erode the traditional bank customer relationship based on ‘soft-information’. FinTech competitors stay clear from asking a banking licence and try to skim profitable business from banks. Furthermore, whilst banks have been traditionally focused on business, FinTech are more focused on customers³⁰. An important question is to what extent existing banks can be at the forefront of new developments, for instance absorbing FinTech players and their innovations³¹. In the EU context, the fundamental question is whether FinTech can disrupt Europe’s financial system in a way that promotes the Capital Market Union, helps integrate financial system borders and increases financial stability and efficiency. Moreover, a further question is whether the disruption will follow at the European Union level or at the national level³².

2.1.1.9 Financial Technology Integration Process

In order to establish strategic partnerships with Financial technology (Fintech) to gain new customers, increase customer experience and enhance operational efficiency; Digital Transformation and Innovation Department, established “Fintech Integration Process” which consists seven steps. All these steps covers whole integration process from finding necessary Fintech to going live.

First contact

Digital Transformation and Innovation department receives Fintech integration demands from four different channels. In first channel, one of the other departments in bank comes for Fintech integration request. This request contains a specific Fintech

for integration. Fintech's business model and background is investigated by DTI for evaluation. Secondly, department comes with a specific problem which they believe can be solved by Fintech. High operational expenses and lack of expertise can drive departments to look for outsource solutions. DTI starts scouting to find the most suitable Fintech for the department. Thirdly, DTI members meet Fintechs in conferences and events. These kinds of organizations could be a good place to meet and recognize Fintechs and their business model. Fourthly, Fintechs come from Kuveyt Türk's API Market Platform where developers can create their own apps powered by Kuveyt Türk Financial Services through the APIs. In order to start using APIs, Fintech needs permission of the DTI. In summary four channels listed as follows;

- i. Department brings specific Fintech
- ii. Department brings problem can be solved by Fintech
- iii. Events or conferences
- iv. API Platform

Fintech Scouting and Researching

DTI starts scouting necessary Fintechs in both global markets and local market. This process is the same for all Fintech first contact channels, due to the possibility of alternative offerings of other Fintechs. There is a possibility that some other Fintechs may provide better solutions. Scouting process starts with basic desktop search by using google. News, media information and blogs were scanned to find basic information about Fintech and its alternatives. After that, in order to deep dive, salient Fintechs are searched in Fintech databases like Startup watch and crunchbase.

Information like owner, estimated valuation, total funding etc. are collected for the pre-assessment. This information helps us to shortlist Fintechs on hand.

Fintech Introduction

DTI establishes a meeting by inviting relevant departments and fintech. Some fintechs attend this meeting physically and some prefer to attend by using teleconference. Fintech makes a brief introduction of team members, their background, business model and solution. Demonstration for their solution is presented. There are some essential questions prepared by DTI to ask on fintech. After the meeting, for few minutes, DTI and departments make an evaluation of the meeting. If majority of the attendees satisfied with fintech, fintech goes with Business Committee. Meeting record and presentation of the fintech is send to Business Committee members to inform them.

Business Evaluation Committee

At a later date, Fintech is invited again for Business Committee. Because it is accepted as strategic decision, only the Vice Presidents of the relevant departments are invited. Meeting starts by brief introduction given by DTI to the committee members and reasons of bringing Fintech in front of the committee explained. Later, as in previous meeting, Fintech makes a presentation about their business model and possible benefits to Kuveyt Türk. It is followed by Q&A session where department Vice Presidents ask direct questions to understand Fintech's business model more clearly. At the end of meeting, after Fintech leaves, members of the committee stay to evaluate the Fintech. All members express opinions and drawbacks. The meeting ends by voting and majority of the votes decide whether to work with this Fintech or not. When Fintech pass the Business Committee successfully, a standard set of questions

send to Fintech. This form includes technical questions, legal questions and compliance questions prepared by relevant departments. It is expected to receive answers from Fintech before coming to Technical Evaluation Meeting. Main purpose of this form is to prepare members of the Technical Evaluation Meetings for forthcoming meeting.

Technical Evaluation Meeting

Fintechs that pass the Business Committee meeting successfully continue with Technical Evaluation Meeting. In this meeting, Fintech and integration process is evaluated by IT, compliance and legal perspectives. Therefore, committee members are chosen from IT, compliance and legal departments. Members can be changed depending on the Fintech's business model and solution. Meeting starts with brief introduction from Fintech and continues with a Q&A session. Committee members raise questions related to their profession. Fintech answers and asks questions about integration. At the end, committee members and fintech establish mutual understanding about technical details of integration. Main reason of this meeting is to analyse integration points and prevent possible problems that could occur in the future. After meeting ends, committee members stay in meeting for a while to discuss technical details. All the members state their opinions and concerns. At the end of this discussion, committee members decide either Fintech is suitable for integration or not. Non-suitable Fintechs are contacted to make necessary changes for integration.

Proof of Concept (PoC)

Before entering Proof of Concept Process, DTI assembles meeting to inform senior management about Fintechs who pass technical evaluation. Senior management

evaluates Fintechs for their value proposition. This meeting has two purposes, first one is to inform senior management and second one is to receive an opinion. Senior management is the ultimate decision maker in Fintech integration process. After senior management evaluation, PoC stage starts with the feasibility study. All aspects of the integration is documented and roadmap of the integration determined. Relevant departments make necessary developments and changes for integration addressed by the roadmap. Because we are aiming to establish all Fintech integrations by using API, we expect Fintech to register our API platform on web. Registration gives us to recognize Fintech in our API platform to open our APIs for PoC process. In cases where API platform could not provide necessary APIs for the Fintech, IT teams start development process for these specific APIs.

Going Live

After completing PoC process successfully, Fintech integration goes live. Integration can be used by all stakeholders from employees to customers. Up to now, forty-one Fintechs from different backgrounds were interviewed by the DTI. Twelve of them (approximately 30%) passed Business Evaluation Committee. Eight of them passed Technical Evaluation Meeting (around 20%) and four of them get approval from Senior Management. Two of them entered PoC process and finally, only one of them is live. In total, only 2% of the Fintechs are successfully integrated to banking services. Most of the elimination happens because of immature Fintechs. As a bank policy, we are not making integration with startup Fintechs. We prefer Fintechs who have a certain number of customers with scale up structure.

2.1.1.10 The Growth Drivers of the Fintech in Nigeria

There has been significant growth in the Fintech sector since 2010. A youthful population, increasing smartphone penetration, and a focused regulatory drive to increase financial inclusion and cashless payments combined to create the perfect recipe for a thriving fintech sector³³. There are over 200 standalone Fintech companies, excluding the banks and telcos, offering fintech solutions. Successful Fintech companies in the industry include Paga, Cellulant, Interswitch, Remitta, Etranzact, Flutterwave, Paystack, Piggybank, Onafi, Fetwallet, CowryWise, OPay, et al. They offer a wide range of enhanced financial services, but with a central focus on products and services that are designed to meet the customers need, can be deployed quickly, are easy to use. The EFINA Fintech Report of 2018 states that 80% of the FinTech market comprises Digital Retail Payment (36%), Lending (25%), and Payment Infrastructure (19%) firms³⁴. The products developed by these firms focus on simple solutions like retail payment processing, fund transfers, utility payments, P2P, and B2P lending. There are four growth drivers identified and discussed in this paper. While they are not exhaustive, empirical data collected from the interviews with current Fintech industry leaders support the reasoning that these are the drivers that have the most significant impact on growth.

Regulatory Support

A critical driver of the growth of Fintech in Nigeria remains the sustained push by regulatory operators towards achieving financial inclusion. The Nigerian government's drive to ensure that all Nigerians are formally included in the monetary economy is the most significant growth driver. The Central Bank of Nigeria has provided operating guidelines, clear policy statements, and an enabling environment. Regulation and support in the form of access to grants, partnerships with government-funded development agencies have further lowered the barriers to entry

into the Fintech sector. Favorable policies like the operational guidance of implementing a "Shared Agent Network and the Agent Aggregator model" allow operators to lower costs through shared infrastructure. A financial inclusion target of 80% was set by the CBN to be performed in 2020³⁵. The target has led to further policy developments at the local and state levels enabling Fintech companies involved in financial inclusion. The government recognized the role Fintech plays in facilitating financial services, and it creates a conducive environment for Fintech to thrive.

Changing Customer Behavior

Increased internet penetration and smartphone use have significantly changed consumer behavior, making convenience and accessibility a priority. Nigeria has the largest mobile market in Africa, with 162 million mobile subscribers in 2017. It represents an 84% penetration rate, up sharply from 53% in the previous year. Changing customer expectations and a corresponding demand for digital services have called for innovative solutions from traditional players and Fintechs. Customers expect and demand a better experience and service. This expectation is in part driven by exposure to the freemium apps on the apple and google app stores on apple and android devices. The surge in e-commerce activity in Nigeria from online shopping vendors like Jumia and Konga, food delivery apps, and ride-sharing apps also points to a change in customer habits.

Lower Cost of Deploying Technology

Fintech companies have no legacy constraints, and as a result, are nimble and positioned to take advantage of opportunities arising amid the technological evolution.

The fast pace of technological developments of analyzing data and the new mobile and online channels opened new possibilities to those that were ready to pivot – especially easy as they didn't have legacy systems. Cloud computing, cloud data hosting, and storage have further driven technology cost down. The average price of storage has declined by 31% per annum over the last ten years. Fintech operators no longer have to host expensive data centers, which raises operating costs significantly.

Increased Access to Capital

FinTech investment in Nigeria is on the rise as investors are increasingly attracted to the industry's potential and the opportunity to tap into it. Nigeria has experienced an increase in investment activity over the last few years. Fourteen funding deals were reported as of September 2016 compared to just two in 2010³⁶. Among the most notable investments that concluded recently are in 2019, Interswitch confirmed that VISA acquired a minority stake for USD 200 million, valuing the company at USD 1 billion. In 2020, Paystack was acquired by Stripe in a deal worth about USD 200 million. Flutterwave also secured USD 170 million in a 2021 Series C round. These three Fintech companies demonstrate the attractiveness of Nigerian Fintech companies to global funding. With more accessible access to funding and capital, Fintech entrepreneurs can quickly start new ventures, innovate new products and pivot their business models. Capital funding for Fintech is accessed as seed capital from angel investors and accelerators, venture capital funds, and corporate venture vehicles.

2.1.2 Bank Performance

2.1.2.1 Determinants of Performance of Commercial Banks

The determinants of bank performance are classified into two; bank specific (also internal) factors and external (macroeconomic) factors⁵². The internal factors are specific to a particular bank and do affect the bank's performance individually. They are influenced by management and board internal decisions. They include; Capital adequacy, Asset quality, Management efficiency and Liquidity Management (CAMEL). This framework (CAMEL) is frequently applied by scholars to proxy the bank specific factors⁵⁵. The external factors are beyond the control of individual banks, they are sector and/or industry-wide or country-wide factors and are beyond the control of banks internally, though they affect the profitability of banks. They include, inflation, political instability, Interest rates among others.

Capital Adequacy

Capital adequacy refers to the sufficiency of the amount of equity to absorb any shocks Capital is the amount of owner's equity fund available to support the bank's business and act as a buffer in case of adverse situation³⁷. Banks capital creates liquidity for the bank since customer deposits are fragile and prone to bank runs. Moreover, larger equity capital for the banks reduces chances of financial distress. However, it is not without drawbacks that it induces weak demand for liability, the cheapest form of fund capital adequacy is the level of capital required by the banks to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential losses and protect the bank's debtors.

Capital adequacy is judged on the basis of CAR (Capital Adequacy Ratio)⁵⁵. Capital adequacy ratio illustrates the internal strengths for a bank to survive during loss crisis. It also has a direct effect on the profitability of banks since it determines the expansion ability to risky but profitable portfolios.

Asset Quality

The bank's asset is another bank specific variable that affects the profitability of a bank. The bank asset includes among others loans portfolio, current asset, fixed asset, and other investments. Asset quality often improves with age and size of a bank⁶⁶. Loans are the major assets that generate income to banks. The quality of a loan portfolio therefore highly determines the profitability of a bank. Good quality Assets reduces losses relating to NPLs, considering the fact that, the highest risk facing banks is the losses arising from delinquent loans⁵⁵. Thus, nonperforming loan ratios are the best proxies for asset quality. Different types of financial ratios used to study the performances of banks by different scholars. It is the major concern of all commercial banks to keep the amount of nonperforming loans to low level. This is so because high nonperforming loan affects the profitability of the bank. Thus, low nonperforming loans to total loans shows that the good health of the portfolio a bank. The lower the ratio the better the bank performing.

Management Efficiency

Efficiency is one of the key internal factors that determine profitability of an entity. It is represented by different financial ratios such as loan growth rate, total asset growth, and earnings growth rate. Operational efficiency is the backbone of management efficiency. Good management of operating expenses plays a major role in the strength of income statement. Performance of management is more often expressed in qualitative representations, through subjective assessment of management systems, control systems, organizational discipline, quality of staff, and others.

One of this ratios used to measure management quality is operating profit to income ratio. The higher the operating profits to total income (revenue) the more the efficient

management is in terms of operational efficiency and income generation. The other important ratio is that proxy management quality is expense to asset ratio. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability⁶⁶.

Liquidity Management

Liquidity is an additional internal factor that determines a bank's performance level. It refers to the capability of a bank to fulfil its short term obligations, mainly of depositors. Sufficient liquidity is positively correlated to banks' profitability. Some of the ratios that can explain liquidity strength are; customer deposit to total assets ratio and total loans to customer deposits. In Kenya, several banks have failed and others put under receivership over years. From Continental Bank, Trade Bank and Pan African Bank, to most recent cases of Dubai Bank, Imperial bank and Chase bank, Insider lending and director's imprudent appropriation of loans and other funds have led to their failure⁵⁵.

2.1.2.2 Performance Measurement

The selection of performance measurements is one of the most critical challenges for organizations. Performance measurement systems play a vital role in the improvement of strategic plans, the achievement of organizational targets estimation and compensation. The final choice of performance measurement system mostly depends on the perception of the most essential factors of successful performance. According to³⁸, he argue that performance is a key factor in ensuring the successful implementation of a company's strategy and proficiency in pursuit of its goals, and in ensuring the success of a stage business organization in both the short- and the long

term. In the banking sector, the quality of administration data, installation of modern technologies, the innovation of banking products and services, competitive cost structure, risk management, extensive information system, prominence of strategic planning and equity endowment are the most critical determinants for productive and successful performance³⁹.

Performance measurement and accounting systems are used to understand past behaviour, as well as for accurate decision-making regarding current issues and planning and forecasting the future. Both the metrics design and the use of performance measurement must be executed carefully to be beneficial. Since banks are for-profit organizations, their performance measured mostly with financial indicators. To enhance the internal processes, to conduct the decided strategy and to achieve the mission and vision statement companies need to see a big picture and have a complete understanding of the whole performance of the company. It is also worth noting that in the modern world, with the technology development enabling a collection of all sort of data, the quality and relevance of the performance metrics play a more important role than the quantity of them⁴⁰.

Financial Performance Measures

Financial ratio analysis is considered as a decent method to obtain the description of a company's overall financial condition. For the company's management, the financial ratio analysis is beneficial as an internal analysis in order to check the obtained financial achievement that it can be used for the forthcoming company planning⁴¹. It was argued that generally argues that the financial performance of a firm provides an insight into the asset utilization and the company's ability to generate revenue from its operations⁴². In other words, financial performance is a determination of the degree of the financial health of an organization over a certain period of time. Operating

performance for a concrete time period is measured by profitability ratios. Profitability ratios are used to determine an organization's capability in gaining profits.

Profitability

Profitability is the measure of outcomes in meeting of an organization goals. Others have seen it as a measures of how an organization uses it resources to generate income⁴³. To this end, financial performance is the expression of the revenues with respect to the resources. Financial performance may involve such measures as profits after tax and market share and customer satisfaction. It was noted by scholars that notes that banking services provided through technology ensures that banks saves on the floor for banking halls and saves on salaries. Further, banking services provided with the aid of technology are available both within and outside banking hours. As a result of increased transactions there may be increase in the profits of the banks while keeping the costs at minimum⁴⁴. Positive profitability is one of the principal financial aims for the banks, as for all other for-profit organizations. According to⁴⁵, profitability to be the one of key indicators in attracting investors because it shows the degree of the bank's management success and demonstrates the level of potential profitability over years.

Turnover

Turnover is another measure of bank performance. This refers to the amount of revenue deposit money banks generated over a given period of time. Financial periods can include weeks and months, but revenue reports are usually reported every three months, known as quarterly, or at the end of the bank's financial year⁴⁶. While turnover usually refers to the amount of money brought into the bank, it can also refer

to staff, customer and asset turnovers. There are four main ways for a bank to generate income. These methods of bank turnover are interest, fees, investments and sales. Interest is raised off loans and mortgages⁴⁷.

Strong Cash Flow

A statement of cash flow reports cash receipts and payments classified according to the major activities: operating, investing and financing during the period. Operating cash flow is calculated by taking cash received from sales and subtracting operating expenses that were paid in cash for the period⁴⁸. The cash flow statement is important because it is used to measure the cash position of the business, that is, the inflow and outflow of cash and cash equivalents in the business for an accounting year, and it also helps the business to know the availability of cash in their business. This reiterates a strong synergy for bank performance through fund sourcing and application thus revealing the importance of financing and cash optimization.

Returns to Equity

Return on equity is one of the most widely used profitability ratios in the banking industry. Returns on equity has been used by the banking industry in the allocation of capital within and across divisions. The study observes that returns on equity is a central performance measure in the banking and the choice of the ratio is as a result of risk management approach to banking⁴⁹. This approach the authors argue, places emphasis on the regulation of bank capital due to a belief in the banking industry that equity should be minimized to reduce capital costs⁵⁰. Return on equity is used to measure earnings from past investments. It is an important indicator for shareholders

as it makes the profitability of their investments more transparent¹¹⁸. Similarly, the ratio reflects a company's ability to find profitable opportunities to invest in¹¹⁷.

Gross Profit Margin (GPM)

The GPM ratio is an indicator of how a company's productions are controlled, as opposed to costs on distribution and costs on administration⁵¹. The key factors affecting change in GPM percentage include volume of sales, costs and prices because they constitute gross profit that is an indicator used in the formula of GPM⁵². However, a company may plan its GPM because the price, various promotions, offers are planned by itself and the costs are known.

Net Profit Margin (NPM)

NPM is an efficiency indicator, which reveals the proficiency level of cost control when revenue is generated from sales. A high NPM allows a company to sustain and provide owners with sufficient return in case of rising costs in production, fall in product or service demand or decline of price. To put it simply, the ratio shows the reflection of the profitability of the company in the form of net sales percentage¹¹⁷.

Return on Assets (ROA)

ROA displays the overall profitability of total assets of a company. This metric is one of the most efficient tools of company's performance measurement, as it broadly and holistically assesses key indicators⁵³. ROA reflects the results of the decision-making process as it increases only when it is used in value-bringing activities meaning that any artificial improvement of net profit will not lead to considerable changes because net profit is only a proportion of assets.

Asset Utilization Ratio

Asset utilization ratio determines the total revenue earned for every dollar of assets a company owns⁵⁴. It shows the loss in revenue per unit of investment that may be attributable to inefficient use of assets in companies⁵⁵. This ratio is frequently used to compare a company's efficiency over time..

Non-Financial Performance Measures

Financial performance measures are effective in short-term performance measurement. However, they do not reveal the whole picture. Information based on financial activities may interfere with the development of products and services, strategically important goals, competitive advantage. Nonetheless, the intangible factors affecting a bank's performance should be taken into consideration as the ones of the utmost importance. Intangible factors drive a firm's performance in the long run. On the whole, there are 5 key indicators for non-financial performance:

- i. customer loyalty,
- ii. competitive advantage,
- iii. attracting new customers,
- iv. perceived image,
- v. reputation

Other non-financial performance factors include market share, customer satisfaction, efficiency and productivity, product quality, and employee satisfaction. Employees' motivation and commitment plays a significant role in a positive change in performance. Motivated and committed employees are more likely to build

relationships with customers where trust, and/or satisfaction prevail, increasing a company's revenue. The stronger relationship makes more revenues from customers because the clients either come for the company's services again or use more services offered⁵⁶. Marie⁵⁷ refers to the study which demonstrates that having satisfied both internal stakeholders and clients allows increasing profitability. Customer-centricity and care of employees lead to a better future financial position. Although the effect of non-financial performance determinants is not immediate, it may display long term improvements. Customer satisfaction is partly determined by the quality of services provided to them. The quality may be expressed in the bank employees' ability to maintain services carefully, accurately and as promised and, moreover, to have needed knowledge about the service (loans, mortgages). Willingness to help customers when needed also plays an important role in affecting the levels of customer satisfaction¹²⁷. In general, the overall competence of bank employees (expressed in behaviour and education) influences the non-financial performance of the bank. Additionally, the number of services enhances a customer perception regarding the service quality as it enhances the interaction between the bank and customer.

The usage of non-financial performance measures is reported to have such consequences as:

- i. positive effect on long-term profit,
- ii. development of a wider product mix,
- iii. increased capital expenditure,
- iv. acquisition of more advanced technology, and
- v. more effective management decision-making.

Competition in any industry encourages companies to improve their services, reduce costs and come up with new solutions. Therefore, it encourages banks to implement the measuring of their non-financial performance. Nowadays, technological integration affects a lot in the banking industry by reshaping existing services, enhancing customer experience and diversifying banks' service set⁵⁸.

2.1.2.3 Fintech Integration and Bank Performance

The reality that Fintech and the banks are targeting the same market puts both sectors at knuckle-head of a kind globally. The Fintech reality is the root of competition brewing in the banking industry, this is boldly expressed as Fintech start-ups and other non-financial industry players are gaining access into the financial industry by introducing new products that has the potential of adding convenience, safety, and ease in offering banking or financial services. The instant contribution of Fintech transition started from the emergence of technology disruptions into the financial industry through the competing innovative financial products and services being offered by the Fintech start-ups, causing the players in the banking sector to re-assess their business strategies and models.

The integration of Fintech in the financial industry is rapidly changing the landscape and the model of banking services and products, by adopting a more customer-centric financial solutions and products at lower costs. A vivid example is the introduction of different and seamless payment methods which customers are now open to diverse options that guarantee convenience and low service rates - some of these include; Paga, OPay, Cellulant, and Interswitch's QuickTeller. These among other platforms

are competing to enable payments for bills, airtime recharge, fund transfers, online purchases and other payments activities that customers can now enjoy across various platforms like mobile banking applications⁶. Also, the use of the Unstructured Supplementary Service Data (USSD) enables any mobile phone to have access to banking services and execute payment transactions. One evident attribute of the Fintech's contribution to the financial industry is the reawakening to digital transformation integration among the Nigerian banks.

The new dispensation is experiencing the emergence of various digital solutions which are being offered by the banks more than ever. Aside from the back-office where process transformation projects of various kinds are taking place to reshape the banking business models in conformity to the market demand, the front-end of banking is rigorously transforming to offer a cross-platform excellent customer experience. Bank customers with smart-phones and mobile devices now carry their bank mobile applications each opening access to various financial services. Nevertheless, Nigerian banks are getting more digital than ever as a result of the Fintech revolution and integration of fintech into banking. Fintech offerings are gradually expanding from payment to credit, assets management, and other sectors⁶.

Financial Technology (Fintech) has always been associated with Digital innovation and Financial Technology Products (FTPs) (ATM, VTM, and mobile banking) that promote inclusive financial services and provide a new impetus to the banking sector to improve its performance in several ways. For example, to improve the relationship with customers' satisfaction and expectation, staff service quality and work efficiency, and profitability. Performance is important to all companies, and there are two directions to measure organizational performance: one is financial performance and the other one is nonfinancial performance. Scholars has examined the implications for

banks in the use of FTPs and how it affects their profitability using a wide range of financial variables traditionally considered in the banking literature (e.g., operational performance, risk profile, and leverage, net interest margin, ROE and ROA). Non-financial performance is related to corporate social responsibility, customer satisfaction and expectation, service quality, and work efficiency⁵⁹.

2.1.2.4 Financial Technology Integration on Bank Performance

The way businesses operate nowadays and deliver their products to the customers are changed by the technology in almost all of the sectors. These changes of business operations have not passed by the financial sector, and especially the commercial banks. The financial and economic crisis of 2008, the enhanced regulation, changes in consumer behaviour and social outlook, new global economic and social trends are the main reasons for the considerable and consequential change in the financial segment. However, the most influential catalyst behind the technological development of the sector is digital transformation. Financial Technology (hereafter FinTech) is a reasonably recent phenomenon and FinTech companies have not yet taken the solid positions in the financial services sector. However, still, the traditional banking industry is experiencing changes due to the rapid development and spreading of technology⁶⁰.

The new catchword 'FinTech' is integrating into the processes managed by the commercial banks with the progressing corporate and customer focus. It creates the need for the financial institutions to keep pace with both the technological advancements and upgraded user experience across the board. The FinTech

companies, which are emerging and entering the market, are increasing the competitiveness within the sector. FinTech is changing the approach of performing the traditional financial operations such as payments, transactions, borrowing, lending and investing⁶¹. The development of FinTech affects the commercial banks both internally, because they are starting to integrate financial technologies into their operations, and externally, through the appearance of new FinTech companies, which provide services that traditional banks do less efficiently or do not do at all, as the competitors for traditional banks⁶². FinTech companies will not replace banks in most of their key functions. In most cases, banks are well placed to adopt technological innovations and do the old things in the new way themselves.

Reports show that up to 77% of financial institutions will intensify internal efforts to innovate, with a lot of businesses adopting the disruptive nature of FinTech⁶³. In a longer perspective, the scarcity of a digital strategy is seen as a factor that may diminish the banks' performance in the provision of assorted financial services⁶⁴. FinTech has beyond reasonable doubt affected the financial performance of banks by increasing their efficiency and effectiveness⁶⁵. Although it is widely accepted that FinTech resources contribute to performance and future growth potential of the commercial banks, there is a relative shortage of the research on that topic. The impact of FinTech on the performance of commercial banks remains rather unclear. Furthermore, emergence of FinTech raises the question of the transformation of performance measurement in this new era of operations. Measuring the performance of banks is hard and the performance indicators differ strongly in quality. For the firms, the choice of the right measurements is a demanding and challenging task during the performance measurement systems development process. During the definition of the performance dimension and selection of performance measures, a

sufficient number of affecting factors should be taken into account. These factors include the responsibilities to different interest groups like stakeholders, customers, employees, suppliers, and society or technological development. Additionally, the organization has to pick out the things they want to emphasize in its performance measurement system⁶⁶. A choice of the right combination of appropriate indicators is crucial for the banks in improving their understanding of the variables which have an impact on the performance, as they contain sufficient information on the correlation of these variables with the performance.

In the era of FinTech, it becomes rather unclear how we should measure banks' performance. Traditional performance measures can give misleading signals for continuous improvement and innovation—activities today's competitive environment demands. Thus, there is an assumption that the performance measures applied by banks are transforming in the light of FinTech. Nowadays, FinTech is quickly transforming and impacting the financial services industry, in terms of operations, regulation, customer experience and a lot of other activities. FinTech improves the health of traditional banking institutions by developing performance and increasing profits. Collaboration between banks and FinTech start-ups can benefit both parties. FinTech helps the formal banking sector to improve customer retention, as FinTech firms have a lot of experience in crunching data and extrapolating outcomes that banking sector did not have before. From such an analysis of data, a bank can better understand how to better serve its customers. FinTech also provides the ability to provide each customer with tailor-made products. FinTechs' granular micro-level approach to each customer will enable a bank to offer better products to its customers⁶⁷.

2.1.2.5 Financial Technology (Fintech) and Efficiency

The use of new technology has important implications for the welfare of market participants that may lead to lower financial intermediation costs in lending, payment systems, financial advising, and insurance, along with better products for consumers. Through online origination technology, Fintech firms offer more convenience to their borrowers. FinTech can effectively screen candidate borrowers via statistical models based on big data, thereby overcoming the information asymmetries that are at the root of the banking business. Importantly, information may be a substitute for collateral; therefore, Fintech-based entities may be able to provide loans to firms and households without posting collateral (often, real estate). Furthermore, Fintech entities may be able to approve loans immediately.

FinTech lenders process mortgage applications 20% faster than other lenders with no higher defaults and adjust supply more elastically than do other lenders in response to exogenous mortgage demand shocks. To predict consumer default, easily accessible variables from the digital footprint (such as accessing a website) are as good or better than the information content of credit bureau scores ⁶⁸. It reduces the need for personnel (e.g. loan officers and tellers) and for an extended branch network (since customers use their mobile phones for banking). Financial Technology (Fintech) allows much more targeted price discrimination. For example, Fintech lenders employ interest rate-setting models for mortgages with superior performance compared with those used by non-FinTech institutions, since more of the variation in prepayment outcomes across borrowers can be attributed to interest rates in the case of FinTech loans.

Furthermore, the convenience of online origination allows FinTech firms to charge higher rates, especially to low-risk borrowers, who are more likely to be less price sensitive and more time sensitive. Moreover, refinances of mortgages are 7% to 10%

more likely to originate from FinTech firms compared with traditional banks⁶⁹. Financial Technology (Fintech) firms can increase financial inclusion by opening the door to financial services for less developed countries as well as segments of the population. Finally, FinTech firms have no legacy technologies to deal with and are characterised by a culture of efficient operational design, which, along with their often-smaller size in the case of FinTech firms, allows them higher innovating capacity than traditional entities.

Cloud computing is another source of efficiency for new entrants. The adoption of cloud computing by financial incumbents has been slower than in other sectors, which can be attributed to high transition costs, security concerns, and regulatory compliance complexities. An advantage emerges for FinTech companies, which can benefit from designing systems in the cloud from scratch instead of having to work on top of legacy IT systems. FinTech firms have changed the structure, provision, and consumption of financial services, but have not managed to acquire a dominant position in the market. For example, FinTech firms have not yet made important inroads in corporate lending to medium-large and large firms. Despite its continuous growth, FinTech credit still represents a small share of total credit, even in China (where it has the greatest share of total credit activity), where it accounted for only 3% of total credit outstanding to the nonbank sector in 2017.

FinTech credit tends to be more important in countries with higher income per capita and a less competitive banking system^{70, 29}. Although they initially aimed to replace traditional banks as leaders in the market, many FinTech firms have settled on forming partnerships with incumbents when faced with difficulties in increasing scale and customer numbers. Even though they have successfully led innovation efforts and raised customer expectations via innovations such as rapid loan adjudication,

customers' willingness to switch away from incumbents has not met expectations, as the costs of switching and consumer inertia are high and incumbents have been adapting to FinTech firms' innovations⁷¹.

Overall, the fundamental advantage of FinTech firms is that they operate as leaner businesses, benefiting from state-of-the-art technologies with no rigid legacy systems so as to allow a fast and flexible response to changing consumer preferences. FinTech is flexible enough to be able to work with legacy technologies. It allows the provision of a satisfactory mobile and digitally focused customer experience focusing on the banking activities with higher returns on equity (ROE) such as payments, advice, and distribution of financial products. At the same time, FinTech firms possess a regulatory advantage in that they are funded with much more equity than traditional banks. Last but not least, FinTech companies are able to attract talent from young, bright people⁷². In contrast, the absence of an installed, loyal customer base; limited access to soft information about potential customers; a comparative lack of reputation and brand recognition; and a relatively high cost of capital are challenges that FinTech firms must try to overcome.

2.1.2.6 Financial Technology (Fintech) Use-Cases

Payments and Remittances

Payments are the largest segment of FinTech in Africa, with mobile money or P2P transfers being the most common area of payments. Digital financial services through mobile phone technology have become one of the primary ways to accelerate financial inclusion for the unbanked and under-banked in Africa. According to

Ericsson, out of the 2 billion adults around the world that do not have a bank account today, 1.7 billion have a mobile phone. Indeed, mobile phones are widely available and used in developing countries, with 89 active subscriptions per 100 people⁷³. The scale of mobile money in Africa is impressive: more than 40% of the adult population in Kenya, Tanzania, Zimbabwe, Ghana, Uganda, Gabon, and Namibia use mobile money on an active basis. In Sub-Saharan Africa, there were 277 million registered accounts in December 2016, which is more than the total number of bank accounts in the region. In Africa, 66% of the combined adult population of Kenya, Rwanda, Tanzania and Uganda use mobile money on an active basis⁷⁴.

International remittances are one of the largest sources of external financing in Africa, and often serve as a lifeline to the poor. Multilateral organisations, NGOs, and governments widely recognise that remittances can drive higher financial inclusion. The UN's Sustainable Development Goals (SDGs), as well as the G20 Global Partnership for financial inclusion, recognise the important role that remittances play in mobilising financial resources across Africa. In Africa, the flow of international remittances as of 2017 was USD 585 billion, which has more than doubled over the past 10 years. Approximately 25 developing countries receive 10% or more of their GDP from remittances⁷⁵. The study also highlights that a total of 19 African countries rely on remittances for 3% or more of their GDP, six countries for 10% or more, and Liberia for an incredible 31.2% of its GDP. An estimated 300 million people in Africa now rely directly on remittances. Global remittances to developing countries increased by 51% between 2007 and 2016 to reach almost half a trillion dollars a year, although the number of migrant workers from the countries in question rose by only 28% over the same period. However, one of the biggest issues with remittances is the high prices, which is mainly due to fragmented and inefficient payment systems and

lack of liquidity. Sending money to Southern Africa, for instance, costs an average of 14.6% of the value of the money sent – the highest rate in the world. At the same time, the cost of transferring money via established money transfer operators is enormous. The average cost to send remittances from a money transfer organisation (MTO) such as Western Union, or a bank in Sub-Saharan Africa, is approximately 7.3% of the transaction amount. The use of digital methods for international remittances can significantly lower the transaction costs, help smooth consumption patterns, and increase the recipient's household income. International remittances can also serve as a strong driver of women's financial inclusion and economic empowerment.

Lending and Credit Risk Assessment

Lending

One of the most significant effects of mobile phone technology has been the ability to provide loans to the unbanked and MSMEs that did not have access to credit in the past. As of 2016, there were 52 mobile money-enabled credit companies, up from seven companies in 2011⁷⁶. Over the past decade, financial inclusion in Africa has experienced remarkable growth. The 2017 Global Findex database shows that 43% of adults in Sub Saharan Africa had accounts in financial institutions or mobile money. However, about 0.8 billion adults are still unbanked and do not have an account either at a financial institution or with a mobile money provider. Poor people also comprise a disproportionate share of the unbanked. In fact, 40% of adults from poor households in Sub Saharan Africa remain financially excluded. Moreover, gender gaps in financial inclusion in Sub Saharan Africa are unchanged at 11 percentage points. The past decade has seen a significant number of low- and middle income (LMI) population and micro, small, and medium enterprises (MSMEs) adopt and use digital financial services via their mobile phones and cards. Digital credit in particular, in the

recent years, has emerged as a new service offering at the digital finance frontier, drawing attention from all players across the digital financial services ecosystem. Defined alongside the three key attributes of instant, automated, and remote, digital credit provides borrowers quick and ready access to short-term credit and enables financial service providers to reach the mass-market at scale. FinTechs are implementing digital credit products that use alternative sources of data to determine creditworthiness and provide loans to populations that have never had access to them before. Digital credit provides users with instantaneous loan approval and disbursement that helps users to meet their short-term goals.

Credit Risk Assessment

The Internet, computers, mobile devices such as phones and tablets, and Internet of Things (IoT) devices generate a staggering volume of digital data. All this data has powerful implications for driving higher financial inclusion, specifically by providing access to loans to the low-income households, MSMEs, and the under-banked. New companies have emerged that use varied forms and combinations of non-traditional data – mobile call data records, user location and movement patterns, psychometric data, bill payments, Internet browsing patterns, and social media behaviour. These companies analyse the data with AI, ML, and Big Data analytics algorithms to develop new ways to assess the creditworthiness of the consumers and the MSMEs. Since the cost of data storage and computing power has significantly declined and data analytics has become more mainstream, these new companies use their alternative credit assessment methods to offer convenient, quicker and lower cost unsecured loans to the unbanked, the under-banked, and MSMEs when compared to traditional banks⁷⁷.

Savings and Deposits

The mobile phone has become a powerful enabler to provide access to savings to the poor, whether it is through storing cash through a mobile money account or through a dedicated savings account linked to mobile money. The main benefits of using digital tools for savings over informal methods are increased liquidity – since funds can be available immediately, higher transparency, lower costs, and a significantly lower risk of either theft or asset depreciation or both. The World Savings Bank Institute (WSBI) (2018) affirms that the poor, who make up most of the low-income customers, engage in savings. Data suggest that they move money through time, across geographical distances, and around their social and business networks just like the other economic strata. Low-income customers meet their needs by using financial services, both formal and informal, through what is usually a complicated maze of portfolios.

Users of formal financial services have a mix of product options from fully liquid, semi-liquid, fixed short-term, and accumulating long-term accounts. For product design considerations, however, low-income savers often seek accounts that offer high levels of liquidity and are willing to sacrifice returns for open access to their funds. Some, however, graduate from low-balance, low-return products to larger, higher-return products as their income and assets grow. The emergence of digital micro-savings is a great opportunity to improve the access to savings.

Banks and traditional financial institutions in Africa do not focus on the low-income populations. Some banks have started focusing on the low-income clients by developing savings products for them. On account of lack of a strategic approach in designing products suited to the low-income clients, while a number of people opened accounts, the account usage was significantly lower than expected. Also, the other challenges include a need to enhance marketing and sales, brand promotion, motivating staff members, and refining products and services to ensure active account

usage. The microfinance industry in Africa has only been contributing partially to the achievement of full financial inclusion of the poor urban and rural households and individuals. This is because most microfinance institutions operate as credit-only institutions. In addition, these institutions lack the technical expertise and capacity to offer customer-centric savings products and services to the low income segment⁷⁸.

Digital identity

As part of on-boarding processes, most financial institutions perform a Know Your Customer (KYC) check, which requires the prospective borrower to provide proof of identity. While this requirement may be easy for customers in developed economies, it is a significant barrier for the poor in developing economies, especially across Africa. Currently, there are approximately 1.5 billion people in the world that do not have an identity document. A lack of documentation excludes them from not only accessing formal financial products and services but also basic needs such as healthcare, education, and social welfare programmes. Digital identity refers to providing a proof of identity through electronic means. These include numeric identification that is stored electronically, biometrics in the form of a fingerprint, iris scans stored digitally, and facial recognition.

A digital identity can be more efficient than a traditional identification system since it may be able to process the identification check in a faster and more efficient manner than traditional manual checks, which can enable higher financial inclusion. In Africa, digital identity systems have helped eliminate fraud and corruption and save money for governments by reducing leakages. For example, Nigeria implemented the Integrated Personnel and Payroll Information System in 2011, which biometrically enrolled civil servants and government workers. The system eliminated 43,000 ‘ghost workers’ and saved the government approximately USD 74 million in its first phase⁷⁹.

Technologies like blockchain can also find use in creating digital identity for individuals. Millions of people in Africa lack a legal identity, which precludes them from receiving social benefits and accessing formal financial products. By developing a digital identity using blockchain technology, a permanent, immutable record can be created, which can serve as the main way to identify an individual. The identity data remains under the ownership of the individual. The individual can give permissions on who can see what data for what purpose and for how long. A wide variety of companies, both start-ups and large technology firms, are looking at ways to develop digital identity systems based on blockchain.

Online Deposits

Technology has facilitated the growth of digital deposits, so banks no longer need to rely as heavily on branches to accumulate deposits. This has leveled the playing field, enabling a host of digital players to compete for deposits. For years, a handful of digital banks have offered accounts that attracted consumers through high yields and digital convenience. Without branch networks, those companies--including American Express, Discover Financial, Ally Financial Inc., Synchrony Financial, and more recently, Goldman Sachs Group Inc.'s Marcus--have been able to accumulate significant increases in deposits using a digital platform, offering higher rates than peers. It remains questionable whether these deposits are sticky, as we believe many of these customers can move deposits quickly based on rate sensitivity. Still, deposit growth rates of banks offering online deposits is impressive and has turned out to be a competitive threat to the traditional means of gathering deposits⁸⁰. It further stated that some banks have responded to the digital threat by offering their own digital platform. Such is a necessary step to take and wise for management to do, so as digital deposits stays relevant for the protection of their deposit market share since the strategy also

helps banks expand deposit footprints in new regions without the expense of building branches.

Payments

Within the payment space, consumers continue to mostly initiate electronic payments with bank-issued credit and debit cards, sending funds mainly through the open-loop networks of Visa and Mastercard or the smaller closed-loop networks of American Express and Discover. Banks collect fees from merchants when consumers use the cards they issue. Many fintech advancements (e.g., mobile card readers, QR codes, and contactless cards) are also facilitating payments via banks cards rather than replacing them. PayPal is one nonbank player that has established a material market position with consumers, as well as merchants who accept PayPal payments. PayPal still relies to a degree on the card networks as well as banks, but transactions on the PayPal system can diminish the economics for banks, depriving them of fees they would have otherwise collected on a card transaction⁸¹. They further stated that some banks have responded to the digital threat by offering their own digital platform. Such is a necessary step to take and wise for management to do, so as digital deposits stays relevant for the protection of their deposit market share since the strategy also helps banks expand deposit footprints in new regions without the expense of building branches.

Within the payment space, consumers continue to mostly initiate electronic payments with bank-issued credit and debit cards, sending funds mainly through the open-loop networks of Visa and Mastercard or the smaller closed-loop networks of American Express and Discover. Banks collect fees from merchants when consumers use the cards they issue. Many fintech advancements (e.g., mobile card readers, QR codes, and contactless cards) are also facilitating payments via banks cards rather than

replacing them. PayPal is one nonbank player that has established a material market position with consumers, as well as merchants who accept PayPal payments. PayPal still relies to a degree on the card networks as well as banks, but transactions on the PayPal system can diminish the economics for banks, depriving them of fees they would have otherwise collected on a card transaction³⁶.

The Bank's Response to FinTech Competition

Banks are responding in different ways to this digital threat. The following are five from several digital threat responses banks have undertaken⁸². One of the responses banks have undertaken is of digital attackers. This simply means that banks in this group consider that the best form of defense is attack. He gave an example of banks with the most advanced digital strategies, like DBS, which launched their own digital banks to enter new markets or defend their patch. The second response is acquisitions. He stated that banks hampered by the vast cost and complexity of maintaining their old systems, sometimes find it easier to buy or invest in a start-up that has built a digital platform from scratch.

Thirdly, partnerships are one of the many ways banks have responded to the digital threat. He alluded that bank bosses complain loudly of an uneven playing field that allows big technology groups to offer financial services without the burdensome regulation that traditional lenders face and that has prompted some banks teaming up with Big Tech groups. The plan is simply to expand the service to other markets he added. Diversification on the other hand is one of the responses banks have undertaken to combat digital threats as he said while their core payments and lending businesses

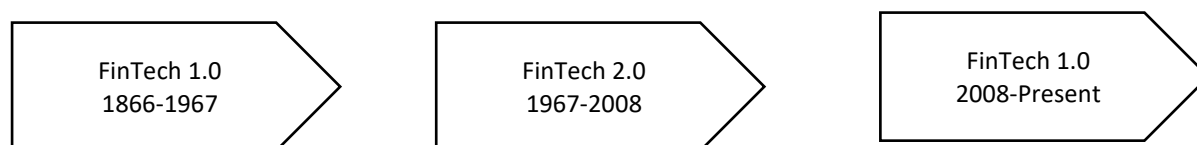
may be under pressure from digital competitors, some banks are using new technologies to move into new markets). Scholar further concluded with his fifth response to digital threats undertaken by banks by stating ‘If you can’t beat them, join them’ of which some banks decide that the threat from digital competition is so great that they just have to amend their business models³⁷.

2.1.2.7 Financial Technology (Fintech) and Banks

Fintech is increasingly becoming a global trend created by innovators and closely followed by academics, and is now attracting the attention of FinTech regulators in the past, present, and future in the financial and banking industries⁸³. Nowadays, FinTech is an industry that uses Information Technology centered on cellphones/smartphones to improve financial system efficiency. Meanwhile, technology is related to the Internet, for example, Cloud Computing or mobile Internet will encourage established financial services industry businesses, such as Lending money or banking transactions⁸⁴. All major ecommerce sites or online shopping systems have built-in their company a specific payment version of this Fintech product⁸⁵. Indeed, the application of this IT innovation to banks through FinTech digital platforms can provide financial services to the public at a lower cost than traditional banking⁸⁶. Business drivers influence the adoption of infrastructure technology(FinTech) in the financial and banking services industry⁸⁷. FinTech mechanism influencing technological innovation for banking and financial services⁸⁸. Meanwhile, organizations as business drivers can create innovation⁸⁹. One perception that arises is that this industry will threaten the existence of conventional

financial institutions, such as banks. This perception arises because of concerns that the bank was disrupted by FinTech. Many opinions from practitioners and researchers said that FinTech is a disruption in financial services⁹⁰. This disruption or collaboration of the Fintech industry has become a concern and considered by the banking services industry. The presence of Fintech and BigTech contributes to traditional banks' propensity to lose their competitive and strategic edge because they lack access to unique credit-seeking party information.

In current years, digitization in the banking sector reflects the rise of FinTech, which represents a relationship or a combination of Finance and Information Technology⁹¹. Zavolokina⁹² stated that the mechanism of a FinTech is indicated by the way to create/change/improve a business model. Furthermore, FinTech has a mechanism for disruption or collaboration. Finally, a real indication of Fintech is the application of IT to Finance⁹³. IOSCO, which is an international organization board for securities commission, has stated that the term FinTech used to describe various business models and new technological innovations that have the potential to change the financial services industry⁹⁴. Also, World Economic Forums added that Fintech, as new entrants have the potential for transformation and innovation in the business model of financial services⁹⁵. FinTech defines a new technological innovation that aims to improve the Bank's automation of financial services. Indeed, related to its development, there has been an evolution of FinTech in the financial and banking industries⁹⁶. The evolution of FinTech shown in Fig. 1.



Source: Thakor(2019))

Figure 1. Phases in FinTech Evolution

FinTech 1.0, (1866-1967), where the transition from Analog to Digital took place in this era. FinTech 2.0, (1967-2008), where the development of Digital Financial Services at Traditional Banks started within this era. FinTech 3.0 (2008-present) is what referred to as the Democratization of Electronic Financial Services. However, the Financial Services Authority in Indonesia mentions FinTech 3.0-3.5, (now until the future) in this era, many startups tend to deliver a range of alternative traditional banking services, and Internet-based financial services operated by outsiders⁹⁷. Frame⁹⁸ mentioned types of FinTech innovations, believed to change the future of the financial and banking industry, namely: (1) Blockchain or Distributed Ledgers is a modern development system that has the potential to bring about a banking revolution with related technologies. Blockchains are an example of a distributed ledger that has data that shared at all points or nodes in the network. Recently, this distributed ledger technology seems to have the potential to disrupt further payment services via cryptocurrency. (2) Artificial Intelligence and Machine Learning are other significant emerging technologies that have significantly affected and applied banking in recent years¹⁵⁷.

Banks are institutions that have significant roles to play in a country's economy. Banks are financial institutions that are operated by the government or the private sector and deal with financial debt and credit problems. It lends, accepts, and deposits money builds the gap between the lenders and the borrowers⁹⁹. In general, the provision of deposit and loan products distinguish banks from other types of financial firms. According to¹⁰⁰ the name "bank" is also associated with medieval transactions, and it assumed that the term "bank" comes from the Italian word "banco" and means bench, counter, where money traders have carried out banking operations. Banks in

the past often referred to as Traditional Banks. However, at present, many banks are referred to as Virtual Banking, Digital Banking, or Modern Banking. In the future, the condition of banking operations predicted to be different from now, so this usually referred to as Future Banking.

FinTech and Banks in Past: FinTech in Past (FinTech 1.0 – 2.0)

In brief, in this past for the development of FinTech closely related to the development of enabling technologies. In this era, the community began to be introduced ATMs that became a transition from analog to a digital industry¹⁰¹. In this past, technology has a role in delivering information across borders, including information in financial¹⁵⁵. The merchant should order products by telephone and travel his wealth around the globe without any effort or difficulty. Besides, Thakor stated Installation of the first trans-Atlantic cable and use of the Telegraph and fast transmission of transactions and payment of financial information.

Banks in the Past: In the past, the function of banks in providing savings and loan service products, which usually distinguishes banks from other types of financial companies, is what referred to as traditional banks¹⁰². Besides¹⁶¹ referred to technical advances in banks in this era as described in the following:(1960)-Mechanical banking introduced, (1970)-Computer-based banking industry introduced, (1980)-Release of computer-based banking communication.

FinTech and Banks in Present: FinTech in Present (FinTech 2.0 – 3.0)

In the present, in the transition from the FinTech 2.0 era to the FinTech 3.0 era¹⁰³. At this era of evolution, Automatic Teller Machine (ATM) is one of the technological innovations taking place in the world financial sector¹⁶⁰. The ATM is the most

important financial innovation. Thus, this era is a transition from analog to the digital industry. E-Payment, clearing systems are to improve products and services in the traditional financial banks.

Bank in the Present: In present, Commercial bank is undergoing a rapid change towards virtual banking. A Virtual banks defined as non-branch banks, as providers of banking services through electronic media used, like ATMs, telephones, personal computers, the internet¹⁶¹. Besides, at present many people call the existence of Modern Bank covers many aspects in the application of technology such as mobile banking, online banking, and ATM¹⁰⁴. Also, the presence of mobile banking and the use of mobile devices will send messages and financial information, as well as consumer transactions, such as checking account balances, accessing other banking services, and goods that transfer funds from anywhere at any time.

FinTech and Banks in Future: FinTech in Future (FinTech 3.0 – 3.5)

The 2008 global financial crisis took place and impacted the banking and finance industries. In this era, it can be called the emergence of the Democratization of Digital Financial Services¹⁶⁰. The use of technical advances by these entrants will provide financial services to customers without direct intermediaries. In the FinTech 3.0 era, the latest technology is growing like the Internet and the Internet of Things (IoT), whereas, towards the FinTech 3.5 era, more and more Data Analytics technology will develop in the banking industry. The collaboration mechanism is one of how to keep FinTech developing in the future in the banking industry. Without a collaboration mechanism, almost 95 percent of fintech companies will fail in the upgrade phase. FinTech companies will always compete with banks for certain activities. Future FinTech products related to banking include: Bitcoin, Blockchain is a distributed ledger, Cryptocurrency, and Robo advisors¹⁵⁷.

Banks in the Future: In the future, in the banking business, furthermore, there will be FinTech Bank and BigTech firm. FinTech Bank is a fintech firm that conducts business activities, such as online banking. FinTech Bank is also a FinTech company that synergizes and collaborates with traditional banks. FinTech Bank can compete with traditional banks on user interface applications with a variety of transaction products with financial access widely. Note that Big Tech Firm is a technology firm with a business model focused on the use of digital technologies¹⁰⁵. Amazon is an example of this in the US, and Alibaba is BigTech in China. BigTech Company's unique advantages allow them to replace traditional bank activities. BigTech's real strength exists in banking, particularly when it comes to consumer financing and lending to SMEs banks.

2.1.2.8 Banking on Fintech in Emerging Markets

Financial services are almost universally available in high income countries. However, in emerging markets, 1.6 billion people and 200 million small businesses do not have access to formal financial services¹⁰⁶. These people and businesses do not have basic transactions accounts. They cannot make or receive anything other than cash payments for their work or products or remit funds to family and friends, and without access to credit, they cannot invest in business ventures or smooth consumption. Furthermore, the absence of insurance and savings mechanisms reduces these individuals' resilience to sudden emergencies or shocks such as ill health or destructive weather and impairs their ability to prepare for old age. The failure to intermediate savings and enable the participation of everyone in society suppresses longterm investment and productivity and weakens economic performance. Financial sector reform has been a policy priority in emerging markets for several decades. Many emerging market economies undertook extensive reforms in the 1980s and

1990s to improve financial depth (size and liquidity of the financial sector) in an effort to increase the use of formal financial services. However, the growth and development impact of liberalization fell short of expectations. By the late 1990s, policy makers shifted their attention to financial breadth or inclusion (access), particularly through micro lending. This was triggered by the success of high-profile business models such as that of the Grameen Bank. Financial inclusion has remained at the top of the global public policy agenda. Increased access to finance is positively associated with GDP growth and that there is a strong correlation between access to finance and the narrowing of gender gaps, as well as increased resilience to financial shocks¹⁰⁷.

Despite enormous demand for financial services in these underserved markets, reducing the number of “unbanked” has proven difficult. However, the application of new technologies to the provision of financial services, or FinTech, has generated solutions that overcome specific barriers to access and use of financial services. Most of the unbanked in emerging markets are among the approximately two billion workers, or 60 percent of the global labor force, who are in seasonal or informal jobs, or are self-employed. Traditional retail banks provide financial services through mechanisms and processes that are not tailored to the needs and characteristics of this population. Their business model has included operating from within physical branches and they undertake many of their client evaluation activities through face-to-face meetings. For many of the unbanked, visiting a branch may be prohibitively expensive, either because these are physically remote or because they are only open during working hours. Mobile phones are the primary tool used by FinTech providers to reach current and potential clients. Two out of three adults who do not have access to financial services do have access to mobile phones, a

phenomenon that has enabled Fintech companies¹⁰⁸. In addition to the 1.6 billion people without access to financial services, more than a billion people who do have bank accounts pay their utility bills in cash. Moreover, 300 million account holders get paid in cash, and approximately 280 million account holders continue to use cash or over-the-counter services to send or receive remittances. Enabling policies and institutions promote FinTech innovation through their commitment to FinTech, protecting individuals and the financial system through updated or improved regulation, consumer protection, data privacy, and the promotion of financial literacy. FinTech products and services are having a disruptive effect on the financial services industry across the world. In high-income countries, where access to financial services is near universal, incumbent providers are reorganizing and restructuring to meet the shifting preferences and expectations of their customers. In emerging markets, traditional banks appear to be viewing FinTech innovators less as competitors and more as potential partners with useful tools and know-how that can help them to reach new customers¹⁰⁹. Their approach to FinTech is to seek partnerships and/or integration of FinTech approaches as part of the development of their own business models. However, it is important to note that FinTech innovations introduce new challenges and risks at both the macro and micro levels. At the macro level, it is necessary to differentiate between the benefits and risks of access to basic payments services and access to credit. While increased efficiency of day-to-day banking improves growth and development outcomes, the expansion of FinTech credit may pose macro stability risks, as it increases private liabilities and both credit and liquidity risk, with little sovereign control or oversight. At the micro level, it may create unsustainable debt burdens for certain groups of borrowers.

FinTech users need protections against loss of privacy, identity theft, and fraud, and without these in place, confidence in the use of digital financial services may quickly erode. Users may also find themselves vulnerable to discrimination where decision-making tools applied in Fintech reflect biases in the underlying data. Finally, the reliability and governance of the new kinds of “cyber” market infrastructure upon which FinTech solutions rely is also uncertain. Regulators have been responding to FinTech through adjustments to their existing regulatory frameworks and ongoing assessments of the extent to which these frameworks cover emerging risks. However,¹¹⁰ note that the characteristics of FinTech upend traditional regulatory approaches and existing insights. The nature and characteristics of FinTech reveal that its regulation needs to deliver on three distinct policy objectives: (1) financial stability and market integrity, (2) efficiency and competition, and (3) data privacy and consumer protection. Many of the issues and questions raised in balancing these trade-offs are entirely new to regulators. For example, the relationship between data and market power creates a new tension between issues of efficiency and competition, and those of privacy and consumer protection. It will be critical to introduce new regulation that addresses any new risks arising from the new activities. Financial technology is altering market structures in the provision of financial services, enhancing existing business models and creating new ones. Expanding connectivity, improved network effects, and an ever-increasing ability to process data have led to very high levels of interest in Fintech by investors. By mid-2021, the global value of Fintech was estimated at \$1.1 trillion, equivalent to 10 percent of the value of the global banking and payments industry, and up from 4 percent in 2018¹¹¹. Fintech is having a transformative effect on growth and development in some country contexts through its effect on financial inclusion¹¹². This is encouraging, because

transformation at the scale and speed that is required to meet ambitions such as those set out in the Sustainable Development Goals (SDGs) is almost always driven by very rapid innovation and adoption of new technologies¹¹³. FinTech expansion in emerging markets is increasing financial inclusion and economic participation at a remarkable speed, although it is not without risk, both for individuals and at the systemic level. The benefits to people and businesses of increased access to capital, more efficient payment mechanisms, and access to tools to support risk management will not be immediately apparent. However, Sen argues that “the exercise of development” is the release of the individual agency of every person. He emphasizes that support for development is the act of removing obstacles in people’s lives and that interventions to support economic development should focus on expanding what it is that people are able to do and be¹¹⁴. FinTech is expanding possibilities for many millions of individuals and businesses in emerging markets. Ensuring financial access for all of those that are unbanked requires solutions for a new constraint, digital access. And ensuring that this financial access is strong and sustainable requires attention to new and unfamiliar risks and policy trade-offs arising from FinTech business models.

2.2 Theoretical Review

Different theories have been used to explain financial inclusion by researchers. Some of these theories that are used in this study are the technology acceptance theory, diffusion of innovation theory and legitimacy theory.

2.2.1 Technology Acceptance Model

This model was originally put forward by Davis in 1986 to expound on the attitude behind the urge to employ technological knowhow¹¹⁵. TAM deals with perceptions

and not systems real usage and argues when new technological advancement is introduced to the customers, either one of this occurs that is, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) influence their decision¹¹⁶. PEOU is the level of confidence that people put on a system and if users perceive a new technology to be beneficial in support of both short and long-run, there is that encouragement to use the system. Further, the level by which an individual consider a system will boost performance in the short and long-run is the PU¹¹⁷. The TAM affirms that the systems real utilization is established by each user's behavioral intention for usage and is inspired by an individual's perception to the system. The theory also explains that the perception towards new technology has a direct relation to its functionality as well as the simplicity of the system¹¹⁸. TAM considers that acceptance of technology and functionality is influenced by consumer's intentions that establish the customer's perception towards system²³⁸. The theory also supports that the recognitions or suspicions about the advancement are instrumental in the improvement of states of mind that will in the long run result in system usage conduct²³⁹.

TAM also explores the attitude of individuals towards particular system. The TAM gives details and clarifies and portrays the reasons why clients acknowledge or dismiss an advancement or data framework. TAM is important both as a prescient strategy, considering the objective to evaluate the probability of individuals and associations to receive a specific innovation²³⁸. TAM can be used to explain the digital financial services which can be applied in clarifying the existence of variations in consumer behaviors especially when it comes to use of related digital financial services²³⁹.

The theory is an adaptation of the Reasoned Action Theory specifically tailored for modeling user acceptance of information systems. The goal of the theory is to provide

an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified. Thus, this study believes that the acceptance of contemporary banking technology by customers is fundamental to the performance of these banks as well as the realization of financial.

2.2.2 Diffusion of Innovation Theory

The Diffusion of Innovations (DOI) theory was proposed by Rogers in 1995 to explain the approach through which innovation can be passed via different ways over certain period among different users¹¹⁹. DOI theory explores the ways in which innovative ideas are passed from one generation to the other. According to DOI theory, an innovation is conveyed through various channels continually among individuals of the same social beliefs¹²⁰. The dispersion of Innovation hypothesis looks at the rate at which new advancement are spreading, how the new development is spreading and reasons why it is spreading with a specific end goal to research the elements influencing the selection of new data innovation advancement diffusion of innovations theory explains that innovations is applied in normal distribution curve which can be partitioned into five segments to categorize users in terms of innovativeness. Diffusion theory explains that the crucial aspect in establishing implementation of innovation is: absolute advantage, companionable, simplicity, trial ability as well as ease to be detected. DOI also classifies users as modernizer, early modernizers, and timely mass, late mass and stragglers²⁴¹. DOI theory perceives innovations to be passed on via several ways several in a span of time as well as a certain system. DOI theory tries to explicate as well as illustrate the approaches in

which innovations that are digital financial services are adopted and becomes successful.

2.2.3 Legitimacy Theory

Legitimacy theory proposes that corporations should adapt to the new alteration in a society in order to survive, otherwise their existence will be threatened, since they will face awkwardness in attracting new customers or even maintaining the relationship with their customers; moreover, they will confront difficulties with attracting employees and capital¹²¹. Furthermore, the corporations are not isolated from the society therefore they have to maintain their relationship with the society by fulfilling the society's expectations, not solely achieve the objectives of the owners¹²². In other words, the essential assumption of this theory derived from the belief that the corporation impacts the society in which it exists and vice versa¹²³.

By the same token, legitimacy theory assumes that the corporation should always ensure that it respects the norms of society in which it operates¹²⁴. Moreover, this theory assists to understand the behavior of a corporation in executing, evolving and fulfilling its social responsibility strategy²⁴⁴. The major presumption of such theory is to achieve the corporation's social contract that requires the embrace of corporate social responsibility (CSR) policy, which affects different areas of activities, especially the management accounting²⁴⁴. Moreover, it remedies the social and environmental behavior of corporations and the disclosure of information about such behavior²⁴⁴. Legitimacy theory is considered to be paramount in analyzing the relation between companies and their environment, as well as it is the linkage between the companies and society¹²⁵. However, the legitimacy theory is applied to demonstrate corporate disclosure practices and corporate social responsibility²⁴².

2.3 Reviewed of Empirical Studies

2.3.1 Studies outside Nigeria

A study assessed FinTech and Bank: Past, Present, and Future. This research focused on presenting a descriptive analysis of FinTech and Bank in the past, present, and future, especially in Indonesia as a case study. The study uses a descriptive analysis research method and qualitative method approaches. The results of this analysis reveal what happened to FinTech and the Bank in the past, present, and future¹²⁶.

Another study assessed the fintech investment and banks performance in Malaysia, Singapore and Thailand. The study used regression analysis to examine the impact of observed variables. The findings show that there is an impact of technology spending ratios and R& D intensity towards bank performance⁶³.

Another study also investigated the Influence of Institutional Environment and Fintech to Urban Commercial Banking Performance. The study investigated the relevant theoretical basis of technology spillover and new institutional economics, and focuses on the influence mechanism of Fintech on the operating performance of urban commercial Banks through technology spillover and intermediate business. Primary data was used for the study. Findings from this study revealed that the development level of Fintech significantly affects the operating performance of China's urban commercial Banks through credit services, third-party payment and other intermediary businesses¹²⁷.

Another study conducted in Kenya and investigated The Effects of FinTech on Bank Market Power and Risk Taking Behavior. The study investigate the nexus between market power and stability of the banking industry in pre FinTech period (2003 - 2009) and post FinTech entrance period (2010 – 2017).

Findings from the study revealed that results from PVAR model finds that bank risk-taking behavior is positively - related to increase in the market power following the FinTechs' entry¹²⁸.

Furthermore, another study analyzed the Prospects for the Development of Fintech and Banking in Ukraine. The focus of this article was limited to investigating the problems of developing Fintech and banking in Ukraine and develop promising areas for their interactions. Findings from the study posited that the most effective strategy of relationships between commercial banks and Fintech companies is not competing but using various mutually beneficial cooperation options¹²⁹.

Studies have also searched the relationship between financial technology (fintech) innovation in the banking sector and (i) real sector growth, (ii) real sector volatility, and (iii) bank fragility. They found that a higher level of financial technology (Fintech) innovation is associated with a stronger relationship between a country's growth opportunities and capital and GDP per capita growth and with higher growth rates in industries that rely more on external financing and depend more on innovation. On the other hand, they found that financial innovation is associated with higher growth volatility among industries more dependent on external financing and on innovation and with higher idiosyncratic bank fragility, higher bank profit volatility and higher bank losses during the recent crisis¹³⁰.

A study in Bangladesh examined Customers' Trust on E-Banking System. The study was limited to investigate practices, impact, security, problems and prospects of e-banking in Bangladesh which are directly related with the trust on electronic banking. The study was done based on primary data with a set of questionnaire developed with 44 questions which covered e-banking practice in Bangladesh, its security, problems and prospects. Findings from the study revealed that customers

trust depends basically on security measures, customers awareness, educational qualification, authentication of e-transaction, e-service quality of banks, bankers behavior amongst others¹³¹.

A study investigated the factors influencing the adoption of financial innovation in Ghana's banking industry. Surveys were conducted involving 405 clients of the six major banks in the country. Using logistical regression, the results amongst other things show that innovation attributes such as lack of complexity, compatibility and perceived usefulness provided by financial innovation, increase the likelihood of e-banking adoption⁶².

Similarly, scholars also studied the determinants of financial innovation in listed commercial banks in Europe and in the United States from 2005 to 2008 that product innovation prevails both in Europe and in the US, but innovation falls from 2005. Not only banks innovate in less categories, but also less banks engage in innovation. When banks have a higher market share in less concentrated and more efficient banking systems, they enjoy a preminent position which leads to innovation⁴¹.

A study in Kenya examined the Effect of Financial Innovations and Operationalization on Market Size in Commercial Banks: A Case Study of Equity Bank, Eldoret Branch. The study had a main purpose of establishing the effect of financial innovations on market size of banks in Kenya. The study adopted a descriptive research design and data was collected through questionnaires and interviews. The study had a target population of 1600 staffs and customers of the bank. The study established that innovations increased the market size and assets of the commercial banks. The study recommended more financial innovations including internet banking that are aimed at meeting customer needs and satisfaction should be

enhanced. However, this study has not analyzed the effects of financial innovations on return on assets. This study will seek to establish the effects of financial innovations on financial performance of commercial banks in Kenya⁵².

Another study also stated that African banks were generally slower in adapting to the change except for South Africa which had well-regulated banking sector and digital banking roadmap with fintech solutions. It concluded that fintech had a positive impact on the Asian banking sector as it gives access to a larger market at a lower cost. However, African banks often had direct competition between mobile operators. Therefore, they will require more integration efforts than Asian banks¹³².

A study in Newyork also analysed the growing capabilities of fintech in both retail and wholesale payments arenas. In its report, “Innovation in Payments: The Future is Fintech”, the bank argues that “without a doubt, the “era of fintech” is upon us and banks cannot merely be mindful of this; they must also have a clear plan in place in order to adapt to and benefit from fintech-fuelled changes”. They observed the fintech disruption in the wholesale payment market could come from two forms: large tech companies within the financial services and numerous fintech startups having the potential for driving disintermediation. They also analysed the current challenges in fintech implementation, how to strategize and monetize fintech opportunities and put forward recommendations for banks to increase engagement with the fintech community in order to position firmly in the digital age)¹³³.

A recent study investigated key drivers for banks to form alliances with fintech and impact of bank-fintech alliances on the market valuation of banks in Canada, France, Germany and the UK. Using hand-collected information on strategic alliances from bank websites, Crunchbase database and Factiva for 2007-2017 by the hundred largest banks in each of the four countries, they found 469 alliances. Of the 469 alliances,

majority is characterised by product-related collaborations (54%), followed by financial engagements (43%). They collapsed the data into a panel dataset for the period from 2007 to 2017 for bank-year observations. They found that banks are significantly more likely to form alliances with fintech when they pursue a well-defined digital strategy and/or employ a Chief Digital Officer (CDO). Employing a CDO increases the number of bank-fintech interactions by two to three times. The coefficients of bank which is listed on stock exchanges and bank assets are statistically significant and have a positive effect in all the regressions, meaning large and listed banks interact with more fintech than small and private banks. The bank ROA is significantly negative in most regressions indicating that banks with poor profitability maybe particularly interested in a higher number of fintech partnerships which maybe an effort to accelerate a transformation process. They found that markets react more strongly if digital banks rather than traditional banks announce a fintech alliance. Their results suggest that stocks of digital banks benefit from alliances, which may result from being better able to internalize the fintech's expertise¹³⁴.

A performed an empirical analysis on a data panel of 38 European Banks to determine the impact of bank innovations on financial performance measured by the ROE between 2013 and 2015. The study was based on secondary data collected from the annual reports for the European banks spanning three years in which fintech innovations have been invested in by banks. She used R and STATA 12.0 to analyse the data and found a significant positive association between fintech and bank profitability as financial innovation can create both cost-cut and cross-sell opportunities for the banks. She also found the existence of a negative relationship between the number of physical branches and bank profitability. She also found more

digitally-oriented banks such as Nordea, SwedBank, Fineco and mBank had shown growing profitability (ROE of 13-15%) at a time of falling interest rates as well as a strong focus on building a customer-oriented bank for the future)¹³⁵.

Another study researched on commercial banks in Latvia from 2010 to 2015 to examine the fintech influence on bank performance measured by the ROA, the ROE and the capital adequacy ratio (CAR). Total 23 commercial banks in Latvia are divided into two groups; those specialised in international customers servicing (BI) and those specialised in domestic customers servicing (BD). They found the ROA, ROE and CAR index was higher for BD because BI was more dependent from internal and external factors of a bank. In summary, fintech development affected the retail banking sector of BD that actively digitalized their operations. Those banks categorised as BD had more flexible and had a focused policy to new customers and existing customers by new digital tools as compared to BI whose change and digital adoption was slower¹³⁶.

2.3.2 Studies within Nigeria

A study examined Electronic Banking and Profitability in the Nigerian Banking Industry. An inferential survey research design was adopted. Primary data were collected through questionnaires from both staff and customers of the surveyed bank. It was complimented with secondary data sourced from the company's audited financial statements for the period of 2010-2017. Data collected were analyzed using both descriptive and inferential statistics while testing of the hypotheses was done using multiple regression analysis. Findings from the study revealed that cards play a significant role more than other channels and immediately followed by ATM)¹³⁷.

Another study assessed The Evolution of Banking From Retail to Mobile Banks and

Fintech. Findings from the study posited that the future of banking is characterized by innovative services and products offered online which, however, would need to be supported by a regulatory framework, able to eliminate entry barriers for newcomers in the banking sector¹³⁸.

Another study critically analyzed Technology innovation in the Nigerian banking system: prospects and challenges. Both Primary data and Secondary data was use for this study. For primary data, cross-sectional survey design was adopted while secondary data were generated for the study through annual reports of CBN (2013-2017). The findings of this study reveal the migration from cheques to electronic related transactions. It further indicates a high rate of fraud committed through those channels. The analysis of primary data shows that innovation adoption, service quality, cybercrime have significant relationship with the competitiveness of banks, the intention of bank customers, and perception of customers towards online services. However, the rate of frauds does not have significant relationship with the usage of mobile banking products which further studies can critically examine¹³⁹.

Similarly, another study analyzed Retail Banking and Bank Performance: Evidence from Nigeria. Secondary data was used for the study and data was collected and analyzed based on the annual reports available on the website of 16 banks listed on the Nigeria stock exchange as at 31st December 2018. The result of findings revealed that Size and Competition significantly impacted on bank performance with a probability of 0.0071 and 0.0178 respectively which is less than 5% degree of significance; and Loans and deposits relationships were all not significantly impacting on bank performance, as the probabilities for all variables were more than the acceptable 5% degree of significance¹⁴⁰.

A study conducted a research on Fintech Evolution in Nigeria: Achieving Double Bottom Line Impact Through Innovation and Entrepreneurship. Both primary data and secondary data were used for this study. The primary data used for the study was collected manually via interviews with current fintech industry operators in Nigeria while the secondary data was sourced from archival research, mainly research publications and regulatory publications. Findings from the study revealed that Fintech's performance in Nigeria impacts the ecosystem economically and socially in three broad dimensions: through stimulating economic activity, by creating a multiplier effect, and by driving progress towards development goals¹⁴¹.

Another study argued that financial technology (Fintech) innovations have positively influenced the return on Equity of commercial banks in Nigeria. They narrowed down to electronic banking citing that more customer transactions are observed and hence more transaction fees leading more revenues¹⁴².

Furthermore, another study carried out a study aiming at establishing the impact of emerging trends on performance of banks. The study considered the use of ATMs, Mobile banking and other technological mechanisms that facilitate the banking process. The study established that those banks that adopted innovations earlier had superior performance when compared to those that adopted much later. Perhaps, this is because of the first mover advantage. It is important to note that technology changes so fast and if firms take long to adopt, it may be of value because other better forms of technology will have emerged¹⁴³.

A study on financial innovation revealed that most of the financial innovations have a positive effect on income generating potentials of banks. He noted that the diffusion of financial innovation is more determined by customer's acceptance than by the seller offerings¹⁴⁴.

2.4 Summary of Gaps Found in Literature

Innovations and advancements in the integration of information communication technology (ICT) in the banking system in the past decades to a large extent played active and vital roles in transforming the way banks make their services available to their customers. Financial Technology (Fintech) which is a result of ICT integration in the banking system, also brought about the innovative technologies that are adopted in providing financial services which ranges from - online transfer payment, online financial planning services and online lending and borrowing through peer to peer system, amongst others. As a result of the varying potentials of Fintech, an overwhelming percentage of banks across the world have been adopting Fintech in order to optimise their services and gain competitive edge by either partnering or acquiring existing Fintech or establishing their own Fintech.

Notwithstanding the fact that the adoption of Fintech is becoming very widespread in developed economies, little or nothing is known about this in developing economies, especially in sub-Saharan Africa, this however, has brought about a dearth of scientific and empirical research on the effects of Fintech integration in developing countries like Nigeria. Hence, this study explore the financial services offered by deposit money banks in Nigeria and the extent to which these banks have integrated technology into delivering these services as well as its challenges in Nigeria.

2.5 Conceptual Framework

The framework of this study is based on the technology acceptance theory introduced by Davis in 1989 which explains technology user acceptance behaviour. The theory proposed that technology acceptance (integration) depends on perceived ease of use and perceived usefulness, attitude and behavioral intention to use. It is however

believed that the perceived usefulness and perceived ease of use forms the end-user's beliefs on a technology and therefore predict his or her attitude towards the technology, which in turn predicts its acceptance.

Many researchers are of the view that the perceived usefulness of a technology is essential when deciding its adoption. Others believed that adoption of a technology is impacted by its perceived usefulness. Meanwhile, when the use of financial technology has a higher perceived usefulness, the probability of it being integrated will also be high. Therefore, the major determinant of adoption or integration of technology is the perceived usefulness, ease of use and other variables of the technology acceptance model¹⁴⁵. This can be expressed in a functional relationship as shown below

$$\text{Integration of Technology} = f(\text{perceived usefulness and perceived ease of use}) \quad (2.1)$$

The major explanation provided by this theory is that for financial technology to be integrated, it must gain wide acceptance by users and this will be based on the ease of use¹⁴⁶. It therefore implies that if financial technology gain wide acceptance, then its integration will be high and as such it will have a form of influence on performance of the organization. Hence, among the determinants of the performance of an organization the extent to which financial technology have been integrated which can be expressed implicitly as

$$\text{Financial Performance} = f(\text{financial technology integration}) \quad (2.2)$$

However, the deposit money banks in Nigeria offers various financial services such as deposit facilities, credit facilities, remittances and payments, export, import and foreign services, investment banking and wealth management, as well as ancillary services, with the adoption of technology, these services are now being offered

through financial technology tools such as automated teller machines (ATMs), mobile banking, internet banking, point of sales (POS) terminal and unstructured supplementary service data (USSD). These financial technology tools have also influenced and empowered deposit money banks to be dynamic in the way they provide these financial services and as a result it influences their financial performance. This relationship is depicted the the figure below which forms the framework for this work.

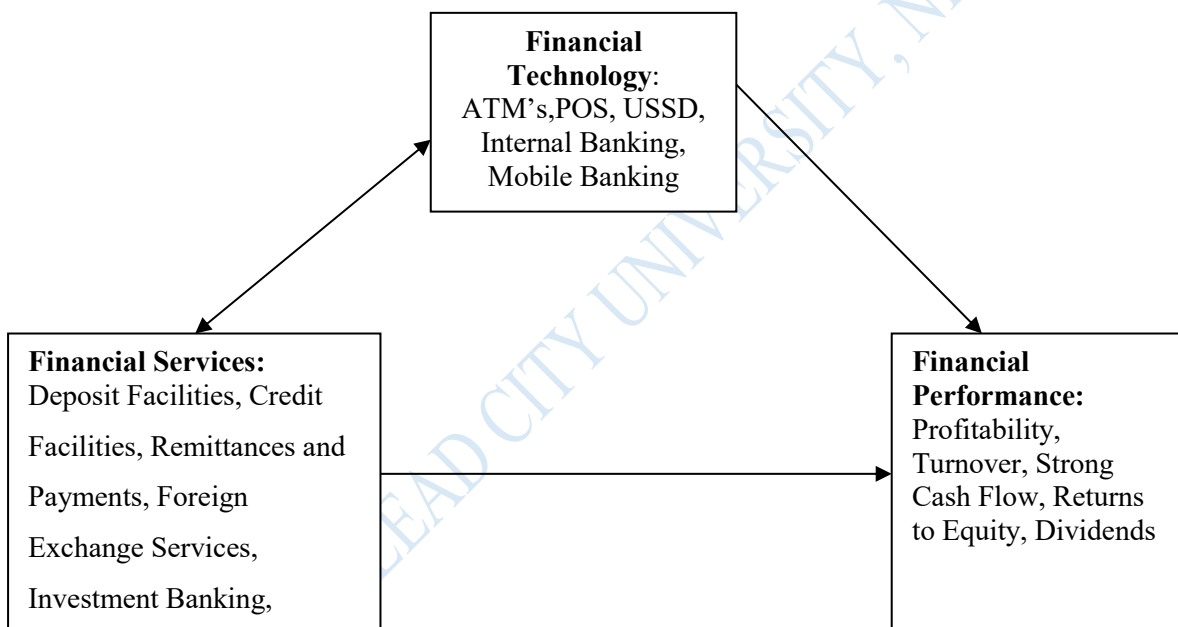


Figure 2.1: *Technology Integration and Financial Performance of Selected Deposit Money Banks in Nigeria*

Source: Researcher's Conceptual Model 2022

Endnotes

- ¹ A.K. Kyari & O.Y, Akinwale, *An Assessment of the Level of Adoption of Financial Technology by Nigerian banks*, **Africa Journal of Science Policy and Innovation Management**. 1, 2020, 118-130.
- ² S. Baker & N.A. Nordin, *Fintech Investment and Banks Performance in Malaysia, Singapore & Thailand*, **Journal of social and behavioral science**.2019.
- ³K. Friday & B.Biirance, *Retail Banking and Bank Performance: Evidence from Nigeria*, **International Journal of Economics and Finance**, 13, 2021, 15-27.
- ⁴Y. Dariush,*Global Financial Technology Report*, **Grégory Weber KPMG** 2017
- ⁵M. Susan, *Separate Fintech Noise From Reality*, 2017
<https://www.gartner.com/smarterwithgartner/separate-fintech-noise-from-reality>.
- ⁶J. Kagan, *Commercial Bank, 2019*, Available at
<http://www.investopedia.com/terms/c/commercialbank.asp> 2019
- ⁷ D. Varga, *FinTech: The New Era of Financial Services*, **Budapest Managerial Review**, 2017, 22- 32.
- ⁸ S. Mofya, *Financial Technology in Zambia Economy*, **Personal Finance, Strategy**, 2019, Available at: <http://fizambia.com/?p=2796>.
- ⁹ J.J. Katigbak, *Revamping Finance via Fintech: Promises, Perils, and Practices in ASEAN*, **Foreign Policy Review**, 13, 2020, 129-144.
- ¹⁰S.O. Adeku, *Technology Innovation in the Nigerian Banking System: Prospects and Challenges*, **Rajagiri management journal** 15(1), 2021 2-15
- ¹¹ A. K. Kyari, *Managing Fintech's Destruction through Innovative Banking: An Empirical Investigation*, **International Journal of Innovation, Creativity and Change**, 13(1), 2020, 253–274
- ¹² P.T. Gupta & T. Mandy, *Fintech: The New DNA of Financial Services*, **Journal of Services Marketing**, 20(2), 2018, 125-135.
- ¹³N. W. Artie & B.K. Benny, *Emergence of Fintech and Cybersecurity in a Global Financial Centre*, **Journal of Financial Regulation and Compliance**, 25(4), 2017 422- 434.
- ¹⁴I. J. Akpan; D. Soopramanien & D.H. Kwak, *Cutting-Edge Technologies for Small Business and Innovation in the Era of COVID-19 Global Health Pandemic*, **Journal of Small Business & Entrepreneurship**, 2020, 1-11.
- ¹⁵K. Gai; M. Qiu & X. Sun, *A survey on Fintech*”, **Journal of Network and Computer Applications**, 103, 2018, 262-273.

¹⁶FSB, Financial Stability Implications from Fintech, Financial Stability Board, 2019, Available at: <https://www.fsb.org/wpcontent/>

¹⁷ N. Nasfi; Y. Yunimar & A. Prawira, *The Role Of Fintech In Sharia Rural Bank West Sumatra*, **International Journal of Social and Management Studies**, 3(2), 2022,13-19.

¹⁸U. Noor; Z. Anwar; T. Amjad & K.K.R. Choo, *A Machine Learning-based FinTech Cyber Threat Attribution Framework using High-level Indicators of Compromise*, **Future Generation Computer Systems**, 96, 2019, 227-242.

¹⁹ X. Chen; Y. Xuyian & V. Chang, *FinTech and commercial banks' performance in China: A leap forward or survival of the fittest?*, **Journal of Technological Forecasting and Social Change**, 166, 2021, 1-12.

²⁰ A. Sahu & G. K. Deshmukh, *Mobile Banking Adoption: A Review*, **Journal of Critical Reviews**, 7 (2), 2020, 860-872.

²¹CIW Team, *China Mobile Banking Overview*, **China Internet Watch**.2019 <https://www.chinainternetwatch.com/28776/shrinkingmobile-banking-p2p/>

²² T. Laukkanen, M.R. Lehto, *Mobile Banking*, **International Journal of Bank Marketing**, 35 (7), 2017, 1042–1043.

²³ M.A. Shareef; A. Baabdullah; D. Shantanu; K. Vinod & Y. K. Dwivedi, *Consumer Adoption of Mobile Banking Services: An Empirical Examination of Factors according to Adoption Stages*, **Journal of Retailing and Consumer Services**, 43, 2018, 54-67.

²⁴ R. Wang; J. Liu & H. Luo, *Fintech Development and Bank Risk taking in China*, **European Journal of Finance**, (13), 2020, 1-22.

²⁵ Ernest & Young. “*EY Fintech Adoption Index 2017: The Rapid Emergence of FinTech*”, 2017 available at: <http://www.ey.com/gl/en/industries/financial-services/ey-fintech-adoption-index>.

²⁶ Vector ITC. “*5 advantages of digitalization in the banking sector*”, available at <https://www.vectoritcgroup.com/en/corporate-en/5-advantages-of-digitalisation-in-the-banking-sector/2019>

²⁷ A.T. Ajlouni & M. Al-Hakim. “*Financial Technology in Banking Industry: Challenges and Opportunities*”. **International Conference on Economics and Administrative Sciences**, 2018, 12,1-182018.

²⁸ Z. Lillia; Y. Diatlova; V. Diatlova; L. Kuznetsova & A. Goncharenko, *Digital Banking in the Marketing Mix: Improving the Approach to Evaluation as an Innovative Component*, **International Journal of Economics and Management Systems**, 6, 2021, 611-619.

- ²⁹A. Muhammad; M.N. Almunawar & M. Masri, *Financial Technology and Disruptive Innovation in Business: Concept and Application*, **International Journal of Asian Business and Information Management (IJABIM)**, 11(4), 2020, 29-43.
- ³⁰ V. Xavier, *Competition and stability in Modern Banking. A Post-Crisis Perspective*, **International Journal of Industrial Organization**, 64, 2019, 55-69.
- ³¹ V. Murind; R. Efthymios & Z. Markos, *The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks*, *International Review of Financial Analysis*, 81(2022), 1-27.
- ³²G., Ferrarini & E., Macchiavello. “*Fintech and alternative finance in the CMU: Theregulation of market place investment*”. **Mimeo**, 2017.
- ³³McKinsey & Company. “*Harnessing Nigeria's fintech potential report*” (2020) <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Middle%20East%20and%20Africa/Harnessing%20Nigerias%20fintech%20potential/Harnessing-nigerias-fintech-potential-vF.pdf>
- ³⁴Efina Fintech Report, Overview and Lessons Learnt from Global FinTech Landscape and Nigerian FinTech Landscape.2018
- ³⁵The Future of Fintech in Nigeria, *SEC Roadmap committee Final-Report-of-the-FinTech-Roadmap-Committee-of-the-Nigerian-Capital-Market-2019*.
- ³⁶KPMG Report 2016, *FinTech in Nigeria, Understanding the value proposition*
- ³⁷ M. O’Connell, *Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability: Evidence from the UK*, **Studies in Economics and Finance**, 2022.
- ³⁸P. Pattanasak; T. Anantana, P. Boontarika & W. Ratapol, Critical Factors and Performance Measurement of Business Incubators: A Systematic Literature Review, **Sustainability**, 14(8), 2022, 1-39.
- ³⁹ D. Haralayya & P. S. Aithal, A Study on Structure and Growth of Banking Industry in India, **International Journal of Research in Engineering, Science and Management (IJRESM)**, 4(5), 2021, 225-230.
- ⁴⁰ U.I. Ironkwe & A. S. Osaat, *Risk Asset Management and Financial Performance of Insurance Companies in Nigeria*, **International Journal of Advanced Academic Research**, 5(4), 2019,18-46.
- ⁴¹D. Fatihudin, How Measuring Financial Performance, **International Journal of Civil Engineering and Technology (IJCIET)**, 9(6), 2018, 553-557.
- ⁴²U.P., Orajaka. “*The Impact of Leverage Financing on Financial Performance of Some Manufacturing Industries in Nigerian Stock Exchange*”.**Saudi Journal of Business and Management Studies**, 2017, 2, 16-26.

- ⁴³ P. Ajaya, *Effect of Financial Technology on Financial Performance of the Banking Industry in Kenya*, PhD diss., University of Nairobi, Kenya, 2020.
- ⁴⁴ I. Uduakobong & I. V. Okonkwo, *Information and Communication Technology in Nigeria Insurance Industry: Developments, Challenges and Prospects*, **Journal of Economics, Finance and Management Studies**, 4(7), 2021,1159-1171.
- ⁴⁵E. Menicucci & G. Paolucci, *The determinants of bank profitability: empirical evidence from European banking sector*, **Journal of Financial Reporting and Accounting**,14(1), 2016, 86-115.
- ⁴⁶ A.M. Selase & B. Arthur, *An Assessment of Customer Attitude towards Internet Banking in Ghana*, **International Journal of Economics, Business and Management Research**, 5(7) , 2021, 113-136.
- ⁴⁷ S. Mbah & J. Obiezekwem, *Electronic Banking and Performance of Small and Medium Scale Enterprises in Anambra State, Nigeria*, **International Journal of Business and Management**, 14, (6), 2019, 173- 180.
- ⁴⁸ N. N. Peace; C. P. Sidi & O. S. Abomeh, *Impact of Information and Communication Technology on the Performance of Deposit Money Banks in Nigeria*, **International Journal of Management and Sustainability**, 7, (4), 2018, 225–239.
- ⁴⁹ Z. Li, R. Wang, Y. Xu, & Y. Gao, *Financial Technology Efficiency and Credit Constraints Facing the Industrial Sector: Evidence from China*, **IEEE Access**, 8, 2020, 57335–57347.
- ⁵⁰ J. Madugba, B. C. Egbide, D. W. Jossy, U. T. Agburuga, & O. O. Chibunna, *Effect of Electronic Banking on Financial Performance of Deposit Money Banks in Nigeria*, **Banks and Bank Systems**, 16, (3), 2021,71–83.
- ⁵¹ J. Welc, *Financial statement analysis*, In *Evaluating Corporate Financial Performance*, Palgrave Macmillan, Cham, 2022,131-212.
- ⁵² N.H. Tien; B.A. Dinh & M.N. Nguyen, *Corporate Financial Performance due to Sustainable Development in Vietnam*, **Corporate Social Responsibility and Environmental Management**, 27(2), 2020, 694-705.
- ⁵³ C. Gartenberg; P. Andrea & S. George, *Corporate Purpose and Financial Performance*, **Organization Science**, 30(1), 2019, 1-18.
- ⁵⁴S. Bernstein; E. Colonnelli & B. Iverson, *Asset Allocation in Bankruptcy*, **The Journal of Finance**, 74(1), 2019, 5-53.

- ⁵⁵N. Aydin & N. Kulali, *Asset Utilization Efficiency and Ownership Structure: Evidence from Emerging and Developing Eastern Europe*, **Journal of Eastern European and Central Asian Research**, 5(1), 2018, 1-18.
- ⁵⁶L. Abdelmoula, *The Impact of Extrinsic Job Satisfaction Factors on the Organizational Commitment of Accounting Professionals in Tunisia*, **Management Science Letters**, 10(13), 2020, 3003-3008.
- ⁵⁷J.K. Tuffour; A.A. Awurabena & O.A. Ernestina, *Assessing the Effect of Financial Literacy Among Managers on the Performance of Small-scale Enterprises*, **Global Business Review**, 23(5), 2022, 1200-1217.
- ⁵⁸M. Okeke, *The Impact of Information, Communication and Technology on Human Resources Management in Selected Money Deposit Banks in South East, Nigeria*, **Management and Human Resource Research Journal**, 8(11), 2019, 8-16.
- ⁵⁹ C. Lee; L. Xinrui; Y. Chin-Hsien & Z. Jinsong, *Does Fintech Innovation Improve Bank Efficiency? Evidence from China's Banking Industry*, **International Review of Economics & Finance**, 74, 2021, 468-483.
- ⁶⁰B. Nicoletti. "The Future of FinTech. Integrating Finance and Technologies in Financial Services". **Cham: Springer International Publishing AG**, 2017.
- ⁶¹S. Chishti; J. Barberis; R. Menat; J. Wendenburg & A. Hatami, *The FinTech Book, The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries*, Cornwall: Wiley, Combination of Insights from Multiple Industry Experts, 2016.
- ⁶²G.B.; Navaretti, G. Calzolari & A.F. Pozzolo, *FinTech and Banks: Friends or Foes?* "From the Editorial Desk. **European Economy, Banks, Regulation, and the Real Sector**, 2017, 3(2), 9-31.
- ⁶³PwC, *Redrawing the lines: FinTech's growing influence on Financial Services*, **Global FinTech Report 2017**, Available at: <https://www.pwc.com/gx/en/industries/financial-services/assets/pwc-global-fintech-report-2017.pdf>.
- ⁶⁴A. Grym; K. Koskinen & O. Manninen, *Nordic Banks go Digital*". 2018, Available at: <https://www.bofbulletin.fi/en/2018/2/nordic-banks-go-digital/>.
- ⁶⁵B.J. Kemboi, *Effect of financial Technology on the Financial Performance of Commercial Banks in Kenya*, **PhD diss., university of Nairobi, Kenya**, 2018.
- ⁶⁶B.G. Osma; J. Gomez-Conde & E. Lopez-Valeiras, *Management Control Systems and Real Earnings Management: Effects on Firm Performance*, **Management Accounting Research**, 55, 2022, 1-22.
- ⁶⁷Global Banking & Finance Review, *How Fintechs Are Empowering Banks?* " **Global Banking & Finance Review website** 2018. Retrieved from <https://www.globalbankingandfinance.com/how-fintechs-are-empowering-banks/>.

- ⁶⁸ T. Berg; V. Burg; A. Gombovié & M. Puri, *On the Rise of the FinTechs—Credit Scoring using Digital Footprints*, **Federal Deposit Insurance Corporation, Center for Financial Research WP**, 2018
- ⁶⁹ G. Buchak; T. Matvos; A. Piskorski, “*Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks*,” **Journal of Financial Economics**, 130 (3),2018, 453-483.
- ⁷⁰ S. Claessens; J. Frost; G. Turner & F. Zhu, *Fintech Credit Markets Around the World: Size, Drivers and Policy Issues*, **BIS Quarterly Review**, 2018.
- ⁷¹ R.J. McWaters & R. Galaski, *Beyond FinTech: A Pragmatic Assessment of Disruptive Potential in Financial Services*, **In world Economic Forum**, **2(1)**, 2017, Available at: <https://www.worldforum.org>.
- ⁷² O.T. Adeosun & S.O. Adeku, *Attracting and Recruiting Quality Talent: Firm Perspectives*, **Rajagiri Management Journal**, 14(2), 2020, 107-120.
- ⁷³ I. Nuwagaba; M.T. Lukamba; H. Costa; K.K. Gerald; J. Mbuga; M.Thekiso; A. Ochora; A. Nduhura, & P. Tumusime, *A Synthesis of the Public Management of Mobile Data and Project Performance, Lessons Learnt from Ministry of Health (MOH), Kampala, Uganda*, **African Journal of Development Studies**, 2022,1(2), (2022), 173-190.
- ⁷⁴ I.Koomson; B.Chei & R.V. Renato, *Mobile Money Adoption and Response to Idiosyncratic Shocks: Empirics from Five Selected Countries in Sub-Saharan Africa*, **Technological Forecasting and Social Change**, 1(167), 2021.
- ⁷⁵ J.B. Ajefu & J.O. Ogebe, *Migrant Remittances and Financial Inclusion among Households in Nigeria*, **Oxford Development Studies**, 47 (3), 2019, 319-335.
- ⁷⁶ M. Chen & J. Grossklags, *An Analysis of the Current State of the Consumer Credit Reporting System in China*, **Proc. Priv. Enhancing Technology**, 2 (4), 2020, 89-110.
- ⁷⁷ A. Sayakkara; L. Nhien-An & M. Scanlon, *A survey of Electromagnetic Side-Channel Attacks and Discussion on their Case-Progressing Potential for Digital Forensics*, **Digital Investigation**, 29, 2019, 43-54.
- ⁷⁸ C. Granda; H. Franz & C. E. Tamayo, *Credit and Saving Constraints in General Equilibrium: A Quantitative Exploration*, **Journal of Development Economics**,140, 2019, 302-319.
- ⁷⁹ E. Kristoffersen; B. Fenna; P. Mikalef & L. Jingyue, *The Smart Circular Economy: A Digital-Enabled Circular Strategies Framework for Manufacturing Companies*, **Journal of business research**, 120, 2020, 241-261.
- ⁸⁰ R.M. Stulz, *Fintech, BigTech, and the Future of Banks*, **Journal of Applied Corporate Finance**, 31 (4), 2019, 86-97.

- ⁸¹F. Shair; S. Shaorong; H.W. Kamran; S.H. Muhammed; A.N. Muhammad & V.C. Nguyen, *Assessing the Efficiency and Total Factor Productivity Growth of the Banking Industry: Do Environmental Concerns Matter?* **Environmental Science and Pollution Research**, 28(16), 2021, 20822-20838.
- ⁸² M. Arnold, *Five Ways Banks are Responding to the Fintech Threat*, *Financial Times*, available at <https://www.ft.com/content/d0ab6b84-c183-11e8-84cd-9e601db069b8> [Accessed on 10th June, 2020], 2018.
- ⁸³A.L. Mention, *The Future of Fintech*, **Research Technology Management**, 62(4), 2019, 59–63.
- ⁸⁴P. Gomber; J.A. Koch & M. Siering, *Digital Finance And FinTech: Current Research And Future Research Directions*, **Journal of Business Economics**, 87(5), 2017, 537–580.
- ⁸⁵A. Teja, *Indonesian Fintech Business: New Innovations or Foster and Collaborate in Business Ecosystems? Literature Study and Hypothesis Development*, **The Asian Journal of Technology Management**, 2017, 10(1), 10–18.
- ⁸⁶M. Jakšič & M. Marinč, *The Future of Banking: The Role of Information Technology*, **International Journal of Scientific and Technology Research**, 2019, 8(6), 305–308.
- ⁸⁷ M.L. Barnett, *The Business Case for Corporate Social Responsibility: A Critique and an Indirect Path Forward*, **Business & Society**, 58 (1), 2019, 167-190.
- ⁸⁸P. Gomber; C. Parker; R. Kauffman & B. Weber, *On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services*, **Journal of Management Information System**, 2018, 1–14.
- ⁸⁹ N. Baporikar, *Innovation Management Case Study*, **International Journal of Innovation in the Digital Economy (IJIDE)**, 13(1), 2022, 1-11.
- ⁹⁰J. Dermine, *Digital Disruption and Bank Lending*, **European Economy – Banks, Regulation, and the Real Sector**, 3(2), 2017, 63–76.
- ⁹¹N. Iman, *Is Mobile Payment still Relevant in the Fintech Era?*, **Electronic Commerce Research and Applications**, 30, 2018, 72-82.
- ⁹² M.B. Legowo; S. Steph & A.S. Fangky, *Fintech and Bank: Past, Present, and Future*, **Jurnal Teknik Komputer AMIK BSI**, 7(1), 2021, 94-99.
- ⁹³V.R., Wulan, *Financial Technology (FinTech), A New Transaction In Future*, **Journal of Electrical Engineering and Computer Sciences**, 2(1), 2017, 177–182.
- ⁹⁴ M. Vučinić, *Fintech and Financial Stability Potential Influence of FinTech on Financial Stability, Risks and Benefits*, **Journal of Central Banking Theory and Practice**, 9(2), 2020, 43-66.

- ⁹⁵ B.R. Early & C. Menevis, *Economic Sanctions in Flux: Enduring Challenges, New Policies, and Defining the Future Research Agenda*, **International Studies Perspectives**, 21(4), 2020, 438-477.
- ⁹⁶ A.V., Thakor. "Fintech and Banking: What do we know"? **Journal of Financial Intermediation**, 2019 1–13.
- ⁹⁷ D.B. Kharisma, *Urgency of Financial Technology (Fintech) laws in Indonesia*, **International Journal of Law and Management**, 2020.
- ⁹⁸ W.S. Frame; L. Wall; & L.J. White, *Technological Change and Financial Innovation in Banking: Some Implications for FinTech*, 2018, Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3261732
- ⁹⁹ K. Prabhavathi & G.P. Dinesh, *Banking: Definition and Evolution*, **International Journal of Scientific & Engineering Research**, 9(8), 2018, 745–753.
- ¹⁰⁰ T. Trębacz, *FinTech as an innovative banking sector*, **World Scientific News**, 122, 2019, 83–95.
- ¹⁰¹ K.P., Prawirasasra. "Financial Technology in Indonesia: Disruptive or Collaborative"? **Reports on Economics and Finance**, 4(2) 2018 83–90.
- ¹⁰² M. Dabrowski & L. Janikowski, *Virtual Currencies and Central Banks Monetary Policy: Challenges Ahead, Depth Analysis*, **Monetary Dialogue**, 2018.
- ¹⁰³ K. Leong, *FinTech (Financial Technology): What is It and How to Use Technologies to Create Business Value in Fintech Way*? **International Journal of Innovation, Management and Technology**, 2018, 9(2), 74–78.
- ¹⁰⁴ E.A. Posnaya; O. G. Semenyuta; E. V. Dobrolezha & M. Smolander, *Modern Features for Capital Portfolio Monitoring*, **International Journal of Economics & Business Administration**, 7(1), 2019, 53–60.
- ¹⁰⁵ S.R. Das, *The Future of Fintech*, **Financial Management**, 48(4), 2019, 981-1007.
- ¹⁰⁶ A.J. Alexander; S. Lin & S. Bensam, *How Fintech is Reaching the Poor in Africa and Asia: A Start-Up Perspective*, **EM Compass Note 34**, IFC, 2017.
- ¹⁰⁷ D. Mhlanga, *COVID-19 and Digital Financial Inclusion: Policies and Innovation that can Accelerate Financial Inclusion in a Post –COVID World through Fintech*, **African Journal of Development Studies**, 2, 2022, 79-100.
- ¹⁰⁸ IFC. . "Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution." 2018 Bank for International Settlements, "Policy Responses to FinTech: A Cross-Country Overview." 2020. <https://www.bis.org/fsi/publ/insights23.pdf>

- ¹⁰⁹T. Zalan & T. Elissar, *The Promise of FinTech in Emerging Markets: Not as Disruptive*, **Contemporary Economics**. 1(1), 2017,415-430.
- ¹¹⁰ E. Feyen; J. Frost; G. Leonardo; N. Harish & S. Matthew, *FinTech and the Digital Transformation of Financial Services: Implications for Market Structure and Public Policy.*” **Bank for International Settlement Papers**, 117, 2021.
- ¹¹¹ L. Anagnostopoulos, *Fintech and Regtech: Impact on Regulators and Banks*, **Journal of Economics and Business**,100, 2018, 7-25.
- ¹¹²M. Sahay; M.S. Ratna; U.V. Eriksson; A. Lahreche; P. Khera; S. Ogawa; M. Bazarbash, B. Kimberly, *The Promise of FinTech Financial Inclusion in the Post COVID-19 Era.* **International Monetary Fund**, 2020.
- ¹¹³World Bank Group; China Development Bank. “*Leapfrogging: The Key to Africa’s Development?*”**World Bank, Washington, DC**, 2017, Available at: <https://openknowledge.worldbank.org/handle/10986/28440>
- ¹¹⁴ D. J. Kjosavik, *Sen and Development as Freedom: In Research Handbook on Democracy and Development*, Edward Elgar Publishing, 2021.
- ¹¹⁵ P.Grover; K.K. Arpan; J. Marijn & P. V. Ilavarasan, *Perceived Usefulness, Ease of Use and User Acceptance of Blockchain Technology for Digital Transactions–Insights from User-Generated Content on Twitter*, **Enterprise Information Systems** ,13(6), 2019, 771-800.
- ¹¹⁶ A. Maqbool, *Review of the Technology Acceptance Model (TAM) in Internet Banking and Mobile Banking*, **International Journal of Information Communication Technology and Digital Convergence**, 3(1), 2018, 23-41.
- ¹¹⁷O. Kodongo, *Financial Regulations, Financial Literacy and Financial Inclusion: Insights from Kenya*, **Emerging Markets Finance and Trade**, 54 (12) (2018), 2851-2873.
- ¹¹⁸ S. Musau; S. Muathe, and L. Mwangi, *Financial Inclusion, Bank Competitiveness and Credit Risk of Commercial Banks in Kenya*, **International Journal of Financial Research**, 9(1), 2018, 203-218.
- ¹¹⁹ J.W. Dearing & G.C. Jeffrey, *Diffusion of Innovations Theory, Principles, and Practice*, **Health Affairs**, 37(2), 2018, 183-190.
- ¹²⁰ E.Z. Milian; M.S. Mauro de, & M.C.Marly, *Fintechs: A literature Review and Research Agenda*, **Electronic Commerce Research and Applications**, 34 (2019): 100833- 100857.
- ¹²¹ C.M.Deegan, *Legitimacy theory: Despite its Enduring Popularity and Contribution, Time is Right for a Necessary Makeover*, **Accounting, Auditing & Accountability Journal**, 32(8), 2019,2307-2329.

- ¹²² M.F. Basheer; M. Saqib; A.N. Muhammad & A. Zubair. *The Antecedents of Corporate Social and Environmental Responsibility Discourse in Pakistan: Multiple Theoretical Perspectives*, **Abasyn University Journal of Social Sciences**, 13(1), 2020, 1-11.
- ¹²³ B. Zyznarska-Dworczak, *Legitimacy Theory in Management Accounting Research*. **Problemy ZarzÉdzania**, 72, 2018, 195-203.
- ¹²⁴ M.Corrado; P. Demartini & J. Dumay, *Assurance on Integrated Reporting: A Critical Perspective*, In *Integrated reporting*, Springer, Cham, 2019,199-217.
- ¹²⁵ M. Etter; E. Colleoni, L. Illia; K. Meggiorin & D.E. Antonino, *Measuring Organizational Legitimacy in Social Media: Assessing Citizens' Judgments with Sentiment Analysis*, **Business & Society**, 57(10), 2018, 60-97.
- ¹²⁶ B.L. Mercurius; S. Steph & F.A. Sorongan. "Fintech and Bank: Past ,Present and Future". **Journal teknik computer**. 7 (1) (2021)
- ¹²⁷ S. Yang & G. Jijan, *Research on the Influence of Institutional Environment and Fintech to Urban Commercial Banking Performance*, **Journal of Social Sciences, Education and Humanities**,4(25),2020.
- ¹²⁸D. Liurui; L. Yongbin; Y. Liu & Y. Zhao, *Impact of Fintech on Bank Risk –Taking :Evidence from China*, 2021.
- ¹²⁹O.Y., Stoiko. "Prospects for the Development of Fintech and Banking in Ukraine, **Baltic Journal of Economic Studies**, 2(44), 2020, 356-364.
- ¹³⁰H. Yin, *Foreign Bank Entry and Bank Competition: Cross-Country Heterogeneity*, **Global Finance Journal**, 48, 2021, 100558.
- ¹³¹M.S. Sadekin; S.N. Mukta & M.H. Shaikh, *Customers' Trust on E-Banking System in Bangladesh*, **International Journal of Economics, Finance and Management sciences**, 7(6), 2019, 178-186.
- ¹³² A.J. Alexander; S. Lin & S. Bensam, *How Fintech is Reaching the Poor in Africa and Asia : A Start-Up Perspective*, **International Finance Corporation, Washington, DC**, 34, 2017, Available at: <https://openknowledge.worldbank.org/handle/10986/30360>
- ¹³³ V. Mărăcine; O. Voican & E. Scarlat, *The Digital Transformation and Disruption in Business Models of the Banks under the Impact of FinTech and BigTech*, **In Proceedings of the International Conference on Business Excellence**, 14 (1), 2020, 294-305.
- ¹³⁴L. Hornuf; F.K. Milan; T.S. Lohwasser & A. Schwienbacher, *How do Banks Interact with Fintech Startups?*, **Small Business Economics**, 57 (3), 2021, 1505-1526.

- ¹³⁵ F. Campanella; A. Derhy G. Francesco, *Knowledge Management and Value Creation in the Post-Crisis Banking System*, **Journal of Knowledge Management**, 23(3), 2018, 263-278.
- ¹³⁶ I. Japparova, & R. Rupeika-Apoga, *Banking Business Models of the Digital Future: The Case of Latvia*, **European Research Studies Journal**, 20 (3), 2017, 846-860.
- ¹³⁷U. Aduaka & O.D. Awolusi, *Electronic Banking and Profitability in the Nigerian Banking Industry*, **Journal of Economics and Finance**, 12 (2), 2020.
- ¹³⁸ A.E. Omarini, *Fintech and the Future of the Payment Landscape: The Mobile Wallet Ecosystem. A challenge for Retail Banks*, **International Journal of Financial Research**, 9(4), 2018, 97-116.
- ¹³⁹ S.O., Adeku, *Technology innovation in the Nigerian Banking System: Prospects and Challenges*, **Rajagiri Management Journal**, 15(1), 2021,2-15.
- ¹⁴⁰ K. Friday & B. Biirance, *Retail Banking and Bank Performance: Evidence from Nigeria*, **International Journal of Economics and Finance**, 1(13), 2021, 15-27
- ¹⁴¹ D.Varga, *Triple-Bottom-Line Impact Analysis Framework of FinTech Companies*, **Vezetéstudomány-Budapest Management Review**, 49(11), 2018, 24-34.
- ¹⁴² Z. C. Abaenewe; O. M. Ogbulu & M.O. Ndugbu, *Electronic Banking and Bank Performance in Nigeria*, **West African Journal of Industrial and Academic Research**, 6(1), 2018, 171-187.
- ¹⁴³ A. Mabrouk & C. Mamoghli. *Dynamic of Financial Innovation and Performance of Banking Firms: Context of an Emerging Banking Industry*, **International Research Journal of Finance and Economics**, 5(2),2018, 32 – 41.
- ¹⁴⁴ S. Ejike, *Financial Technological Innovation and Financial Performance of Deposit Money Banks in Nigeria*, **European Journal of Accounting, Finance and Innovation**, 5(4),2019 40-56.
- ¹⁴⁵ W. Akani & R. L. Obiosa, *Effects Of Financial Innovations On The Profitability Of Deposit Money Banks In Nigeria*, **European Journal of Accounting, Auditing and Finance Research**. 8 (1), 2020, 52-73.
- ¹⁴⁶ J. Madugba; B. C. Egbide; D. W. Jossy; U. T. Agburuga & O. O. Chibunna, *Effect of Electronic Banking on Financial Performance of Deposit Money Banks in Nigeria*, **Banks and Bank Systems**, 16, (3), 2021, 71–83.

Chapter Three

Methodology

This chapter presents the approaches and methodology that is employed in this study. It discusses the research designs population, sample size and sampling procedure, measurement of variables and method of data analysis.

3.1 Research Design

This study employed the survey research design which focused on data collection with the aid of questionnaire. This has the ability to collect large amount of data in a population based research. This method is used because it ensure a coherent research instrument for gathering data and generating information that will be drawn on the study. The use of questionnaire in this study allows for respondent to disclose their perception on current and emerging issues with respect to financial technology and financial performance of deposit money banks in Nigeria. It is also faster and relatively inexpensive to use.

3.2 Population of the Study

This research intends to explore the efficacy and restrictions of Financial technology (FINTECH) integration in Nigeria banking sector. The target population include the twenty four (24) deposit money banks listed by the central bank of Nigeria with both local and international authorization as at June 2021.

3.3 Sample Size and Sampling Technique

This study uses a sample of eleven (11) deposit money banks with both local and international authorization. The simple random sampling technique was used to select the needed sample from the population, this is because simple random sampling is objective and unbiased. The selected banks include, Zenith Bank, Guaranty Trust

Bank, First Bank, Access Bank, Polaris Bank, Union Bank, First City Monument Bank, Fidelity Bank, Sterling Bank, Stanbic IBTC Bank and Ecobank. Questionnaires were administered on 150 respondents who are staff of the selected banks.

3.4 Description of Research Instrument

Research instruments are tools used in a study to collect data. This study uses structured closed-ended questionnaire to collect data from the participants.

The Research Questionnaire consist of sections A to E. Section A focused on the essential demographic characteristics of the respondents, while Section B focused on financial services provided by deposit money banks in Nigeria, section C contains questions with regard to financial technology and the extent to which it has been integrated, section D contains questions on constraints to technology integration, while the last section focused on financial performance of deposit money banks in Nigeria.

Each question of the questionnaire from Section B to E were structured in Likert Scale which required the respondents to grade their options on a scale of 1 – 5. The questions had scaled responses as of Very Large Extent (coded 4), Large Extent (coded 3), Some Extent (coded 2), Minor Extent (coded 1) and Not At All (coded 0).

3.5 Validity of Research Instrument

Validity refers to the degree to which a measuring instrument measures what it is designed to measure, as well as the extent to which empirical evidences and theoretical rationales support the adequacy and appropriateness of interpretations based on findings¹. In order to ensure the validity of the instrument used in this study, past literature were reviewed in order to ensure that the instrument is empirically and

theoretically valid. In addition, the researcher's supervisor to ensure that it was comprehensive enough to cover the full range of the subject matter.

3.6 Reliability of the Research Instrument

A reliability scrutiny was done to verify the reliability level of the variables used in the study. The study adopted a test-retest method, which involved giving an instrument the second time to the same group of respondents. Reliability would therefore be confirmed through correlation between the scores on the two independent instruments.

3.7 Data Collection

This study relied exclusively on primary source of data using questionnaire to collect data from participants who are low-level and mid-level staffs of selected deposit money banks in Nigeria. A total of one hundred and fifty (150) questionnaires was administered among the respondents.

3.8 Model Specification

The general model of this study is founded on the theoretical framework specified by equation 2.1 above. This is in line with the objective of the study which is to examine the effect of technology integration on financial performance of deposit money banks in Nigeria. The functional relationship is expressed as below

$$FP = f(\text{Financial Technology}) \quad (3.1)$$

Where FP is the financial performance of deposit money banks

3.8.1 Model for the Investigation of the Effect of Financial Technology on the Financial Performance of Deposit Money Banks in Nigeria.

To achieve this objective, five (5) financial technology tool will be used as a measure of financial technology which is in line with past studies^{2,3}. The equation 3.1 can then be re-expressed as;

$$FP = f(ATM, POS, IB, MB, USSD)$$

This can be expressed in estimable form as follows

$$FP = \alpha_0 + \alpha_1 ATM + \alpha_2 POS + \alpha_3 IB + \alpha_4 MB + \alpha_5 USSD + \varepsilon$$

Where

FP = financial performance of deposit money banks in Nigeria

ATM = Automated Teller Machine

POS = Point of Sales

IB = Internet Banking

MB = Mobile Banking

USSD = Unstructured Supplementary Service Data

α_0 = Constant term

α_{1-5} = Coefficient of the variables

ε = error term

3.8.2 Model for the Assessment of the Effect of Constraints to Technology Integration on Financial Performance of Deposit Money Banks in Nigeria.

To achieve this objectives, the constraints to technology integration (CONST) is expressed as a determinant of financial performance of deposit money banks in Nigeria (FP). This relationship is expressed as

$$FP = f(CONST)$$

In its econometric form, it can be expressed as

$$FP = \alpha_0 + \alpha_1 \text{CONST} + \varepsilon$$

α_0 = Constant term

α_1 = Coefficient of the variable

ε = error term

3.9 Method of Data Analysis

To achieve the objectives of this study, the descriptive and inferential analysis. Descriptive analysis was carried out to show the demography of the respondents and give insightful information regarding the distribution of the respondents.

The inferential analysis was carried out to investigate effects of financial technology and constraints to technology integration on financial performance of deposit money banks in Nigeria using the correlation, exploratory factor analysis and regression analysis. Also, descriptive analysis was conducted to show variations in responses and opinions of the respondents using frequencies and percentage denotations. The data for the study was analyze using version 26 of the SPSS (Statistical Package for Social Sciences) software.

3.10 Apriori Expectations

A positive and significant relationship is expected between financial technology and financial performance of deposit money banks in Nigeria. A positive relationship is also expected between financial technology tools (ATM, Internet Banking, POS, Mobile Banking and USSD) and financial performance of deposit money banks in Nigeria. Also, a negative relationship is expected between constraints to technology integration and financial performance of deposit money banks in Nigeria.

3.11 Ethical Consideration

This study is conducted with honesty and integrity, exercising due diligence while recognizing and protecting the confidentiality of participants in the study. To render this study ethical, research participants participated voluntarily and the information provided are treated with utmost confidentiality. The anonymity of the participants was ensured while being treated with dignity.

Deception or exaggeration about the aims and objectives of the research was avoided and all communications and information reports in relation to the research are done with honesty and transparency, such that there are no misleading information, as well as representation of primary data findings in a biased way. The researcher maintained strict objectivity in discussions and analyses throughout the research.

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Endnotes

D. Bruin, *Exploring how Objects used in a Picture Vocabulary Test Influence Validity*, **University of Pretoria**, 2011, 49–80.

² A.O. Okpara; O. Ikpefan & O. M. Aigbiremolen, *Impediments to E-Banking Services Marketing in Developing Economies—A Case Study of Nigerian Banks*, **European Journal of Business and Social Sciences**, 3(3), 2018, 228-248.

³ M.Y. Keskar & N. Pandey, *Internet Banking: A Review (2002–2016)*, **Journal of Internet Commerce**, 17(3), 2018, 310-323.

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Chapter Four

Results and Discussion of Findings

This chapter presents the data, analysis and interpretation with respect to the objectives of the study. The data analysis and interpretation was based on the response of the participants from questionnaire administered.

4.1 Demographic Data Analysis

For the purpose of this study, 150 participants from 11 selected deposit money banks in Nigeria were considered, out of which 112 responses were retrieved. The respondents comprise of both male and females. The table 4.1.1 below presents the demographic statistics of the respondents in the survey carried out.

Table 4.1.1 Demographic Characteristics of Respondents

Variable	Frequency (n)	Percentage (%)
Gender	Male	47.5
	Female	52.5
	Missing	13
	Total	112
Marital Status	Single	29.2
	Married	68.9
	Divorced	0.9
	Separated	0.9
	Missing	6
	Total	112
Age	18-25	15.0
	26-35	51.4
	36-45	27.1
	46 and Above	6.5
	Missing	5
	Total	112
Education	NCE/OND	8.3
	HND/B.Sc	71.3
	M.Ed/M.Sc	16.7
	PhD	3.7
	Missing	2
	Total	112
Years of Experience in the Banking Industry	Less than 1 Year	10.9
	1-3 Years	31.8
	4-6 Years	22.7
	7-10 Years	15.5
	More than 10 Years	19.1
	Total	112

Source: Field Survey 2022

It was revealed from the table 4.1.1 that majority of the participants were females represented by 52.5% while the male respondents were 47.5 %. This is showed pictorially below.

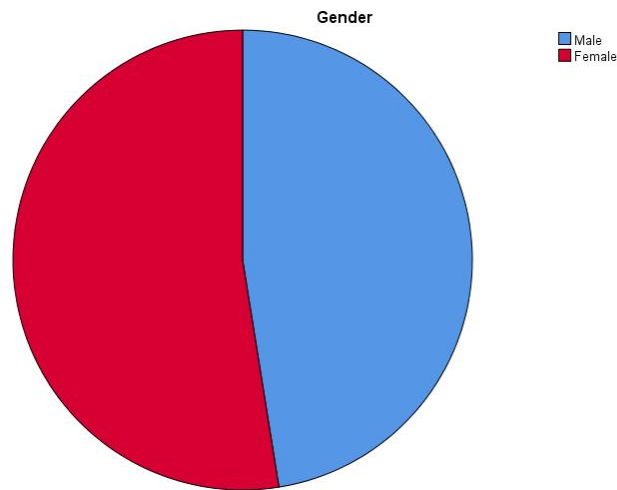


Figure 4.1.1: Gender
Source: *Field Survey 2022*

In terms of marital status of the respondents, majority are married (68.9%) followed by those that are single (29.2%) while those that are divorced and separated are represented by 0.9% each. This is depicted pictorially below.

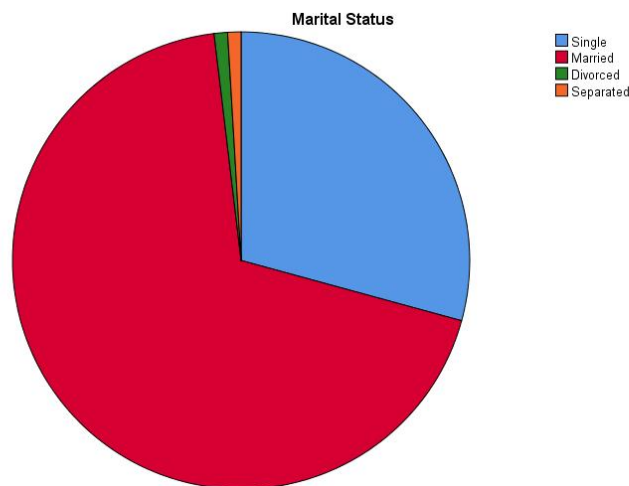


Figure 4.1.2: Marital Status
Source: *Field Survey 2022*

With regards to education, majority of the participants are HND/B.Sc holders (71.3%) followed by M.Ed/M.Sc (16.7%) and NCE/OND (8.3%), while the least represented were the PhD holders with 3.7%.

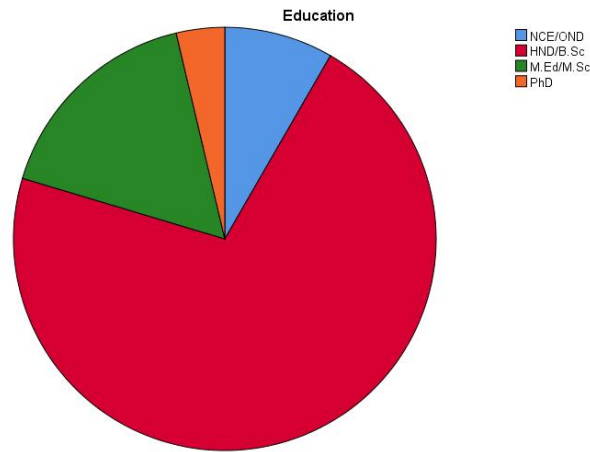


Figure 4.1.3: Education
Source: *Field Survey 2022*

In terms of age, the age range with the highest participation are those between 26 to 35 with 51.4% followed by those that falls within the range of 36 to 45 with 27.1%. Those that are within the range of 18 to 25 are 15% while the least are those above 46 years of age (6.5%).

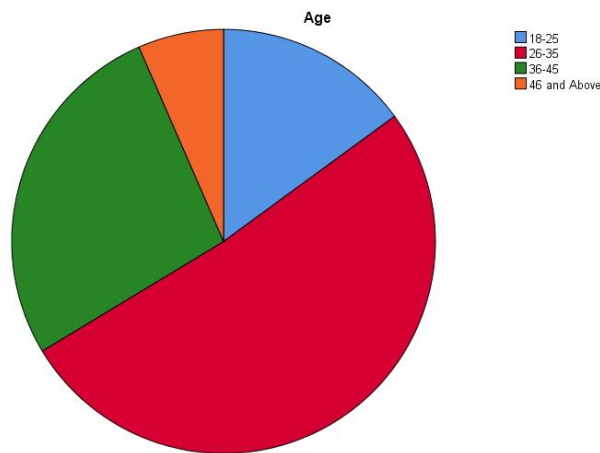


Figure 4.1.4: Age
Source: *Field Survey 2022*

In addition, it was also discovered that majority of the respondent are still relatively new at their respective banks as participants with 1 to 3 years work experience account for 31.8%, followed by 22.7% of those with 4 to 6 years work experience in the banking industry. Those that have more than 010 years work experience were 19.1% followed by those with 7 to 10 years (15.5%), while the least represented were those with less than a year (10.9%). This is presented pictorially below:

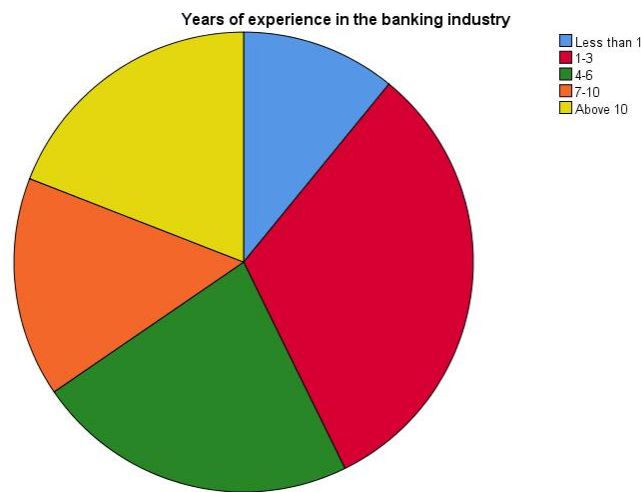


Figure 4.1.5: Years of Experience in the Banking Industry
Source: *Field Survey 2022*

4.2 Data Analysis and Interpretation

The study collected data on the financial services and financial technology as well as the constraints experienced in the adoption and use of financial technology as well as financial performance measures of deposit money banks in Nigeria. The analyses based on the objectives of the study are presented below.

4.2.1 Examination of the Extent to which Deposit Money Banks Have Integrated Technology into Financial Services in Nigeria.

In order to examine the extent to which deposit money banks have integrated technology into financial services in Nigeria, the set of financial services offered by deposit money banks must be ascertained.

Table 4.2.1 Financial Services Provided by Deposit Money Banks in Nigeria**To what extent does your bank engage in the following Financial Services**

S/N	Financial Services	Percentage of Respondents					
		VLE	LE	SE	ME	NAA	MEAN
1	Deposit facilities (current, savings and term deposit accounts)	72.3	23.2	2.7	1.8	0	3.66
2	Credit facilities (term loans, cash credit, bills discounting, vehicles loans, agriculture loans, corporate credit, retail loans)	36.6	47.3	10.7	5.4	0	3.15
3	Remittances and payments (payment of bills, collection of cheques and bills, Real-Time Gross Settlement (RTGS) Electronic Clearing Service (ECS), National Electronic Funds Transfer (NEFT), and Society for Worldwide Interbank Financial Transfers (SWIFT))	58.9	25.0	8.0	6.3	1.8	3.33
4	Export, import and foreign exchange facilities (Export and import credit, foreign letters of credit, cross country payments, currency exchange, remittance from abroad)	35.1	41.4	12.6	7.2	3.6	2.97
5	Investment banking and wealth management (personal banking, asset management, executor and trusteeship arrangements)	32.1	53.6	8.9	5.4	0	3.12
6	Ancillary services (safe custody and safe deposit locker facilities, solvency certificates, insurance and mutual fund services, credit and debit cards, and sale of gold coins)	28.8	28.8	32.4	9.0	0.9	2.76
	Average Mean						3.17

Source: Field Survey 2022**KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All*******Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

The table 4.2.1 revealed that all participants generally agreed to a large extent that the deposit banks in Nigeria offers the listed financial services which are deposit services, credit services, remittances and payments, export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services (Mean = 3.17).

Specifically, the report shows that with a frequency distribution of 72.3%, the respondents agree to a large extent that deposit money banks in Nigeria offers deposit services (Mean = 3.66). Credit service is another major financial services provided by the deposit money banks in Nigeria as majority of the respondents agree to a large

extent that their banks offer credit services (Mean = 3.15). Respondents also agree to a large extent that deposit money banks in Nigeria offers remittances and payments services (Mean = 3.33). Similarly, respondents agreed to a large extent that deposit money banks in Nigeria provide investment banking and wealth management services (Mean = 3.12). Meanwhile, export, imports and foreign exchange services (Mean = 2.97) and ancillary services respondents agree to a some extent (Mean = 2.76) that deposit money banks these services.

This implies that deposit money banks in Nigeria provides deposit services, credit services, remittances and payments, export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services. With this information, the extent to which deposit money banks have integrated technology in providing these financial services can then be examined. To achieve this the respondents were further asked the extent to which their banks uses each of the five financial technology tools (ATM, Internet Banking, POS, Mobile Banking and USSD) to deliver financial services. The distribution of their responses are reported below.

Table 4.2.2 The Extent to which Deposit Money Banks uses Technology to Provide Deposit Services

To what extent does your bank uses the following technology to perform Deposit Services							
S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	75.0	15.2	5.4	2.7	1.8	3.59
2	Internet Banking	70.5	20.5	3.6	3.6	1.8	3.54
3	POS	67.0	19.6	12.5	0.9	0	3.53
4	Mobile Banking	71.4	16.1	8.0	3.6	0.9	3.54
5	USSD	71.4	11.6	8.0	6.3	2.7	3.43
Average Mean							3.53

Source: *Field Survey 2022*

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

Table 4.2.2 depict that on the overall, the respondents agreed to a large extent that deposit money banks in Nigeria uses each of the financial technology tools to provide deposit services (Mean = 3.53). Majority of the respondents with a frequency distribution of 75% specifically agreed to a large extent that deposit money banks uses ATMs (Mean = 3.59), Internet banking (Mean = 3.54), POS (Mean = 3.53) and Mobile banking (Mean = 3.54) to provide deposit services in Nigeria. Meanwhile, majority of the respondents with a frequency distribution of 71.4% agreed to a large extent that USSD as a financial technology tools is being used to provide deposit services. In summary, ATMs, internet banking, POS, mobile banking and USSD as financial technology tools have been integrated to a large extent among deposit money banks.

Table 4.2.3 The Extent to which Deposit Money Banks uses Technology to Provide Credit Services

To what extent does your bank uses the following technology to perform Credit Services							
S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	68.5	17.1	9.0	0.9	4.5	3.44
2	Internet Banking	62.2	25.2	9.0	0.9	2.7	3.43
3	POS	51.4	27.0	14.4	0.9	6.3	3.16
4	Mobile Banking	61.3	26.1	8.1	2.7	1.8	3.42
5	USSD	61.3	25.2	8.1	3.6	1.8	3.41
Average Mean							3.37

Source: Field Survey 2022

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

Table 4.2.3 shows that generally, the respondents agreed to a large extent that deposit money banks in Nigeria uses each of the financial technology tools to provide credit services (Mean = 3.37). To be specific, the report shows that for each of the financial technology tools, respondents agree to a large extent that deposit money banks have integrated ATMs (Mean = 3.44), internet banking (Mean = 3.43), POS (Mean = 3.16),

mobile banking (Mean = 3.42) and USSD (Mean = 3.41) to provide credit services in Nigeria. This imply that credit services recipients can receive credit services via the use of technology tools such as ATMs, internet banking, POS, mobile banking and USSD to a large extent among deposit money banks.

Table 4.2.4 The Extent to which Deposit Money Banks uses Technology to Provide Remittances and Payment Services

To what extent does your bank uses the following technology to perform Remittances and Payment Services							
S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	56.4	24.5	9.1	9.1	0.9	3.26
2	Internet Banking	53.2	29.7	7.2	9.0	0.9	3.25
3	POS	46.4	29.1	14.5	9.1	0.9	3.11
4	Mobile Banking	51.4	29.7	9.9	6.3	2.7	3.21
5	USSD	50.9	23.6	14.5	7.3	3.6	3.11
Average Mean							3.12

Source: *Field Survey 2022*

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

In table 4.2.4, it was observed that the respondents generally agreed to a large extent that deposit money banks in Nigeria have integrated each of the financial technology tools to provide remittances and payment services (Mean = 3.12). Clearly, it can be seen from the frequency distribution that the majority of the respondents for each of the technology tools agree to a very large extent, however, the mean shows that the respondents agree to a large extent that deposit money banks in Nigeria have integrated ATMs (Mean = 3.26), internet banking (Mean = 3.25), POS (Mean = 3.11), mobile banking (Mean = 3.21) and USSD (Mean = 3.11) to provide remittances and payment services in Nigeria. This means that users can access remittances and payment services to a large extent through financial technology tools.

Table 4.2.5 The Extent to which Deposit Money Banks uses Technology to Provide Export, Import and Foreign Exchange Services

To what extent does your bank uses the following technology to perform Export, Import and Foreign Exchange Services

S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	37.8	21.6	19.8	9.9	10.8	2.66
2	Internet Banking	31.8	36.4	16.4	9.1	6.4	2.78
3	POS	30.6	22.5	19.8	16.2	10.8	2.46
4	Mobile Banking	40.5	23.4	21.6	9.9	4.5	2.86
5	USSD	34.2	21.6	18.9	10.8	14.4	2.50
Average Mean							2.65

Source: Field Survey 2022

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent.**

Table 4.2.5 depict that the respondents overall agree to some extent that deposit money banks in Nigeria have integrated each of the financial technology tools to provide export, import and foreign exchange services. From the mean of the distribution of the respondents, it can be seen that for each of the financial technology tools, respondents agree to some extent that deposit money banks in Nigeria have integrated ATMs (Mean = 2.66), internet banking (Mean = 2.78), POS (Mean = 2.46), mobile banking (Mean = 2.86) and USSD (Mean = 2.50) to provide export, import and foreign exchange services in Nigeria. This means that users can access export, import and foreign exchange services to some extent through financial technology tools.

Table 4.2.6 The Extent to which Deposit Money Banks uses Technology to Provide Investment Banking and Wealth Management Services

To what extent does your bank uses the following technology to perform Investment Banking and Wealth Management Services

S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	41.8	27.3	12.7	9.1	9.1	2.84
2	Internet Banking	31.8	40.0	14.5	9.1	4.5	2.85
3	POS	21.8	36.4	18.2	11.8	11.8	2.45
4	Mobile Banking	26.4	44.5	15.5	8.2	5.5	2.78
5	USSD	32.7	30.0	17.3	8.2	11.8	2.64
Average Mean							2.71

Source: Field Survey 2022

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

Table 4.2.6 shows that the respondents generally agree to some extent that deposit money banks in Nigeria have integrated each of the financial technology tools to perform investment banking and wealth management services. Specifically, the mean of the distribution of the respondents shows that for each of the financial technology tools, respondents agree to some extent that deposit money banks in Nigeria have integrated ATMs (Mean = 2.84), internet banking (Mean = 2.85), POS (Mean = 2.45), mobile banking (Mean = 2.78) and USSD (Mean = 2.64) to provide investment banking and wealth management services in Nigeria. This means that users can access investment banking and wealth management services to some extent through financial technology tools.

Table 4.2.7 The Extent to which Deposit Money Banks uses Technology to Provide Ancillary Services

To what extent does your bank uses the following technology to perform Ancillary Services							
S/N	FINTECH	VLE	LE	SE	ME	NAA	Mean
1	ATM	30.9	39.1	11.8	10.0	8.2	2.75
2	Internet Banking	32.4	31.5	17.1	12.6	6.3	2.71
3	POS	27.9	30.6	19.8	13.5	8.1	2.57
4	Mobile Banking	31.5	31.5	18.9	12.6	5.4	2.71
5	USSD	29.7	32.4	16.2	13.5	8.1	2.62
Average Mean							2.67

Source: *Field Survey 2022*

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

In table 4.2.7 it can be observed that respondents generally agree to some extent that deposit money banks in Nigeria have integrated each of the financial technology tools to provide ancillary services. The mean of the distribution of the respondents, shows specifically that for each of the financial technology tools, respondents agree to some extent that deposit money banks in Nigeria have integrated ATMs (Mean = 2.75), internet banking (Mean = 2.71), POS (Mean = 2.57), mobile banking (Mean = 2.71) and USSD (Mean = 2.62) to provide ancillary services in Nigeria. The implication of this is that users can access ancillary services to some extent through financial technology tools.

Overall, it can be seen from the results that deposit money banks in Nigeria have integrated technology into providing financial services in Nigeria, however, the technology are mostly used to offer deposit services, credit services and remittances and payment services. Although, these technological tools are also being used to provide export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services but only to some extent.

4.2.2 Analysis of the Constraints to Integrating Technology into Financial Services Among Deposit Money Banks in Nigeria.

In order to achieve the second objective which is to analyse the constraints to integrating technology into financial services among deposit money banks in Nigeria, questions were asked to get information on the constraints to using these financial technology tools. The question focused on the extent to which deposit money banks experience the listed constraints such as poor understanding and acceptance, regulatory challenges, infrastructure and security threat and data privacy in using financial technology tools.

Table 4.2.8 The Extent to which Deposit Money Banks Experience Constraints in using Financial Technology

To what extent does your bank experience the following constraints in using Financial Technology							
S/N	FINTECH	Percentage of Respondents					Mean
		VLE	LE	SE	ME	NAA	
1	Poor understanding/ acceptance and distrust of FINTECH innovation by customers	35.7	29.5	23.2	8.0	3.6	2.86
2	Regulatory challenges	27.0	36.0	18.9	10.8	7.2	2.65
3	Consumers unwillingness to pay higher prices for better FINTECH	31.3	34.8	13.4	16.1	4.5	2.72
4	Lack of qualified personnel	28.6	25.9	17.9	15.2	12.5	2.43
5	Lack of adequate finance for FINTECH innovation in the bank	25.5	23.6	13.6	19.1	18.2	2.19
6	Lack of adequate information on FINTECH	14.5	31.8	20.9	18.2	14.5	2.14
7	Difficulty in finding reliable cooperation partners for FINTECH innovation	21.1	23.9	19.3	16.5	19.3	2.11
8	Inadequate access to infrastructure such as electricity and telecommunication	21.8	32.7	11.8	20.0	13.6	2.29
9	Lack of privacy and security hazards	19.4	37.0	13.9	15.7	13.9	2.32
10	High cost of maintenance compared to traditional system	25.9	21.3	19.4	19.4	13.9	2.26
11	Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking	22.7	29.1	24.5	16.4	7.3	2.44
Average Mean							2.40

Source: *Field Survey 2022*

KEY: VLE = Very Large Extent, LE = Large Extent, SE = Some Extent, ME = Minor Extent, NAA = Not At All

*****Decision Rule of mean is 0 to 0.99 = Not At All; 1 to 1.99 = Minor Extent; 2 to 2.99 = Some Extent; 3 to 3.99 = Large Extent; 4 to 4.99= Very Large Extent**

Table 4.2.8 reports the distribution of the respondent and their respective mean with regards to the constraints in using financial technology in their respective banks. It can be seen that participants generally agree to some extent that there are constraints to integrating technology into the provision financial services in Nigeria (Mean = 2.40). Eleven (11) constraints were considered where for each of the constraints, majority of the respondents agree to a large extent that they affect the integration of technology. Meanwhile, the mean of the distribution shows that the respondents agree to some extent that poor understanding/ acceptance and distrust of FINTECH innovation by customers (2.86), regulatory challenges (2.65), consumers unwillingness to pay higher prices for better FINTECH (2.72), lack of qualified personnel (2.43), lack of adequate finance for FINTECH innovation in the bank (2.19), lack of adequate information on FINTECH (2.14), difficulty in finding reliable cooperation partners for FINTECH innovation (2.11), inadequate access to infrastructure such as electricity and telecommunication (2.29), lack of privacy and security hazards (2.32), high cost of maintenance compared to traditional system (2.26) and security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking (2.44) are constraints to full integration of technology to providing financial services among deposit money banks in Nigeria.

This means that although the listed constraints limits the integration of technology into financial services by deposit money banks in Nigeria to some extent, there are other challenges which acts as constraints to the integration of technology to the provision of financial services.

To evaluate the performance of the selected deposit money banks in Nigeria, questions regarding their financial performance was also asked. The distribution of the respondents are reported below.

Table 4.2.9 Financial Performance: Frequency Distribution of Respondents

S/N	Financial Performance	Percentage of Respondents					Mean
		VLE	LE	SE	ME	NAA	
1	Profitability grows consistently yearly.	63.6	26.4	7.3	1.8	0.9	3.50
2	Turnover grows consistently increase yearly.	46.4	41.8	7.3	3.6	0.9	3.29
3	Maintenance of a strong cash flow.	51.8	30.9	14.5	0.9	1.8	3.30
4	Increasing return on capital.	44.5	40.0	10.0	4.5	0.9	3.23
5	Dividend is constantly being paid	47.3	30.9	14.5	5.5	1.8	3.16
	Average Mean						3.30

Source: Field Survey 2022

Table 4.2.4 presents the report of the distribution of respondents with regards to the financial performance of their respective banks. The report shows that for each of the question, majority of the respondents agree to a very large extent and to a large extent whereas only few do not agree at all. 63.6% of the respondents agree to a very large extent and 26.4% agree to a large extent that profitability grows consistently yearly, while for question on turnover grows consistently increase yearly, 46.4% agree to a very large extent and 41.8% agree to a large extent meanwhile just as in the case on profitability, 0.9% do not agree at all.

Also, 51.8% agree to a very large extent and 30.9% agree to a large extent that their respective banks maintain a strong cash flow while only 1.8% do not agree at all. Meanwhile, 44.5% agree to a very large extent and 40% agree to a large extent that their banks experience increasing return on capital while only 0.9% disagree. Lastly, 47.3% agree to a very large extent and 30.9% agree to a large extent that dividend is constantly being paid by their banks while only 1.8% do not agree at all.

4.2.3 Exploratory Factor Analysis (EFA)

In line with the third and fourth objectives of this study which seek to investigate the effect of financial technology on the financial performance of deposit money banks in Nigeria and to evaluate the effect of constraints to to integration of technology on the financial performance of deposit money banks in Nigeria, the study employs exploratory factor analysis (EFA) using the principal components analysis (PCA). The EFA method is used to condense the information contained in a large number of variables into a number of information or factor loading. The statistical purpose of this technique is to determine the combination of variables that will help summarize the data and identify underlying relationships. It also collectively analyse all variables under investigation to identify underlying factors. This is carried out using principal component analysis which is a variable reduction technique with the aim of reducing a larger set of variables into a smaller set of 'artificial' variables, called 'principal components', which account for most of the variance in the original variables. However, this method is subject to some assumptions, as a result, the following pre-test was carried out on the whole questionnaire.

4.2.4 Correlation

The correlation matrix result produced a huge correlation table, which was recorded in the appendix of this study. Factor analysis checks for relationships between the data, the expectation is that there should be at least some moderate-to-high correlations in the data (for instance correlations above the value of $r=0.3$). As seen in the result of the correlation matrix for integration of financial technology, constraints to the integration of technology and financial performance of deposit money banks in Nigeria shows that there are several moderate correlations which suggest that the analysis is appropriate. However, in order to avoid multicollinearity in factor analysis,

any variable with a very high correlation of $r > 0.9$ should be removed. From the result in this study, there are no variables with $r > 0.9$ which indicate the absence of multicollinearity. However, further test need to be carried out to test the strength of the correlation.

4.2.5 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

Table 4.2.10 The Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

Variables	KMO Test	Bartlett's Test	
		Approx. Chi-Square	Sig
ATMs	0.809	159.767	0.000
Internet Banking	0.693	80.883	0.000
POS	0.719	141.127	0.000
Mobile Banking	0.665	118.612	0.000
USSD	0.691	174.930	0.000
Constraints	0.860	1147.105	0.000
Financial Performance	0.835	318.501	0.000

Source: Author's Computation using SPSS 26, (2022)

The result of the Kaiser-Meyer-Olkin (KMO) which measures sampling adequacy for the overall data set and the Bartlett's test are presented in table 4.2.10 above. The KMO test was conducted to test the strength of the partial correlation (how the factors explain each other) between the variables. The KMO values that is considered ideal and acceptable ranges from 0.5 to 1.0, while values less than 0.4 are unacceptable. The questionnaire administered comprise of 30 questions with regards to technology integration with 6 questions each relating to ATMs, internet banking, POS, mobile banking, and USSD. There were also 11 questions for constraints to technology integration as well as 5 questions for financial performance.

The result of Kaiser-Meyer-Olkin measure of sampling adequacy was for all the variables as presented in the table 4.2.10 shows that all the variables are within the acceptable values of 0.5 and 1. This imply that there is a strong partial correlation among the variables. In addition, the Bartlett's test of Sphericity was used to test whether the correlation matrix is the same as the identity matrix. The purpose of this

is to make sure that the correlation matrix of the variables in the dataset diverges significantly from the identity matrix, so that we know a data reduction technique is suitable to use. A significant statistical test is expected to be below 0.05 to show that correlation matrix is indeed not an identity matrix which means rejection of the null hypothesis. The Bartlett's Test of Sphericity in this study is less than 0.01 for all variables of interest. With the results meeting the assumptions of the principal components analysis (PCA) test, this means that PCA test can therefore be carried out with reliable result.

4.2.6 Extracted Factors and Percentage of Variance

Table 4.2.10 Total Variance Explained: ATMs

Component	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.845	47.420	47.420	2.845	47.420	47.420
2	.991	16.509	63.929			
3	.727	12.115	76.043			
4	.570	9.495	85.538			
5	.512	8.533	94.072			
6	.356	5.928	100.000			

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The total variance explained and extracted factors for integration of ATMs was reported in table 4.2.10. The scree plot (reported in the appendix) and eigenvalues >1 was used to determine the underlying factor components. A single factor was extracted which explained a total of 47.42% of the variance in integration of ATMs. This factor is labeled ATMs.

Table 4.2.11 Total Variance Explained: Internet Banking

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.185	36.417	36.417	2.185	36.417	36.417	1.954	32.560	32.560
2	1.084	18.071	54.487	1.084	18.071	54.487	1.316	21.927	54.487
3	.924	15.403	69.890						
4	.739	12.319	82.209						
5	.558	9.303	91.513						
6	.509	8.487	100.000						

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The result of the principal component analysis for the integration of internet banking is presented in the table 4.2.11. Showing the extracted factors and the total variance explained by each components. Using the scree plot and the eigenvalues >1 to determine the underlying components, the analysis showed that 2 factors were extracted for the integration of internet banking which cumulatively explains 54.49% of the variations in the data. However, the factor with the highest load is more relevant in defining the variable's dimension, therefore the first factor which explains 36.42% of the variations in the data is selected and labeled internet banking.

Table 4.2.12 Total Variance Explained: POS

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.615	43.590	43.590	2.615	43.590	43.590	2.426	40.430	40.430
2	1.074	17.896	61.486	1.074	17.896	61.486	1.263	21.056	61.486
3	.824	13.732	75.218						
4	.651	10.855	86.073						
5	.476	7.930	94.003						
6	.360	5.997	100.000						

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The total variance explained and extracted factors for integration of POS was reported in table 4.2.12. The scree plot (reported in the appendix) and eigenvalues >1 was used to determine the underlying factor components. The analysis showed that 2 factors

were extracted for the integration of POS which cumulatively explains 61.49% of the variations in the data. However, the factor with the highest load is more relevant in defining the variable's dimension, therefore the first factor which explains 43.59% of the variations in the data is selected and labeled POS.

Table 4.2.13 Total Variance Explained: Mobile Banking

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.372	39.541	39.541	2.372	39.541	39.541	1.848	30.797	30.797
2	1.132	18.868	58.409	1.132	18.868	58.409	1.657	27.612	58.409
3	.944	15.732	74.141						
4	.672	11.194	85.335						
5	.499	8.308	93.644						
6	.381	6.356	100.000						

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The total variance explained and extracted factors for integration of mobile banking was reported in table 4.2.13. The scree plot (reported in the appendix) and eigenvalues >1 was used to determine the underlying factor components. The analysis showed that 2 factors were extracted for the integration of mobile banking which cumulatively explains 58.41% of the variations in the data. However, the factor with the highest load is more relevant in defining the variable's dimension, therefore the first factor which explains 43.59% of the variations in the data is selected and labeled mobile banking.

Table 4.2.14 Total Variance Explained: USSD

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.685	44.753	44.753	2.685	44.753	44.753	2.159	35.984	35.984
2	1.145	19.088	63.841	1.145	19.088	63.841	1.671	27.857	63.841
3	.916	15.268	79.109						
4	.526	8.774	87.882						
5	.443	7.391	95.274						
6	.284	4.726	100.000						

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

Table 4.2.14 presents the result of the principal component analysis for the integration of USSD. It shows the extracted factors and the total variance explained by each component. Using the scree plot and the eigenvalues >1 to determine the underlying components, the analysis showed that 2 factors were extracted for the integration of USSD which cumulatively explains 63.84% of the variations in the data. However, the factor with the highest load is more relevant in defining the variable's dimension, therefore the first factor which explains 44.75% of the variations in the data is selected and labeled USSD.

Table 4.2.15 Total Variance Explained: Constraints

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.456	58.689	58.689	6.456	58.689	58.689	4.308	39.159	39.159
2	2.022	18.381	77.070	2.022	18.381	77.070	4.170	37.910	77.070
3	.814	7.401	84.470						
4	.527	4.789	89.259						
5	.299	2.715	91.975						
6	.245	2.231	94.206						
7	.191	1.737	95.943						
8	.147	1.337	97.280						
9	.121	1.101	98.381						
10	.094	.852	99.234						
11	.084	.766	100.000						

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The result of the principal component analysis for the constraints to integration of technology to providing financial services among deposit money banks in Nigeria is presented in the table 4.2.1. Using the scree plot and the eigenvalues >1 to determine the underlying components, the analysis showed that 2 factors were extracted for the integration of internet banking which cumulatively explains 77.07% of the variations in the data. However, the factor with the highest load is more relevant in defining the variable's dimension, therefore the first factor which explains 58.69% of the variations in the data is selected and labeled constraints.

Table 4.2.16 Total Variance Explained: Financial Performance

Component	Total Variance Explained			Extraction Sums of Squared Loadings		
	Total	Initial Eigenvalues % of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.442	68.839	68.839	3.442	68.839	68.839
2	.627	12.534	81.373			
3	.461	9.229	90.602			
4	.304	6.071	96.674			
5	.166	3.326	100.000			

Extraction Method: Principal Component Analysis.

Source: Author's Computation using SPSS 26, (2022)

The total variance explained and extracted factors for financial performance of deposit money banks in Nigeria was reported in table 4.2.16. The scree plot (reported in the appendix) and eigenvalues >1 was used to determine the underlying factor components. A single factor was extracted which explained a total of 68.84% of the variance in the data. This factor is labeled Financial Performance (PERF).

4.3 Hypothesis Testing

Having determined the factors/variables for this study, the hypothesis can therefore be tested. The hypotheses in this study presumed that financial technology has no significant effect of financial performance of deposit money banks in Nigeria and constraints to technology integration has no significant effect on financial performance of deposit money banks in Nigeria. To test this, a multiple regression was conducted to establish the significant level of the impact financial technology and

constraints to integration of technology on financial performance of deposit money banks in Nigeria.

4.3.1 Hypothesis One: Investigation of the Effect of Financial Technology on the Financial Performance of Deposit Money Banks in Nigeria

H₀₁: Financial technology has no significant effect on financial performance of banks in Nigeria.

The hypothesis seek to test if there is a significant relationship between financial technology and financial performance of deposit money banks in Nigeria.

Table 4.3.1 Result of the Investigation of the Effect of Financial Technology Tools on the Financial Performance of Deposit Money Banks in Nigeria.

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics			
	B	Std. Error	Beta	t	Sig.	R	RSquare	Tolerance	VIF
1 (Constant)	0.006	0.089		0.064	0.949	0.487	0.237		
Automated Teller Machine (ATMs)	0.349	0.092	0.349	3.778	0.000			1.000	1.000
Internet Banking	0.360	0.092	0.358	3.909	0.000			1.000	1.000
Point of Sales (POS)	0.268	0.095	0.266	2.813	0.006			1.000	1.000
Mobile Banking	0.171	0.096	0.170	1.770	0.080			1.000	1.000
Unstructured Supplementary Service Data (USSD)	0.207	0.096	0.206	2.147	0.034			1.000	1.000

Source: Author's Computation using SPSS 26, (2022)

The result of the multiple regression, estimating the effect of financial technology tools on financial performance of deposit money banks in Nigeria was reported in the table 4.3.1. The result shows that there is a positive and moderate association between the five financial technology tools (ATMs, Internet Banking, POS, Mobile Bankiing and USSD) and financial performance of deposit money banks in Nigeria ($r = 0.49$, $p < 0.01$). These financial technology tools also collectively explains 23.7% of the variation in the financial performance of deposit money banks in Nigeria.

The coefficient results reported in table 4.3.1 shows that each of the financial technology tools (ATMs, Internet Banking, POS, Mobile Banking and USSD) have a positive and significant effect on financial performance of deposit money bank in Nigeria. Although, ATMs (B= 0.349), internet banking (B= 0.360) and POS (B= 0.268) are significant at 1% level of significance, while mobile banking (B= 0.171) and USSD (B= 0.207) are significant at 10% and 5% level of significance respectively.

The implication of this is that the financial performance of deposit money banks in Nigeria will improve by 34.9% as a result of improvement in integration of ATMs, 36% as a result of improvement in integration of internet banking, 26.8% as a result of improvement in integration of POS, 17.1% as a result of improvement in integration of mobile banking and 20.7% as a result of improvement in integration of USSD.

The table further reported the test for multicollinearity using the variance inflation factor (VIF) which is less than 3 (VIF = 1) for each of the financial technology tools.

This means there is an absence of multicollinearity in the model.

Table 4.3.2 Result of the Investigation of the Effect of Financial Technology on the Financial Performance of Deposit Money Banks in Nigeria.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R	RSquare	Collinearity Statistics	
	B	Std. Error	Beta					Tolerance	VIF
1 (Constant)	0.002	0.097		0.025	0.980	0.224	0.050		
Financial Technology	0.224	0.096	0.224	2.320	.022			1.000	1.000

Source: Author's Computation using SPSS 26, (2022)

The regression result estimating the impact of overall financial technology on the financial performance of deposit money banks in Nigeria is presented in table 4.3.2.

The result indicated that there exist a positive but weak correlation between financial technology and financial performance of deposit money banks ($r=0.224$, $p<0.05$). It

was also discovered that financial technology account for 5% of the variation in the financial performance of deposit money banks in Nigeria. This implies that there several other factors that account for the financial performance of deposit money banks in Nigeria.

The coefficient results reported in table 4.3.2 shows that there is a positive and significant impact of financial technology on the financial performance of deposit money banks in Nigeria ($B= 0.224$, $t= 2.320$, $p < 0.05$). The implication of this is that an improvement in the financial technology integration in providing financial services by deposit money banks will improve financial performance by 22.4%. The table further reported the test for multicollinearity using the variance inflation factor (VIF) which is less than 3 ($VIF = 1$). This means there is an absence of multicollinearity in the model.

Consequently, at a level of significance of 0.022, which is lower than 0.05, the study rejected the null hypothesis which that state that financial technology has no significant effect on financial performance of banks in Nigeria.

4.3.2 Hypothesis Two: Assessment of the Effect of Constraints to Technology Integration on Financial Performance of Deposit Money Banks in Nigeria

H₀2: Constraints to technology integration has no significant effect on financial performance of deposit money banks in Nigeria.

This hypothesis seeks to test if there is a significant effect on financial performance of deposit money banks in Nigeria.

Table 4.3.3 Result of the Assessment of the Effect of Constraints to Technology Integration on Financial Performance of Deposit Money Banks in Nigeria.

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	R	RSquare	Collinearity Statistics	
		B	Std. Error	Beta						Tolerance	VIF
1	(Constant)	-0.005	0.098			-0.055	0.956	0.216	0.047		
	Constraints	-0.016	0.098	-0.016		-0.164	0.870			1.000	1.000

Source: Author's Computation using SPSS 26, (2022)

Tables 4.3.3 presents the linear regression result of the estimation of the impact of constraints to technology integration on financial performance of deposit money banks in Nigeria. From the result it was discovered that there is a positive but weak correlation between technology constraints and financial performance of deposit money banks in Nigeria ($r= 0.216$, $p>0.05$). The result also revealed that these constraints to technology are responsible for 4.7% of the variations in the financial performance of deposit money banks in Nigeria.

The table also reported the coefficient result which indicates a negative and insignificant impact of constraints to technology integration on the financial performance of deposit money banks in Nigeria ($B = -0.016$, $t = -0.164$, $p > 0.05$). It was further discovered from the result the variance inflation factor (VIF) which tested for the presence of multicollinearity was found to be is less than 3 ($VIF = 1$) which imply the absence of multicollinearity in the model.

As a result of this findings, the study cannot rejected the null hypothesis which that state that constraints to technology integration has no significant effect on financial performance of deposit money banks in Nigeria.

4.4. Discussion of Findings

This study investigated the impact of technology integration on financial performance of deposit money banks in Nigeria with the aim of determining the extent to which technology has been integrated into the provision of financial services, identifying the

constraints to technology integration, evaluating the effect of financial technology and constraints to financial technology integration on financial performance of deposit money banks in Nigeria.

The first objective was to examine the extent to which deposit money banks have integrated technology into financial services in Nigeria. The result of the analysis showed that deposit money banks in Nigeria provides deposit services, credit services, remittances and payments, export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services. It was further found that deposit money banks in Nigeria have integrated technology into providing financial services in Nigeria, however, the technology are mostly used to offer deposit services, credit services and remittances and payment services. Although, these technological tools are also being used to provide export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services but only to some extent.

The second objective was to analyze the constraints of integrating technology into financial services among deposit money banks in Nigeria. The result of the analysis showed that to a large extent, poor understanding/acceptance and distrust of FINTECH innovation by customers, regulatory challenges, consumers unwillingness to pay higher prices for better FINTECH, lack of qualified personnel, lack of adequate finance for FINTECH innovation in the bank, lack of adequate information on FINTECH, difficulty in finding reliable cooperation partners for FINTECH innovation, inadequate access to infrastructure such as electricity and telecommunication, lack of privacy and security hazards, high cost of maintenance compared to traditional system and security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking are

constraints to integration of technology into the provision of financial services among deposit money banks in Nigeria.

This is consistent with the findings of other scholars who also identified similar constraints to technology integration among deposit money banks. Some of these studies identified security and fraud issues, low literacy level of most customers, low patronage of e-banking services and inadequate power supply^{4,5}. Others also identified low patronage of e-services, inadequate power supply, lack of requisite ICT capabilities, over-dependence on foreign software, online Security and Fraud risks, high Cost of ICT hardware and software, monopoly of e-banking by stronger banks, low literacy level of most customers, cultural and religious beliefs of customers, reluctance of bank employees to adapt to ICT as well as high Tariffs by Nigerian telecom operators⁶.

This also support the findings of another researcher who also identified the factors affecting the adoption of internet banking services in Nigeria. This include security/privacy and dearth of communication infrastructures, perception and culture. Although, it was also found that in order to counter these challenges, the banking sector need to intensify promotional efforts through the print and electronic media which will directly appeal to the bank and non-bank customers to become internet bank users will encourage usage. These findings provide a platform for bank managers to plan and execute viable programs with a view to expansion of their customer base through aggressive marketing⁷.

The third objective was to investigate the effect of financial technology on the financial performance of deposit money banks in Nigeria. The result of the multiple regression, estimating the effect of financial technology tools on financial performance of deposit money banks in Nigeria. showed that there is a positive and

moderate association between the five financial technology tools (ATMs, Internet Banking, POS, Mobile Banking and USSD) and financial performance of deposit money banks in Nigeria ($r = 0.49$, $p < 0.01$). These financial technology tools also collectively explains 23.7% of the variation in the financial performance of deposit money banks in Nigeria. The coefficient results indicated that each of the financial technology tools (ATMs, Internet Banking, POS, Mobile Banking and USSD) have a positive and significant effect on financial performance of deposit money bank in Nigeria. Although, ATMs ($B = 0.349$), internet banking ($B = 0.360$) and POS ($B = 0.268$) are significant at 1% level of significance, while mobile banking ($B = 0.171$) and USSD ($B = 0.207$) are significant at 10% and 5% level of significance respectively. The test for multicollinearity using the variance inflation factor (VIF) is found to be less than 3 ($VIF = 1$) for each of the financial technology tools. This means there is an absence of multicollinearity in the model.

The implication of this is that the financial performance of deposit money banks in Nigeria will improve by 34.9% as a result of improvement in integration of ATMs, 36% as a result of improvement in integration of internet banking, 26.8% as a result of improvement in integration of POS, 17.1% as a result of improvement in integration of mobile banking and 20.7% as a result of improvement in integration of USSD.

The study further tested the effect of financial technology on financial performance of deposit money banks in Nigeria. It was found that there exist a positive but weak correlation between financial technology and financial performance of deposit money banks ($r = 0.224$, $p < 0.05$). It was also discovered that financial technology account for 5% of the variation in the financial performance of deposit money banks in Nigeria. This implies that there several other factors that account for the financial performance

of deposit money banks in Nigeria. The coefficient results also showed that there is a positive and significant impact of financial technology on the financial performance of deposit money banks in Nigeria ($B= 0.224$, $t= 2.320$, $p < 0.05$). The implication of this is that an improvement in the financial technology integration in providing financial services by deposit money banks will improve financial performance by 22.4%. The table further reported the test for multicollinearity using the variance inflation factor (VIF) which is less than 3 ($VIF = 1$). This means there is an absence of multicollinearity in the model.

The implication of this is that an improvement in integration of technology to provide financial services, financial performance of deposit money banks will improve by 22.4%. Banks should therefore focus more on integrating technology and encouraging the use of the adopted technology by customers as this will boost their performance.

This findings is in line with the result of other scholars who have investigated similar objectives. Similar result was found by other scholars which support that ATM has a positive and significant association with Earning EPS and ROA; POS and NEFT significantly affect ROA, while WEB has an insignificant impact on both EPS and ROA. This imply that electronic banking significantly affects financial performance of deposit money banks in Nigeria. ⁸.

Others also found that the adoption of various forms of ICT has greatly influenced the content and quality of banking operations and performance⁹. Studies also revealed that technology innovation has influenced Nigerian banking industry performance. ICT has specifically increased banks Return on Equity. Such findings support the result of this study that interbank transfers, use of POS, ATM, mobile payment, and web payment have significant effect on the performance of deposit money banks in Nigeria.¹⁰.

The fourth objective assess the effect of constraints to technology integration on financial performance of deposit money banks in Nigeria. From the result of the analysis, it was discovered that there is a positive but weak correlation between technology constraints and financial performance of deposit money banks in Nigeria ($r= 0.216, p>0.05$). The result also revealed that these constraints to technology are responsible for 4.7% of the variations in the financial performance of deposit money banks in Nigeria. The coefficient result indicates a negative and insignificant impact of constraints to technology integration on the financial performance of deposit money banks in Nigeria ($B = -0.016, t = -0.164, p > 0.05$). It was further discovered from the result the variance inflation factor (VIF) which tested for the presence of multicollinearity was found to be is less than 3 ($VIF = 1$) which imply the absence of multicollinearity in the model.

This is consistent with the findings of other scholars who's discoveries from their study indicated that improvement of financial technology efficiency is the key to reducing costs, de-leveraging and increasing efficiency in the industrial sector. It was found that it can also effectively alleviate the credit constraints facing the industrial sector and promote its high-quality development¹¹

Other scholars identified some of the factors affecting the adoption of internet banking services in Nigeria such as security/privacy and dearth of communication infrastructures, perception and culture which plays a serious role in financial technology in Nigeria¹². Bank technology integration has also been found to reduce the sensitivity of capital expenditures to the level of internal funds. Integration decreases financing constraints for bank-dependent firms¹³.

Endnotes

- ¹K.C. Anigbogu, *Challenges of ICT Application in Nigerian Banking Organizations: A Study of New and Old Generation Banks*, **The Nigerian Journal of Sociology and Anthropology**, 11, (2), 2013.
- ² W. Chung & J. Paynter, *An evaluation of Internet banking in New Zealand*, **Proceedings of the 35th Annual Hawaii International Conference on System Sciences**, IEE, 2002, January, 2410–2419.
- ³ A. M. Edwin; A. Okpara; O. Ikpefan & M.O. Aigbiremolen, *Impediments To E-Banking Services Marketing in Developing Economies – a Case Study of Nigerian Banks*, **European Journal of Business and Social Sciences**, 3, (3), 2014, pp. 228–248.
- ⁴A.G. Edwin, *An Analysis of Obstacles to Uptake of Internet Banking Services In Nigeria* **Research Journal of Business & Management**, 2(1), 2015.
- ⁵ J. Madugba; B. C. Egbide; D. W. Jossy; U. T. Agburuga & O. O. Chibunna, *Effect of Electronic Banking on Financial Performance of Deposit Money Banks in Nigeria*, **Banks and Bank Systems**, 16, (3), 2021, 71–83.
- ⁶ P. Ajaya, *Effect of Financial Technology on Financial Performance of the Banking Industry in Kenya*, **PhD diss., University of Nairobi, Kenya**, 2020.
- ⁷ N.N. Peace; C.P. Sidi & O.S. Abomeh, *Impact of Information and Communication Technology on the Performance of Deposit Money Banks in Nigeria*, **International Journal of Management and Sustainability**, 7, (4), 2018, 225–239.
- ⁸ Z. Li; R. E. Wang; Y. Xu & Y. Gao, *Financial Technology Efficiency and Credit Constraints Facing the Industrial Sector : Evidence from China*, **IEEE Access**, 1-15, 2020.
- ⁹ W. Akani & R. L. Obiosa, *Effects of Financial Innovations on the Profitability of Deposit Money Banks In Nigeria*, **European Journal of Accounting, Auditing and Finance Research**. 8 (1), 2020, 52-73.
- ¹⁰ R. Correa, *Bank Integration and Financial Constraints: Evidence from U.S. Firms*, **FRB International Finance Discussion Paper**, 925, 2008.

Chapter Five

Conclusion

This chapter presents a summary of findings, conclusion and recommendations based on the based on the result of the analysis carried out. It also discusses the contribution to knowledge made and suggested arrears for further study.

5.1 Summary of Findings

As a result of the importance of the banking sector in an economy, there is a constant need to improve their service quality and to follow the innovative trends in the world. The advent of technology has reshaped the way financial services are provided in the banking sector. Hence, financial technology is rapidly increasing and has become widespread in both developed and developing economies. This has caused several studies to investigate the influence of financial technology on the performance of banks in different countries. In Nigeria however, there is still a dearth of scientific and empirical research on technology integration and bank performance.

The aim of this study is to examine the effect of Technology Integration on Financial performance of Deposit Money Banks in Nigeria. Specifically, this study set out to examine the extent to which deposit money banks have integrated technology into financial services in Nigeria, analyse the constraints of integrating technology into financial services among deposit money banks in Nigeria and investigate the effect of financial technology and constraints to technology integration on the financial performance of deposit money banks in Nigeria.

In order to achieve these objectives, this study collected data using questionnaire administered to 150 participants from 11 selected deposit money banks in Nigeria were considered, out of which 112 responses was retrieved. The data was collected for financial services, financial technology tools, constraints to technology integration and financial performance of deposit money banks in Nigeria. The collected data was subjected to analysis using SPSS version 26.

The descriptive statistics showed that 52.5% of the respondents were female, while the male respondents were 47.5 %. Also, 68.9% are married, 29.2% are single while those that are divorced and separated are represented by 0.9% each. It was also observed that 71.3% of the participants are HND/B.Sc holders, 16.7% are M.Ed/M.Sc (16.7%), 8.3% are NCE/OND and 3.7% are PhD holders. In terms of age, the age range with the highest participation are those between 26 to 35 with 51.4% followed by those that falls within the range of 36 to 45 with 27.1%. Those that are within the range of 18 to 25 are 15% while the least are those above 46 years of age (6.5%). In addition, it was also discovered that majority of the respondent are still relatively new at their respective banks as participants with 1 to 3 years work experience account for 31.8%, followed by 22.7% of those with 4 to 6 years work experience in the banking industry. Those that have more than 10 years work experience were 19.1% followed by those with 7 to 10 years (15.5%), while the least represented were those with less than a year (10.9%).

This study employed descriptive statistics, exploratory factor analysis as well as ordinary least square. However, preliminary checks were carried out to confirm the appropriateness of these methods employed, this include correlation matrix which shows the degree of association among the variables. It was confirmed that there are several moderate correlations among the variables which suggest that the analysis is

appropriate. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test were also carried out. The result of Kaiser-Meyer-Olkin measure of sampling adequacy for each of the variables are all above the commonly recommended value of 0.5 for all variables. The implication of this is that there exists a strong partial correlation among the variables. Also, the Bartlett's test of Sphericity in this study is less than 0.01 for all variables of interest. With the results meeting the assumptions of the principal components analysis (PCA) test, this means that PCA test can therefore be carried out.

From the result of the PCA, both the scree plot and eigenvalues > 1 was used to determine the underlying components and the factor component with with the highest load which is more relevant in defining the variable's dimension was considered and were used to represent each variable. Regression test were then carried out to test whether financial technology and constraints to technology integration have significant effect on financial performance of deposit money banks in Nigeria.

The first objective was to examine the extent to which deposit money banks have integrated technology into financial services in Nigeria. The result of the analysis showed that deposit money banks in Nigeria provides deposit services, credit services, remittances and payments, export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services. It was further found that deposit money banks in Nigeria have integrated technology into providing financial services in Nigeria, however, the technology are mostly used to offer deposit services, credit services and remittances and payment services. Although, these technological tools are also being used to provide export, imports and foreign exchange services, investment banking and wealth management services as well as ancillary services but only to some extent.

The second objective was to analyze the constraints of integrating technology into financial services among deposit money banks in Nigeria. The result of the analysis showed that to a large extent, poor understanding/acceptance and distrust of FINTECH innovation by customers, regulatory challenges, consumers unwillingness to pay higher prices for better FINTECH, lack of qualified personnel, lack of adequate finance for FINTECH innovation in the bank, lack of adequate information on FINTECH, difficulty in finding reliable cooperation partners for FINTECH innovation, inadequate access to infrastructure such as electricity and telecommunication, lack of privacy and security hazards, high cost of maintenance compared to traditional system and security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking are constraints to integration of technology into the provision of financial services among deposit money banks in Nigeria.

The third objective was to investigate the effect of financial technology on the financial performance of deposit money banks in Nigeria. The result of the multiple regression, estimating the effect of financial technology tools on financial performance of deposit money banks in Nigeria, showed that there is a positive and moderate association between the five financial technology tools (ATMs, Internet Banking, POS, Mobile Banking and USSD) and financial performance of deposit money banks in Nigeria ($r = 0.49$, $p < 0.01$). These financial technology tools also collectively explain 23.7% of the variation in the financial performance of deposit money banks in Nigeria. The coefficient results indicated that each of the financial technology tools (ATMs, Internet Banking, POS, Mobile Banking and USSD) have a positive and significant effect on financial performance of deposit money bank in Nigeria. Although, ATMs ($B = 0.349$), internet banking ($B = 0.360$) and POS ($B =$

0.268) are significant at 1% level of significance, while mobile banking (B= 0.171) and USSD (B= 0.207) are significant at 10% and 5% level of significance respectively. The test for multicollinearity using the variance inflation factor (VIF) is found to be less than 3 (VIF = 1) for each of the financial technology tools. This means there is an absence of multicollinearity in the model. The study further tested the effect of financial technology on financial performance of deposit money banks in Nigeria. It was found that there exist a positive but weak correlation between financial technology and financial performance of deposit money banks ($r=0.224$, $p<0.05$). It was also discovered that financial technology account for 5% of the variation in the financial performance of deposit money banks in Nigeria. This implies that there several other factors that account for the financial performance of deposit money banks in Nigeria. The coefficient results also showed that there is a positive and significant impact of financial technology on the financial performance of deposit money banks in Nigeria (B= 0.224, $t= 2.320$, $p < 0.05$). The implication of this is that an improvement in the financial technology integration in providing financial services by deposit money banks will improve financial performance by 22.4%. The table further reported the test for multicollinearity using the variance inflation factor (VIF) which is less than 3 (VIF = 1). This means there is an absence of multicollinearity in the model.

The fourth objective assesses the effect of constraints to technology integration on financial performance of deposit money banks in Nigeria. From the result of the analysis, it was discovered that there is a positive but weak correlation between technology constraints and financial performance of deposit money banks in Nigeria ($r= 0.216$, $p>0.05$). The result also revealed that these constraints to technology are responsible for 4.7% of the variations in the financial performance of deposit money

banks in Nigeria. The coefficient result indicates a negative and insignificant impact of constraints to technology integration on the financial performance of deposit money banks in Nigeria ($B = -0.016$, $t = -0.164$, $p > 0.05$). It was further discovered from the result the variance inflation factor (VIF) which tested for the presence of multicollinearity was found to be less than 3 ($VIF = 1$) which imply the absence of multicollinearity in the model.

In summary, technology has been integrated to a large extent among deposit money banks in Nigeria and further integration will improve the financial performance of deposit money banks. In the same way, overcoming the constraints to technology integration also has the potential to improve the financial performance of deposit money banks in Nigeria.

5.2 Conclusion

This study was conducted to examine the impact of technology integration on the financial performance of deposit money banks Using descriptive statistics, correlation, exploratory factor analysis and regression models, the impacts were analyzed and established. Positive and significant impact of financial technology and technology tools on financial performance was established.

In line with the findings of this study, it was concluded that although deposit money banks in Nigeria offers deposit services, credit services, remittances and payments, export, imports and foreign exchange services, investment banking and wealth management services and ancillary services, technology has been integrated to a large extent into providing deposit services, credit services and remittances and payments services compared to export, imports and foreign exchange services, investment

banking and wealth management services as well as ancillary services where technology have only been integrated to some extent.

Financial technology tools and financial technology as a whole are significant predictors of financial performance of deposit money banks in Nigeria. Also, to a large extent, poor understanding/acceptance and distrust of FINTECH innovation by customers, regulatory challenges, consumers unwillingness to pay higher prices for better FINTECH, lack of qualified personnel, lack of adequate finance for FINTECH innovation in the bank, lack of adequate information on FINTECH, difficulty in finding reliable cooperation partners for FINTECH innovation, inadequate access to infrastructure such as electricity and telecommunication, lack of privacy and security hazards, high cost of maintenance compared to traditional system and security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking are constraints to integration of technology into the provision of financial services among deposit money banks in Nigeria, although these constraints collectively are found to have a negative and insignificant impact on financial performance of deposit money banks in Nigeria.

5.3 Recommendations

On the basis of the findings of this study, the following were recommended:

- i. The banks should embark on aggressive campaign and re-orientation of clients to create awareness for the customers to patronize the facilities especially in the area of use of ATMs, USSD, Internet banking, POS, mobile banking and others because increasing acceptance and use of these financial technology tools will consolidate the gains from investing in them and improve the financial performance.

- ii. The monetary authority and banks should encourage consistent use of ATM, POS, Internet banking, Mobile banking and USSD as these will improve and sustain the financial performance of deposit money banks.
- iii. Banks should ensure constant availability of funds in their automated teller machines, they should also ensure rapid response to customer queries arising from ATM failures in terms of dispensing cash.
- iv. Bank agents should be giving advanced financial training to equip them more and banks should ensure strong network connectivity to improve POS transactions success rate.
- v. Banks should ensure cyber security as related to internet and mobile transactions and improve safety measures to protect customer details during and after online transactions.
- vi. In addition, deposit money banks should also on regular basis monitor global best practices as with regards to technology innovation in the financial sector so that they can train their workers and agents accordingly.

5.4 Contribution to Knowledge

The aim of this study is to examine the effect of Technology Integration on Financial performance of Deposit Money Banks in Nigeria. Specifically, this study set out to examine the extent to which deposit money banks have integrated technology into financial services in Nigeria, analyse the constraints of integrating technology into financial services among deposit money banks in Nigeria and investigate the effect of financial technology and constraints to technology integration on the financial performance of deposit money banks in Nigeria.

The findings of this study contributes to the body of knowledge by establishing the financial services provided by deposit money banks in Nigeria and the extent to which they use technology to provide each of the services. Also, specific constraints to integration of technology by deposit money banks were identified. In addition, the financial performance of deposit money banks can be improved by further integration of technology to providing financial services in Nigeria.

5.5 Suggested Areas for Further Research

This study has examined the technology integration from context of the banking sector and its implication on the achievement of the primary objective of banks in Nigeria using primary data. However, further studies could employ secondary data in measuring the financial performance of deposit money banks and how it is affected by financial technology integration. Future studies could also explore the adoption of technology from the view of bank customers with respect to with respect to implications of technology integration on customer's satisfaction.

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Bibliography

Chapters in Books

- Banerjee, A., *FinTech Revolution in the Gulf Countries and MENA Region*, In *Entrepreneurial Finance in Emerging Markets*, 2020, 335-344.
- Chishti, S.; Barberis, J.; Menat, R.; Wendenburg, J. & Hatami, A., *The FinTech Book, The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries*, Cornwall: Wiley, Combination of Insights from Multiple Industry Experts, 2016.
- Corrado, M.; Demartini, P. & Dumay, J., *Assurance on Integrated Reporting: A Critical Perspective*, In *Integrated reporting*, Springer, Cham, 2019,199-217.
- Kjosavik, D. J., *Sen and Development as Freedom*: In *Research Handbook on Democracy and Development*, Edward Elgar Publishing, 2021.
- Welc, J., *Financial statement analysis*, In *Evaluating Corporate Financial Performance*, Palgrave Macmillan, Cham, 2022,131-212.

Journals

- Abaenewe, Z. C.; Ogbulu, O. M. & Ndugbu, M.O., *Electronic Banking and Bank Performance in Nigeria*, **West African Journal of Industrial and Academic Research**, 6(1), 2018, 171-187.
- Abdelmoula, L., *The Impact of Extrinsic Job Satisfaction Factors on the Organizational Commitment of Accounting Professionals in Tunisia*, **Management Science Letters**, 10(13), 2020, 3003-3008.
- Adeku, S.O., *Technology innovation in the Nigerian Banking System: Prospects and Challenges*, **Rajagiri Management Journal**, 15(1), 2021,2-15.
- Adeosun, O.T. & Adeku, S.O., *Attracting and Recruiting Quality Talent: Firm Perspectives*, **Rajagiri Management Journal**, 14(2), 2020, 107-120.
- Aduaka, U. & Awolusi, O.D., *Electronic Banking and Profitability in the Nigerian Banking Industry*, **Journal of Economics and Finance**, 12 (2), 2020.
- Ajefu, J.B. & Ogebe, J.O., *Migrant Remittances and Financial Inclusion among Households in Nigeria*, **Oxford Development Studies**, 47 (3), 2019, 319-335.
- Ajlouni , A.T. & Al-Hakim, M., *Financial Technology in Banking Industry: Challenges and Opportunities*, **International Conference on Economics and Administrative Sciences**, 12. 2018,1-18.
- Akani, W. & Obiosa, R. L., *Effects Of Financial Innovations On The Profitability Of Deposit Money Banks In Nigeria*, **European Journal of Accounting, Auditing and Finance Research**. 8 (1), 2020, 52-73.

- Akani, W. & Obiosa, R. L., *Effects of Financial Innovations on the Profitability of Deposit Money Banks In Nigeria*, **European Journal of Accounting, Auditing and Finance Research**, 8 (1), 2020, 52-73.
- Akpan, I. J.; Soopramanien, D. & Kwak, D.H., *Cutting-Edge Technologies for Small Business and Innovation in the Era of COVID-19 Global Health Pandemic*, **Journal of Small Business & Entrepreneurship**, 2020, 1-11.
- Alexander, A.J.; Lin, S. & Bensam, S., *How Fintech is Reaching the Poor in Africa and Asia: A Start-Up Perspective*, **EM Compass Note 34**, IFC, 2017.
- An, J. & Rau, R., *Finance, Technology and Disruption*, **The European Journal of Finance**, 2019, 1-12.
- Anagnostopoulos, L., *Fintech and Regtech: Impact on Regulators and Banks*, **Journal of Economics and Business**, 100, 2018, 7-25.
- Anigbogu, K.C., *Challenges of ICT Application in Nigerian Banking Organizations: A Study of New and Old Generation Banks*, **The Nigerian Journal of Sociology and Anthropology**, 11, (2), 2013.
- Artie, N. W. & Benny, B.K., *Emergence of Fintech and Cybersecurity in a Global Financial Centre*, **Journal of Financial Regulation and Compliance**, 25(4), 2017, 422- 434.
- Aydin, N. & Kulali, N., *Asset Utilization Efficiency and Ownership Structure: Evidence from Emerging and Developing Eastern Europe*, **Journal of Eastern European and Central Asian Research**, 5(1), 2018, 1-18.
- Baker, S. & Nordin, N.A., *Fintech Investment and Banks Performance in Malaysia, Singapore & Thailand*, **Journal of Social and Behavioral Science**, 2019.
- Baporikar, N., *Innovation Management Case Study*, **International Journal of Innovation in the Digital Economy (IJIDE)**, 13(1), 2022, 1-11.
- Barnett, M.L., *The Business Case for Corporate Social Responsibility: A critique and an Indirect Path Forward*, **Business & Society**, 58(1), 2019, 167-190.
- Basheer, M.F.; Saqib, M.; Muhammad, A.N. & Zubair, A., *The Antecedents of Corporate Social and Environmental Responsibility Discourse in Pakistan: Multiple Theoretical Perspectives*, **Abasyn University Journal of Social Sciences**, 13(1), 2020, 1-11.
- Berg, T.; Burg, V.; Gombovié, A. & Puri, M., *On the Rise of the FinTechs—Credit Scoring using Digital Footprints*, **Federal Deposit Insurance Corporation, Center for Financial Research WP**, 2018
- Bernstein, S.; Colonnelli, E. & Iverson, B., *Asset Allocation in Bankruptcy*, **The Journal of Finance**, 74(1), 2019, 5-53.

- Bruin, D., Exploring how Objects used in a Picture Vocabulary Test Influence Validity, **University of Pretoria**, 2011, 49–80
- Buchak, G.; Matvos, T. & Piskorski, A., “*Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks*,” **Journal of Financial Economics**, 130 (3), 2018, 453-483.
- Campanella, F.; Derhy, A. & Francesco G., *Knowledge Management and Value Creation in the Post-Crisis Banking System*, **Journal of Knowledge Management**, 23(3), 2018, 263-278.
- Chen, M. & Grossklags, J., *An Analysis of the Current State of the Consumer Credit Reporting System in China*, **Proc. Priv. Enhancing Technology**, 2 (4), 2020, 89-110.
- Chen, X.; Xuyian, Y. & Chang, V., *FinTech and commercial banks’ performance in China: A leap forward or survival of the fittest?*, **Journal of Technological Forecasting and Social Change**, 166, 2021, 1-12.
- Claessens, S.; Frost, J.; Turner, G. & Zhu, F., *Fintech Credit Markets Around the World: Size, Drivers and Policy Issues*, **BIS Quarterly Review**, 2018.
- Correa, R., *Bank Integration and Financial Constraints: Evidence from U.S. Firms*, **FRB International Finance Discussion Paper**, 925, 2008.
- Dabrowski, M. & Janikowski, L., *Virtual Currencies and Central Banks Monetary Policy: Challenges Ahead, Depth Analysis*, **Monetary Dialogue**, 2018.
- Dariusz, Y., *Global Financial Technology Report*, **Grégory Weber KPMG** 2017.
- Das, S.R., *The Future of Fintech*, **Financial Management**, 48(4), 2019, 981-1007.
- Dearing, J.W. & Jeffrey, G.C., *Diffusion of Innovations Theory, Principles, and Practice*, **Health Affairs**, 37(2), 2018, 183-190.
- Deegan, C.M., *Legitimacy theory: Despite its Enduring Popularity and Contribution, Time is Right for a Necessary Makeover*, **Accounting, Auditing & Accountability Journal**, 32(8), 2019, 2307-2329.
- Dermine, J., *Digital Disruption and Bank Lending*, **European Economy – Banks, Regulation, and the Real Sector**, 3(2), 2017, 63–76.
- Early, B.R. & Menevis, C., *Economic Sanctions in Flux: Enduring Challenges, New Policies, and Defining the Future Research Agenda*, **International Studies Perspectives**, 21(4), 2020, 438-477.
- Edwin, A. M., O kpara, A.; Ikpefan, O. & Aigbiremolen, M.O., *Impediments To E-Banking Services Marketing in Developing Economies – a Case Study of Nigerian Banks*, **European Journal of Business and Social Sciences**, 3, (3), 2014, pp. 228–248.
- Edwin, A.G., *An Analysis of Obstacles to Uptake of Internet Banking Services In Nigeria* **Research Journal of Business & Management**, 2(1), 2015.

- Ejike, S., *Financial Technological Innovation and Financial Performance of Deposit Money Banks in Nigeria*, **European Journal of Accounting, Finance and Innovation**, 5(4),2019 40-56.
- Etter, M.; Colleoni, E., Illi, L.; Meggiorin, K. & Antonino, D.E., *Measuring Organizational Legitimacy in Social Media: Assessing Citizens' Judgments with Sentiment Analysis*, **Business & Society**, 57(10), 2018, 60-97.
- Fatihudin, D., How Measuring Financial Performance, **International Journal of Civil Engineering and Technology (IJCIET)**, 9(6), 2018, 553-557.
- Ferrarini, G., & Macchiavello, E., *Fintech and alternative finance in the CMU: The Regulation of Market Place Investment*, **Mimeo**, 2017.
- Feyen, E.; Frost, J.; Leonardo, G.; Harish, N. & Matthew, S., *FinTech and the Digital Transformation of Financial Services: Implications for Market Structure and Public Policy.*” **Bank for International Settlement Papers**, 117, 2021.
- Friday, K. & Biirance, B., *Retail Banking and Bank Performance: Evidence from Nigeria*, **International Journal of Economics and Finance**, 13, 2021, 15-27.
- Gai, K.; Qiu, M. & Sun, X., *A survey on FinTech*, **Journal of Network and Computer Applications**, 10(3), 2018, 262-273.
- Gartenberg, C.; Andrea, P. & George, S., *Corporate Purpose and Financial Performance*, **Organization Science**, 30(1), 2019, 1-18.
- Goldstein, I.; Jiang, W. & Karolyi, G.A., *To FinTech and Beyond*, **The Review of Financial Studies**”32(5), 2019 1647-1661
- Gomber, P.; Parker, C.; Kauffman, R. & Weber, B., *On the Fintech Revolution: Interpreting the Forces of Innovation, Disruption, and Transformation in Financial Services*, **Journal of Management Information System**, 2018, 1–14.
- Granda, C.; Franz, H. & Tamayo, C. E., *Credit and Saving Constraints in General Equilibrium: A Quantitative Exploration*, **Journal of Development Economics**,140, 2019, 302-319.
- Grover, P.; Arpan, K.K.; Marijn, J. & Ilavarasan, P. V., *Perceived Usefulness, Ease of Use and User Acceptance of Blockchain Technology for Digital Transactions–Insights from User-Generated Content on Twitter*, **Enterprise Information Systems** ,13(6), 2019, 771-800.
- Gupta, P.T. & Mandy, T. *Fintech: The New DNA of Financial Services*, **Journal of Services Marketing**, 20(2), 2018, 125-135.
- Haralayya, D., & Aithal, P. S., A Study on Structure and Growth of Banking Industry in India, **International Journal of Research in Engineering, Science and Management (IJRESM)**, 4(5), 2021, 225-230.

- Hendrikse, R.; Meeteren, M. V. & Bassens, D., *Strategic coupling between Finance, Technology and the State: Cultivating a Fintech Ecosystem for Incumbent Finance, Environment and Planning A: Economy and Space*, 2019.
- Hidayat, S.E.; Omar, B.; Nadiahi, H.; Citra, A.S. & Dewandaru, G., *Value Drivers of Startup Valuation from Venture Capital Equity-Based Investing: A Global Analysis with a Focus on Technological Factors*, **Borsa Istanbul Review**, 22(4), 2022, 653-667.
- Hornuf, L.; Milan, F.K.; Lohwasser, T.S. & Schwienbacher, A., *How do Banks Interact with Fintech Startups?*, **Small Business Economics**, 57 (3), 2021, 1505-1526.
- Iluba, E. & Phiri, J., *The Fintech Evolution and its Effect on Traditional Banking in Africa- A Case of Zambia*, **Open Journal of Business and Management**, 9(2), 2021, 838-850.
- Iman, N., *Is Mobile Payment still Relevant in the Fintech Era?*, **Electronic Commerce Research and Applications**, 30, 2018, 72-82.
- Ironkwe, U.I. & Osaat, A. S., *Risk Asset Management and Financial Performance of Insurance Companies in Nigeria*, **International Journal of Advanced Academic Research**, 5(4), 2019, 18-46.
- Jakšič, M. & Marinč, M., *The Future of Banking: The Role of Information Technology*, **International Journal of Scientific and Technology Research**, 2019, 8(6), 305–308.
- Japparova, I., & Rupeika-Apoga, R., *Banking Business Models of the Digital Future: The Case of Latvia*, **European Research Studies Journal**, 20 (3), 2017, 846-860.
- Katigbak, J.J., *Revamping Finance via Fintech: Promises, Perils, and Practices in ASEAN*, **Foreign Policy Review**, 13, 2020, 129-144.
- Keskar, M.Y. & Pandey, N., *Internet Banking: A Review (2002–2016)*, **Journal of Internet Commerce**, 17(3), 2018, 310-323.
- Kharisma, D.B., *Urgency of Financial Technology (Fintech) laws in Indonesia*, **International Journal of Law and Management**, 2020.
- Kodongo, O., *Financial Regulations, Financial Literacy and Financial Inclusion: Insights from Kenya*, **Emerging Markets Finance and Trade**, 54 (12) (2018), 2851-2873.
- Koomson, I.; Chei, B. & Renato, R.V., *Mobile Money Adoption and Response to Idiosyncratic Shocks: Empirics from Five Selected Countries in Sub-Saharan Africa*, **Technological Forecasting and Social Change**, 1(167), 2021.
- Kristoffersen, E.; Fenna, B.; Mikalef, P. & Jingyue, L., *The Smart Circular Economy: A Digital-Enabled Circular Strategies Framework for Manufacturing Companies*, **Journal of Business Research**, 120, 2020, 241-261.

- Kyari, A. K., *Managing Fintech's Destruction through Innovative Banking: An Empirical Investigation*, **International Journal of Innovation, Creativity and Change**, 13(1), 2020, 253–274.
- Kyari, A.K. & Akinwale, O.Y., *An Assessment of the Level of Adoption of Financial Technology by Nigerian Banks*, **Africa Journal of Science Policy and Innovation Management**. 1, 2020, 118-130.
- Laukkanen, T. & Lehto, M.R., *Mobile Banking*, **International Journal of Bank Marketing**, 35 (7), 2017, 1042–1043.
- Lee, C.; Xinrui, L.; Chin-Hsien, Y. & Jinsong, Z., *Does Fintech Innovation Improve Bank Efficiency? Evidence from China's Banking industry*, **International Review of Economics & Finance**, 74, 2021, 468-483.
- Legowo, M.B.; Steph, S. & Fangky, A.S., *Fintech and Bank: Past, Present, and Future*, **Jurnal Teknik Komputer AMIK BSI**,7(1), 2021, 94-99.
- Leong, K., *FinTech (Financial Technology):What is It and How to Use Technologies to Create Business Value in Fintech Way”?***International Journal of Innovation, Management and Technology**, 2018, 9(2), 74–78.
- Li, Z., Wang, R., Xu, Y., & Gao, Y., *Financial Technology Efficiency and Credit Constraints Facing the Industrial Sector: Evidence from China*, **IEEE Access**, 8, 2020, 57335–57347.
- Liliiia, Z.; Diatlova, Y.; Diatlova, V.; Kuznetsova, L. & Goncharenko, A., *Digital Banking in the Marketing Mix: Improving the Approach to Evaluation as an Innovative Component*, **International Journal of Economics and Management Systems**, 6, 2021, 611-619.
- Liurui, D.; Yongbin, L.; Liu, Y. & Zhao, Y., *Impact of Fintech on Bank Risk –Taking :Evidence from China*, 2021.
- Mabrouk, A. & Mamoghli, C., *Dynamic of Financial Innovation and Performance of Banking Firms: Context of an Emerging Banking Industry*, **International Research Journal of Finance and Economics**, 5(2),2018, 32 – 41.
- Madugba, J.; Egbide, B. C.; Jossy, D. W.; Agburuga, U. T. & Chibunna, O. O.,*Effect of Electronic Banking on Financial Performance of Deposit Money Banks in Nigeria*, **Banks and Bank Systems**, 16, (3), 2021,71–83.
- Maqbool , A., *Review of the Technology Acceptance Model (TAM) in Internet Banking and Mobile Banking*, **International Journal of Information Communication Technology and Digital Convergence**, 3(1), 2018, 23-41.
- Mbah, S. & Obiezekwem J., *Electronic Banking and Performance of Small and Medium Scale Enterprises in Anambra State, Nigeria*, **International Journal of Business and Management**, 14, (6), 2019, 173- 180.

- Menicucci, E. & Paolucci, G., *The determinants of bank profitability: empirical evidence from European banking sector*, **Journal of Financial Reporting and Accounting**, 14(1), 2016, 86-115.
- Mention, A.L., *The Future of Fintech*, **Research Technology Management**, 62(4), 2019, 59–63.
- Mercurius, B.L.; Steph, S. & Sorongan, F.A. “*Fintech and Bank: Past ,Present and Future*”. **Journal teknik computer**. 7 (1), 2021.
- Mhlanga, D., *COVID-19 and Digital Financial Inclusion: Policies and Innovation that can Accelerate Financial Inclusion in a Post –COVID World through Fintech*, **African Journal of Development Studies**, 2, 2022, 79-100.
- Milian, E.Z.; Mauro de, M.S., & Marly, M.C., *Fintechs: A literature Review and Research Agenda*, **Electronic Commerce Research and Applications**, 34 (2019): 100833-100857.
- Muhammad, A.; Almunawar, M.N. & Masri, M., *Financial Technology and Disruptive Innovation in Business: Concept and Application*, **International Journal of Asian Business and Information Management (IJABIM)**, 11(4), 2020, 29-43.
- Murind, V.; Efthymios, R. & Markos, Z., *The Impact of the FinTech Revolution on the Future of Banking: Opportunities and Risks*, **International Review of Financial Analysis**, 81(2022), 1-27.
- Musau, S.; Muathe, S., and Mwangi, L., *Financial Inclusion, Bank Competitiveness and Credit Risk of Commercial Banks in Kenya*, **International Journal of Financial Research**, 9(1), 2018, 203-218.
- Nasfi, N.; Yunimar, Y. & Prawira, A., *The Role Of Fintech In Sharia Rural Bank West Sumatra*, **International Journal of Social and Management Studies**, 3(2), 2022,13-19.
- Navaretti, G. B.; Calzolari, G.; Mansilla-Fernandez, J. M. & Pozzolo, A. F., *Fintech and Banking. Friends or Foes?* **European Economy, Banks, Regulation, and the Real Sector**, (2) 2017, 9–39.
- Navaretti, G.B.; Calzolari, G. & Pozzolo, A.F., *FinTech and Banks: Friends or Foes? ” From the Editorial Desk. European Economy, Banks, Regulation, and the Real Sector*, 2017, 3(2), 9-31.
- Noor, U.; Anwar, Z.; T. Amjad & Choo, K.K.R., *A Machine Learning-based FinTech Cyber Threat Attribution Framework using High-level Indicators of Compromise*, **Future Generation Computer Systems**, 96, 2019, 227-242.

- Nuwagaba, I.; Lukamba, M.T.; Costa, H.; Gerald, K.K.; Mbuga, J.; Thekiso, M.; Ochora, A.; Nduhura, A. & Tumusime, P., *A Synthesis of the Public Management of Mobile Data and Project Performance, Lessons Learnt from Ministry of Health (MOH), Kampala, Uganda*, **African Journal of Development Studies**, 2022,1(2), (2022), 173-190.
- O’Connell, M., *Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability: Evidence from the UK*, **Studies in Economics and Finance**, 2022.
- Okeke, M., *The Impact of Information, Communication and Technology on Human Resources Management in Selected Money Deposit Banks in South East, Nigeria*, **Management and Human Resource Research Journal**, 8(11), 2019, 8-16.
- Okpara, A.O.; Ikpefan, O. & Aigbiremolen, O. M., *Impediments to E-Banking Services Marketing in Developing Economies—A Case Study of Nigerian Banks*, **European Journal of Business and Social Sciences**, 3(3), 2018, 228-248.
- Omarini, A.E., *Fintech and the Future of the Payment Landscape: The Mobile Wallet Ecosystem. A challenge for Retail Banks*, **International Journal of Financial Research**, 9(4), 2018, 97-116.
- Orajaka, U.P., *The Impact of Leverage Financing on Financial Performance of Some Manufacturing Industries in Nigerian Stock Exchange*, **Saudi Journal of Business and Management Studies**, 2017, 2, 16-26.
- Osma, B.G.; Gomez-Conde, J. & Lopez-Valeiras, E., *Management Control Systems and Real Earnings Management: Effects on Firm Performance*, **Management Accounting Research**, 55, 2022, 1-22.
- Pattanasak, P.; Anantana, T.; Boontarika, P. & Ratapol, W., *Critical Factors and Performance Measurement of Business Incubators: A Systematic Literature Review*, **Sustainability**, 14(8), 2022, 1-39.
- Peace, N. N.; Sidi, C. P. & Abomeh, O. S., *Impact of Information and Communication Technology on the Performance of Deposit Money Banks in Nigeria*, **International Journal of Management and Sustainability**, 7, (4), 2018, 225–239.
- Posnaya, E.A.; Semenyuta, O. G.; Dobrolezha, E. V. & Smolander, M., *Modern Features for Capital Portfolio Monitoring*, **International Journal of Economics & Business Administration**, 7(1), 2019,53–60.
- Prabhavathi, K. & Dinesh, G.P., *Banking: Definition and Evolution*, **International Journal of Scientific & Engineering Research**, 9(8),2018, 745–753.
- Prawirasasra, K.P., *Financial Technology in Indonesia: Disruptive or Collaborative”?* **Reports on Economics and Finance**, 4(2) 201883–90.
- Sadekin, M.S.; Mukta, S.N. & Shaikh, M.H., *Customers’ Trust on E-Banking System in Bangladesh*, **International Journal of Economics, Finance and Management sciences**, 7(6), 2019, 178-186.

- Sahay, M.; Ratna, M.S.; Eriksson, U.V.; Lahreche, A.; Khera, P.; Ogawa, S.; Bazarbash, M., Kimberly, B., *The Promise of FinTech Financial Inclusion in the Post COVID-19 Era*. **International Monetary Fund**, 2020.
- Sahu, A. & Deshmukh, G. K., *Mobile Banking Adoption: A Review*, **Journal of Critical Reviews**, 7 (2), 2020, 860-872.
- Sayakkara, A.; Nhien-An, L. & Scanlon, M., *A Survey of Electromagnetic Side-Channel Attacks and Discussion on their Case-Progressing Potential for Digital Forensics*, **Digital Investigation**, 29, 2019, 43-54.
- Selase, A.M. & Arthur, B., *An Assessment of Customer Attitude towards Internet Banking in Ghana*, **International Journal of Economics, Business and Management Research**, 5(7) , 2021, 113-136.
- Shair, F.; Shaorong, S.; Kamran, H.W.; Muhammed, S,H.; Muhammad, A.N. & Nguyen,V.C., *Assessing the Efficiency and Total Factor Productivity Growth of the Banking Industry: Do Environmental Concerns Matters?* **Environmental Science and Pollution Research**, 28(16), 2021, 20822-20838.
- Shareef, M.A.; Baabdullah, A.; Shantanu, D.; Vinod, K. & Dwivedi, Y. K., *Consumer Adoption of Mobile Banking Services: An Empirical Examination of Factors according to Adoption Stages*, **Journal of Retailing and Consumer Services**, 43, 2018, 54-67.
- Stoiko, O.Y., *Prospects for the Development of Fintech and Banking in Ukraine*, **Baltic Journal of Economic Studies**, 2(44), 2020, 356-364.
- Stulz, R.M., *Fintech, BigTech, and the Future of Banks*, **Journal of Applied Corporate Finance**, 31 (4), 2019, 86-97.
- Teja, A., *Indonesian Fintech Business: New Innovations or Foster and Collaborate inBusiness Ecosystems? Literature Study and Hypothesis Development*, **The Asian Journal of Technology Management**, 2017, 10(1), 10–18.
- Thakor, A.V., *Fintech and Banking: What do we know*”?**Journal of Financial Intermediation**, 2019 1–13.
- Tien, N.H.; Dinh, B.A. & Nguyen, M.N., *Corporate Financial Performance due to Sustainable Development in Vietnam*, **Corporate Social Responsibility and Environmental Management**, 27(2), 2020, 694-705.
- Trebacz, T., *FinTech as an innovative banking sector*, **World Scientific News**, 122, 2019,83-95.
- Tuffour , J.K.; Awurabena, A.A. & Ernestina, O.A., *Assessing the Effect of Financial Literacy Among Managers on the Performance of Small-scale Enterprises*, **Global Business Review**, 23(5), 2022, 1200-1217.

- Uduakobong, I. & Okonkwo, I. V., Information and Communication Technology in Nigeria Insurance Industry: Developments, Challenges and Prospects, **Journal of Economics, Finance and Management Studies**, 4(7), 2021,1159-1171.
- Varga, D., *FinTech: The New Era of Financial Services*, **Budapest Managerial Review**, 2017, 22- 32.
- Varga, D., *Triple-Bottom-Line Impact Analysis Framework of FinTech Companies*, **Vezetéstudomány-Budapest Management Review**, 49(11), 2018, 24-34.
- Vučinić, M., Fintech and Financial Stability Potential Influence of FinTech on Financial Stability, Risks and Benefits, **Journal of Central Banking Theory and Practice**, 9(2), 2020, 43-66.
- Wang, R.; Liu, J. & Luo, H., *Fintech Development and Bank Risk taking in China*, **European Journal of Finance**, (13), 2020, 1-22.
- Wulan, V.R., *Financial Technology (FinTech), A New Transaction In Future*, **Journal of Electrical Engineering and Computer Sciences**, 2(1), 2017, 177–182.
- Xavier, V., *Competition and stability in Modern Banking. A Post-Crisis Perspective*, **International Journal of Industrial Organization**, 64, 2019, 55-69.
- Xavier, V., *The Impact of Fintech on Banking*, **European Economy, Banks, Regulation, and the Real Sector**. (2) 2017, 97-105.
- Yang, S. & Jijan, G., *Research on the Influence of Institutional Environment and Fintech to Urban Commercial Banking Performance*, **Journal of Social Sciences, Education and Humanities**,4(25),2020.
- Yin, H., *Foreign Bank Entry and Bank Competition: Cross-Country Heterogeneity*, **Global Finance Journal**, 48, 2021, 100558.
- Zalan, T. & Elissar, T., *The Promise of FinTech in Emerging Markets: Not as Disruptive*, **Contemporary Economics**. 1(1), 2017,415-430.
- Zyznarska-Dworczak, B. *Legitimacy Theory in Management Accounting Research*. **Problemy Zarządzania**, 72, 2018, 195-203.

Conference Proceedings

- Chung, W. & Paynter, J., *An evaluation of Internet banking in New Zealand*, In **Proceedings of the 35th Annual Hawaii International Conference on System Sciences**, IEE, 2002, January, 2410–2419.
- Mărăcine, V.; Voican, O. & Scarlat, E., *The Digital Transformation and Disruption in Business Models of the Banks under the Impact of FinTech and BigTech*, **In Proceedings of the International Conference on Business Excellence**, 14 (1), 2020, 294-305.

Text Book

Nicoletti, B., *The Future of FinTech. Integrating Finance and Technologies in Financial Services*. Cham: Springer International Publishing AG, 2017.

Websites

Alexander, A.J.; Lin, S. & Bensam, S., *How Fintech is Reaching the Poor in Africa and Asia : A Start-Up Perspective*, International Finance Corporation, Washington, DC, 34, 2017, Available at: <https://openknowledge.worldbank.org/handle/10986/30360>

Arnold, M., *Five Ways Banks are Responding to the Fintech Threat*, Financial Times, 2018, Available at <https://www.ft.com/content/d0ab6b84-c183-11e8-84cd-9e601db069b8>

CIW Team, *China Mobile Banking Overview*, China Internet Watch, 2019, <https://www.chinainternetwatch.com/28776/shrinkingmobile-banking-p2p/>

Ernest & Young, *EY Fintech Adoption Index 2017: The Rapid Emergence of FinTech*, 2017 Available at: <http://www.ey.com/gl/en/industries/financial-services/ey-fintech-adoption-index>.

Frame, W.S.; Wall, L.; & White, L.J., *Technological Change and Financial Innovation in Banking: Some Implications for FinTech*, 2018, Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3261732

FSB, *Financial Stability Implications from Fintech*, Financial Stability Board, 2019, Available at: <https://www.fsb.org/wpcontent/>

Global Banking & Finance Review, *How Fintechs Are Empowering Banks?* Global Banking & Finance Review website 2018, Available at: <https://www.globalbankingandfinance.com/how-fintechs-are-empowering-banks/>.

Grym, A.; Koskinen, K. & Manninen, O., *Nordic Banks go Digital*, 2018, Available at: <https://www.bofbulletin.fi/en/2018/2/nordic-banks-go-digital/> 2018.

IFC. *“Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution.”* 2018 Bank for International Settlements, *“Policy Responses to FinTech: A Cross-Country Overview.”* 2020, <https://www.bis.org/fsi/publ/insights23.pdf>

Kagan, J., *Commercial Bank*, Available at <http://www.investopedia.com/terms/c/commercialbank.asp> 2019

McKinsey & Company. *“Harnessing Nigeria's fintech potential report”* (2020) <https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Middle%20East%20and%20Africa/Harnessing%20Nigerias%20fintech%20potential/Harnessing-nigerias-fintech-potential-vF>

McWaters, R.J. & Galaski, R., *Beyond FinTech: A Pragmatic Assessment of Disruptive Potential in Financial Services*. In *World Economic Forum*, 2(1), 2017, Available at: <https://www.worldforum.org>

Mofya, S., *Financial Technology in Zambia Economy*, **Personal Finance, Strategy**, 2019, Available at: <http://fizambia.com/?p=2796>.

PWC, *Nigeria Fintech Survey*, 2017, Available at: <https://www.pwc.com/ng/en/publications/nigeria-fintech-survey-report.html>

PwC, *Redrawing the lines: FinTech's growing influence on Financial Services*, **Global FinTechReport** 2017 Available at: <https://www.pwc.com/gx/en/industries/financial-services/assets/pwc-global-fintech-report-2017.pdf>.

Susan, M., *Separate Fintech Noise From Reality*, 2017 <https://www.gartner.com/smarterwithgartner/separate-fintech-noise-from-reality>.

Vector ITC. "5 advantages of digitalization in the banking sector", available at <https://www.vectoritcgroup.com/en/corporate-en/5-advantages-of-digitalisation-in-the-banking-sector/>, 2019.

World Bank Group; China Development Bank. "*Leapfrogging: The Key to Africa's Development?*" **World Bank, Washington, DC**, 2017, Available at: <https://openknowledge.worldbank.org/handle/10986/28440>

Theses/Dissertation

Ajaya P., Effect of Financial Technology on Financial Performance of the Banking Industry in Kenya, **PhD diss., University of Nairobi, Kenya**, 2020.

Kemboi, B.J. Effect of financial Technology on the Financial Performance of Commercial Banks in Kenya, **PhD diss., university of Nairobi, Kenya**, 2018.

Appendices

Appendix I: Demographic Statistics

1.1 Gender

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	47	42.0	47.5	47.5
	Female	52	46.4	52.5	100.0
	Total	99	88.4	100.0	
Missing	System	13	11.6		
Total		112	100.0		

1.2 Age

		Age			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	16	14.3	15.0	15.0
	26-35	55	49.1	51.4	66.4
	36-45	29	25.9	27.1	93.5
	46 and Above	7	6.3	6.5	100.0
	Total	107	95.5	100.0	
Missing	System	5	4.5		
Total		112	100.0		

1.3 Marital Status

		Marital Status			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	31	27.7	29.2	29.2
	Married	73	65.2	68.9	98.1
	Divorced	1	.9	.9	99.1
	Separated	1	.9	.9	100.0
	Total	106	94.6	100.0	
Missing	System	6	5.4		
Total		112	100.0		

1.4 Education

		Education			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NCE/OND	9	8.0	8.3	8.3
	HND/B.Sc	77	68.8	71.3	79.6
	M.Ed/M.Sc	18	16.1	16.7	96.3
	PhD	4	3.6	3.7	100.0
	Total	108	96.4	100.0	
Missing	System	4	3.6		
Total		112	100.0		

1.5 Years of experience in the banking industry**Years of experience in the banking industry**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1	12	10.7	10.9	10.9
	1-3	35	31.3	31.8	42.7
	4-6	25	22.3	22.7	65.5
	7-10	17	15.2	15.5	80.9
	Above 10	21	18.8	19.1	100.0
	Total		110	98.2	100.0
Missing	System	2	1.8		
Total		112	100.0		

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Appendix II: Frequency Distribution of Respondents (Technology Integration)

2.1 Deposit Facilities

		Deposit Facilities			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor Extent	2	1.8	1.8	1.8
	Some Extent	3	2.7	2.7	4.5
	Large Extent	26	23.2	23.2	27.7
	Very Large Extent	81	72.3	72.3	100.0
	Total	112	100.0	100.0	

2.2 Deposit Facilities

		Credit Facilities			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor Extent	6	5.4	5.4	5.4
	Some Extent	12	10.7	10.7	16.1
	Large Extent	53	47.3	47.3	63.4
	Very Large Extent	41	36.6	36.6	100.0
	Total	112	100.0	100.0	

2.3 Remittances and Payments

		Remittances and Payments			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	7	6.3	6.3	8.0
	Some Extent	9	8.0	8.0	16.1
	Large Extent	28	25.0	25.0	41.1
	Very Large Extent	66	58.9	58.9	100.0
	Total	112	100.0	100.0	

2.4 Export, Import and Foreign Exchange Facilities

		Export, Import and Foreign Exchange Facilities			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	4	3.6	3.6	3.6
	Minor Extent	8	7.1	7.2	10.8
	Some Extent	14	12.5	12.6	23.4
	Large Extent	46	41.1	41.4	64.9
	Very Large Extent	39	34.8	35.1	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.5 Investment Banking and Wealth Management

		Investment Banking and Wealth Management			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor Extent	6	5.4	5.4	5.4
	Some Extent	10	8.9	8.9	14.3
	Large Extent	60	53.6	53.6	67.9
	Very Large Extent	36	32.1	32.1	100.0
	Total	112	100.0	100.0	

2.6 Ancillary Services

		Ancillary Services			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	10	8.9	9.0	9.9
	Some Extent	36	32.1	32.4	42.3
	Large Extent	32	28.6	28.8	71.2
	Very Large Extent	32	28.6	28.8	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.7 Deposit_ATM

		Deposit_ATM			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	3	2.7	2.7	4.5
	Some Extent	6	5.4	5.4	9.8
	Large Extent	17	15.2	15.2	25.0
	Very Large Extent	84	75.0	75.0	100.0
	Total	112	100.0	100.0	

2.8 Deposit_Internet Banking

		Deposit_Internet Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	4	3.6	3.6	5.4
	Some Extent	4	3.6	3.6	8.9
	Large Extent	23	20.5	20.5	29.5
	Very Large Extent	79	70.5	70.5	100.0
	Total	112	100.0	100.0	

2.9 Deposit_POS

		Deposit_POS			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor Extent	1	.9	.9	.9
	Some Extent	14	12.5	12.5	13.4
	Large Extent	22	19.6	19.6	33.0
	Very Large Extent	75	67.0	67.0	100.0
	Total	112	100.0	100.0	

2.10 Deposit_Mobile Banking

		Deposit_Mobile Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	4	3.6	3.6	4.5
	Some Extent	9	8.0	8.0	12.5
	Large Extent	18	16.1	16.1	28.6
	Very Large Extent	80	71.4	71.4	100.0
	Total	112	100.0	100.0	

2.11 Deposit_USSD

		Deposit_USSD			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	3	2.7	2.7	2.7
	Minor Extent	7	6.3	6.3	8.9
	Some Extent	9	8.0	8.0	17.0
	Large Extent	13	11.6	11.6	28.6
	Very Large Extent	80	71.4	71.4	100.0
	Total	112	100.0	100.0	

2.12 Credit_ATM

		Credit_ATM			Cumulative Percent
		Frequency	Percent	Valid Percent	
Valid	Not At All	5	4.5	4.5	4.5
	Minor Extent	1	.9	.9	5.4
	Some Extent	10	8.9	9.0	14.4
	Large Extent	19	17.0	17.1	31.5
	Very Large Extent	76	67.9	68.5	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.13 Credit_Internet Banking

		Credit_Internet Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	3	2.7	2.7	2.7
	Minor Extent	1	.9	.9	3.6
	Some Extent	10	8.9	9.0	12.6
	Large Extent	28	25.0	25.2	37.8
	Very Large Extent	69	61.6	62.2	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.14 Credit_POS

		Credit_POS			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	7	6.3	6.3	6.3
	Minor Extent	1	.9	.9	7.2
	Some Extent	16	14.3	14.4	21.6
	Large Extent	30	26.8	27.0	48.6
	Very Large Extent	57	50.9	51.4	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.15 Credit_Mobile Banking

		Credit_Mobile Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	3	2.7	2.7	4.5
	Some Extent	9	8.0	8.1	12.6
	Large Extent	29	25.9	26.1	38.7
	Very Large Extent	68	60.7	61.3	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.16 Credit_USSD

		Credit_USSD			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	4	3.6	3.6	5.4
	Some Extent	9	8.0	8.1	13.5
	Large Extent	28	25.0	25.2	38.7
	Very Large Extent	68	60.7	61.3	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.17 Remittances_ATM

		Remittances_ATM			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	10	8.9	9.1	10.0
	Some Extent	10	8.9	9.1	19.1
	Large Extent	27	24.1	24.5	43.6
	Very Large Extent	62	55.4	56.4	100.0
	Total		110	98.2	100.0
Missing	System	2	1.8		
Total		112	100.0		

2.18 Remittances_Internet Banking

		Remittances_Internet Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	10	8.9	9.0	9.9
	Some Extent	8	7.1	7.2	17.1
	Large Extent	33	29.5	29.7	46.8
	Very Large Extent	59	52.7	53.2	100.0
	Total		111	99.1	100.0
Missing	System	1	.9		
Total		112	100.0		

2.19 Remittances_POS

		Remittances_POS			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	10	8.9	9.1	10.0
	Some Extent	16	14.3	14.5	24.5
	Large Extent	32	28.6	29.1	53.6
	Very Large Extent	51	45.5	46.4	100.0
	Total		110	98.2	100.0
Missing	System	2	1.8		
Total		112	100.0		

2.20 Remittances_Mobile Banking

		Remittances_Mobile Banking			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	3	2.7	2.7	2.7
	Minor Extent	7	6.3	6.3	9.0
	Some Extent	11	9.8	9.9	18.9
	Large Extent	33	29.5	29.7	48.6
	Very Large Extent	57	50.9	51.4	100.0
	Total		111	99.1	100.0
Missing	System	1	.9		
Total		112	100.0		

2.21 Remittances_USSD

		Remittances_USSD			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	4	3.6	3.6	3.6
	Minor Extent	8	7.1	7.3	10.9
	Some Extent	16	14.3	14.5	25.5
	Large Extent	26	23.2	23.6	49.1
	Very Large Extent	56	50.0	50.9	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.22 Forex_ATM

		Forex_ATM			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	12	10.7	10.8	10.8
	Minor Extent	11	9.8	9.9	20.7
	Some Extent	22	19.6	19.8	40.5
	Large Extent	24	21.4	21.6	62.2
	Very Large Extent	42	37.5	37.8	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.23 Forex_Internet Banking

		Forex_Internet Banking			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	7	6.3	6.4	6.4
	Minor Extent	10	8.9	9.1	15.5
	Some Extent	18	16.1	16.4	31.8
	Large Extent	40	35.7	36.4	68.2
	Very Large Extent	35	31.3	31.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.24 Forex_POS

		Forex_POS			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	12	10.7	10.8	10.8
	Minor Extent	18	16.1	16.2	27.0
	Some Extent	22	19.6	19.8	46.8
	Large Extent	25	22.3	22.5	69.4
	Very Large Extent	34	30.4	30.6	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.25 Forex_Mobile Banking

		Forex_Mobile Banking			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	5	4.5	4.5	4.5
	Minor Extent	11	9.8	9.9	14.4
	Some Extent	24	21.4	21.6	36.0
	Large Extent	26	23.2	23.4	59.5
	Very Large Extent	45	40.2	40.5	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.26 Forex_USSD

		Forex_USSD			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	16	14.3	14.4	14.4
	Minor Extent	12	10.7	10.8	25.2
	Some Extent	21	18.8	18.9	44.1
	Large Extent	24	21.4	21.6	65.8
	Very Large Extent	38	33.9	34.2	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.27 Invesment Banking_ATM

		Invesment Banking_ATM			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	10	8.9	9.1	9.1
	Minor Extent	10	8.9	9.1	18.2
	Some Extent	14	12.5	12.7	30.9
	Large Extent	30	26.8	27.3	58.2
	Very Large Extent	46	41.1	41.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.28 Invesment Banking_Internet Banking

		Invesment Banking_Internet Banking			Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	Not At All	5	4.5	4.5	4.5
	Minor Extent	10	8.9	9.1	13.6
	Some Extent	16	14.3	14.5	28.2
	Large Extent	44	39.3	40.0	68.2
	Very Large Extent	35	31.3	31.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.29 Investment Banking_POS

Investment Banking_POS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	13	11.6	11.8	11.8
	Minor Extent	13	11.6	11.8	23.6
	Some Extent	20	17.9	18.2	41.8
	Large Extent	40	35.7	36.4	78.2
	Very Large Extent	24	21.4	21.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.30 Investment Banking_Mobile Banking

Investment Banking_Mobile Banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	6	5.4	5.5	5.5
	Minor Extent	9	8.0	8.2	13.6
	Some Extent	17	15.2	15.5	29.1
	Large Extent	49	43.8	44.5	73.6
	Very Large Extent	29	25.9	26.4	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.31 Investment Banking_USSD

Investment Banking_USSD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	13	11.6	11.8	11.8
	Minor Extent	9	8.0	8.2	20.0
	Some Extent	19	17.0	17.3	37.3
	Large Extent	33	29.5	30.0	67.3
	Very Large Extent	36	32.1	32.7	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.32 Ancillary_ATM

Ancillary_ATM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	9	8.0	8.2	8.2
	Minor Extent	11	9.8	10.0	18.2
	Some Extent	13	11.6	11.8	30.0
	Large Extent	43	38.4	39.1	69.1
	Very Large Extent	34	30.4	30.9	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

2.33 Ancilliary_Internat Banking

Ancilliary_Internat Banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	7	6.3	6.3	6.3
	Minor Extent	14	12.5	12.6	18.9
	Some Extent	19	17.0	17.1	36.0
	Large Extent	35	31.3	31.5	67.6
	Very Large Extent	36	32.1	32.4	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.34 Ancilliary_POS

Ancilliary_POS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	9	8.0	8.1	8.1
	Minor Extent	15	13.4	13.5	21.6
	Some Extent	22	19.6	19.8	41.4
	Large Extent	34	30.4	30.6	72.1
	Very Large Extent	31	27.7	27.9	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.35 Ancilliary_Mobile Banking

Ancilliary_Mobile Banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	6	5.4	5.4	5.4
	Minor Extent	14	12.5	12.6	18.0
	Some Extent	21	18.8	18.9	36.9
	Large Extent	35	31.3	31.5	68.5
	Very Large Extent	35	31.3	31.5	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

2.36 Ancilliary_USSD

Ancilliary_USSD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	9	8.0	8.1	8.1
	Minor Extent	15	13.4	13.5	21.6
	Some Extent	18	16.1	16.2	37.8
	Large Extent	36	32.1	32.4	70.3
	Very Large Extent	33	29.5	29.7	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

Appendix III: Frequency Distribution of Respondents (Constraints to Technology Integration)

3.1 .Poor understanding/ acceptance and distrust of FINTECH innovation by customers

Poor understanding/ acceptance and distrust of FINTECH innovation by customers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	4	3.6	3.6	3.6
	Minor Extent	9	8.0	8.0	11.6
	Some Extent	26	23.2	23.2	34.8
	Large Extent	33	29.5	29.5	64.3
	Very Large Extent	40	35.7	35.7	100.0
	Total	112	100.0	100.0	

3.2 Regulatory challenges

Regulatory challenges

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	8	7.1	7.2	7.2
	Minor Extent	12	10.7	10.8	18.0
	Some Extent	21	18.8	18.9	36.9
	Large Extent	40	35.7	36.0	73.0
	Very Large Extent	30	26.8	27.0	100.0
	Total	111	99.1	100.0	
Missing	System	1	.9		
Total		112	100.0		

3.3 Consumers unwillingness to pay higher prices for better FINTECH

Consumers unwillingness to pay higher prices for better FINTECH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	5	4.5	4.5	4.5
	Minor Extent	18	16.1	16.1	20.5
	Some Extent	15	13.4	13.4	33.9
	Large Extent	39	34.8	34.8	68.8
	Very Large Extent	35	31.3	31.3	100.0
	Total	112	100.0	100.0	

3.4 Lack of qualified personnel

Lack of qualified personnel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	14	12.5	12.5	12.5
	Minor Extent	17	15.2	15.2	27.7
	Some Extent	20	17.9	17.9	45.5
	Large Extent	29	25.9	25.9	71.4
	Very Large Extent	32	28.6	28.6	100.0
	Total	112	100.0	100.0	

Lack of adequate finance for FINTECH innovation in the bank

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	20	17.9	18.2	18.2
	Minor Extent	21	18.8	19.1	37.3
	Some Extent	15	13.4	13.6	50.9
	Large Extent	26	23.2	23.6	74.5
	Very Large Extent	28	25.0	25.5	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

3.6 Lack of adequate information on FINTECH

Lack of adequate information on FINTECH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	16	14.3	14.5	14.5
	Minor Extent	20	17.9	18.2	32.7
	Some Extent	23	20.5	20.9	53.6
	Large Extent	35	31.3	31.8	85.5
	Very Large Extent	16	14.3	14.5	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

3.7 Difficulty in finding reliable cooperation partners for FINTECH innovation

Difficulty in finding reliable cooperation partners for FINTECH innovation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	21	18.8	19.3	19.3
	Minor Extent	18	16.1	16.5	35.8
	Some Extent	21	18.8	19.3	55.0
	Large Extent	26	23.2	23.9	78.9
	Very Large Extent	23	20.5	21.1	100.0
	Total	109	97.3	100.0	
Missing	System	3	2.7		
Total		112	100.0		

3.8 Inadequate access to infrastructure such as electricity and telecommunication

Inadequate access to infrastructure such as electricity and telecommunication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	15	13.4	13.6	13.6
	Minor Extent	22	19.6	20.0	33.6
	Some Extent	13	11.6	11.8	45.5
	Large Extent	36	32.1	32.7	78.2
	Very Large Extent	24	21.4	21.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

3.9 Lack of privacy and security hazards

Lack of privacy and security hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	15	13.4	13.9	13.9
	Minor Extent	17	15.2	15.7	29.6
	Some Extent	15	13.4	13.9	43.5
	Large Extent	40	35.7	37.0	80.6
	Very Large Extent	21	18.8	19.4	100.0
	Total	108	96.4	100.0	
Missing	System	4	3.6		
Total		112	100.0		

3.10 High cost of maintenance compared to traditional system

High cost of maintenance compared to traditional system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	15	13.4	13.9	13.9
	Minor Extent	21	18.8	19.4	33.3
	Some Extent	21	18.8	19.4	52.8
	Large Extent	23	20.5	21.3	74.1
	Very Large Extent	28	25.0	25.9	100.0
	Total	108	96.4	100.0	
Missing	System	4	3.6		
Total		112	100.0		

3.11 Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking

Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	8	7.1	7.3	7.3
	Minor Extent	18	16.1	16.4	23.6
	Some Extent	27	24.1	24.5	48.2
	Large Extent	32	28.6	29.1	77.3
	Very Large Extent	25	22.3	22.7	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

Appendix IV: Frequency Distribution of Respondents (Financial Performance)

4.1 Profitability grows consistently yearly.

Profitability grows consistently yearly.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	2	1.8	1.8	2.7
	Some Extent	8	7.1	7.3	10.0
	Large Extent	29	25.9	26.4	36.4
	Very Large Extent	70	62.5	63.6	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

4.2 Turnover grows consistently increase yearly.

Turnover grows consistently increase yearly.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	4	3.6	3.6	4.5
	Some Extent	8	7.1	7.3	11.8
	Large Extent	46	41.1	41.8	53.6
	Very Large Extent	51	45.5	46.4	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

4.3 Maintenance of a strong cash flow

Maintenance of a strong cash flow.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	1	.9	.9	2.7
	Some Extent	16	14.3	14.5	17.3
	Large Extent	34	30.4	30.9	48.2
	Very Large Extent	57	50.9	51.8	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

4.4 Increasing return on capital.

Increasing return on capital.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	1	.9	.9	.9
	Minor Extent	5	4.5	4.5	5.5
	Some Extent	11	9.8	10.0	15.5
	Large Extent	44	39.3	40.0	55.5
	Very Large Extent	49	43.8	44.5	100.0
	Total	110	98.2	100.0	
Missing	System	2	1.8		
Total		112	100.0		

4.5 Dividend is constantly being paid

Dividend is constantly being paid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not At All	2	1.8	1.8	1.8
	Minor Extent	6	5.4	5.5	7.3
	Some Extent	16	14.3	14.5	21.8
	Large Extent	34	30.4	30.9	52.7
	Very Large Extent	52	46.4	47.3	100.0
	Total		110	98.2	100.0
Missing	System	2	1.8		
Total		112	100.0		

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Appendix V: MEAN of The Distribution

5.1 Financial Services Provided by Deposit Money Banks in Nigeria

Descriptive Statistics

	N	Mean
Deposit Facilities	112	3.66
Credit Facilities	112	3.15
Remittances and Payments	112	3.33
Export, Import and Foreign Exchange Facilities	111	2.97
Investment Banking and Wealth Management	112	3.12
Ancillary Services	111	2.76
Valid N (listwise)	111	

5.2 The Extent to which Deposit Money Banks uses Technology to Provide Deposit Services

Descriptive Statistics

	N Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Deposit_ATM	112	3.59	.081	.855	.731
Deposit_Internet Banking	112	3.54	.082	.869	.755
Deposit_POS	112	3.53	.071	.747	.558
Deposit_Mobile Banking	112	3.54	.081	.859	.737
Deposit_USSD	112	3.43	.100	1.054	1.112
Valid N (listwise)	112				

5.3 The Extent to which Deposit Money Banks uses Technology to Provide Credit Services

Descriptive Statistics

	N Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Credit_ATM	111	3.44	.096	1.015	1.031
Credit_Internet Banking	111	3.43	.085	.901	.811
Credit_POS	111	3.16	.106	1.116	1.246
Credit_Mobile Banking	111	3.42	.084	.890	.792
Credit_USSD	111	3.41	.087	.918	.843
Valid N (listwise)	111				

5.4 The Extent to which Deposit Money Banks uses Technology to Provide Remittances and Payment Services

Descriptive Statistics

	N Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Remittances_ATM	110	3.26	.097	1.020	1.040
Remittances_Internet Banking	111	3.25	.094	.995	.990
Remittances_POS	110	3.11	.098	1.026	1.052
Remittances_Mobile Banking	111	3.21	.098	1.037	1.075
Remittances_USSD	110	3.11	.108	1.128	1.272
Valid N (listwise)	110				

5.5 The Extent to which Deposit Money Banks uses Technology to Provide Export, Import and Foreign Exchange Services

Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Forex_ATM	111	2.66	.129	1.358	1.845
Forex_Internet Banking	110	2.78	.112	1.176	1.383
Forex_POS	111	2.46	.129	1.360	1.851
Forex_Mobile Banking	111	2.86	.113	1.190	1.415
Forex_USSD	111	2.50	.135	1.426	2.034
Valid N (listwise)	110				

5.6 The Extent to which Deposit Money Banks uses Technology to Provide Investment Banking and Wealth Management Services

Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Invesment Banking_ATM	110	2.84	.125	1.310	1.716
Invesment Banking_Internet Banking	110	2.85	.106	1.107	1.226
Invesment Banking_POS	110	2.45	.122	1.282	1.644
Invesment Banking_Mobile Banking	110	2.78	.104	1.095	1.200
Invesment Banking_USSD	110	2.64	.127	1.332	1.775
Valid N (listwise)	110				

5.7 The Extent to which Deposit Money Banks uses Technology to Provide Ancillary Services

Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Ancilliary_ATM	110	2.75	.117	1.230	1.513
Ancilliary_Internat Banking	111	2.71	.116	1.224	1.498
Ancilliary_POS	111	2.57	.119	1.255	1.575
Ancilliary_Mobile Banking	111	2.71	.113	1.194	1.425
Ancilliary_USSD	111	2.62	.120	1.265	1.601
Valid N (listwise)	110				

5.8 The Extent to which Deposit Money Banks Experience Constraints in using Financial Technology

Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
Poor understanding/ acceptance and distrust of FINTECH innovation by customers	112	2.86	.104	1.106	1.223
Regulatory challenges	111	2.65	.114	1.196	1.430
Consumers unwillingness to pay higher prices for better FINTECH	112	2.72	.113	1.195	1.427
Lack of qualified personnel	112	2.43	.130	1.374	1.887
Lack of adequate finance for FINTECH innovation in the bank	110	2.19	.140	1.468	2.156
Lack of adequate information on FINTECH	110	2.14	.123	1.288	1.660
Difficulty in finding reliable cooperation partners for	109	2.11	.136	1.423	2.025

FINTECH innovation					
Inadequate access to infrastructure such as electricity and telecommunication	110	2.29	.131	1.370	1.878
Lack of privacy and security hazards	108	2.32	.128	1.331	1.772
High cost of maintenance compared to traditional system	108	2.26	.134	1.397	1.951
Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking	110	2.44	.116	1.216	1.478
Valid N (listwise)	106				

5.9 Financial Performance

	Descriptive Statistics				
	N Statistic	Mean Statistic	Std. Error	Std. Deviation Statistic	Variance Statistic
Profitability grows consistently yearly.	110	3.50	.075	.787	.619
Turnover grows consistently increase yearly.	110	3.29	.079	.828	.685
Maintenance of a strong cash flow.	110	3.30	.084	.884	.781
Increasing return on capital.	110	3.23	.083	.874	.764
Investment Banking	110	3.16	.094	.991	.982
Valid N (listwise)	110				

Appendix VI: Correlation Matrix

6.1 ATMs

Correlation Matrix

		Deposit_AT M	Credit_AT M	Remittances_ ATM	Forex_AT M	Ancilliary_A TM	Invesment Banking_AT M
Correlation	Deposit_ATM	1.000	.158	.265	.141	.159	.099
	Credit_ATM	.158	1.000	.280	.501	.337	.423
	Remittances_ATM	.265	.280	1.000	.441	.411	.417
	Forex_ATM	.141	.501	.441	1.000	.468	.632
	Ancilliary_ATM	.159	.337	.411	.468	1.000	.481
	Invesment Banking_ATM	.099	.423	.417	.632	.481	1.000

6.2 Internet Banking

Correlation Matrix

		Deposit_Inter net Banking	Credit_Intern et Banking	Remittances_ Internet Banking	Forex_Intern et Banking	Invesment Banking_Inte rnet Banking	Ancilliary_In ternat Banking
Correlation	Deposit_Internet Banking	1.000	.151	.180	.113	.044	.113
	Credit_Internet Banking	.151	1.000	.144	.352	.055	.152
	Remittances_Internet Banking	.180	.144	1.000	.311	.303	.256
	Forex_Internet Banking	.113	.352	.311	1.000	.310	.393
	Invesment Banking_Internet Banking	.044	.055	.303	.310	1.000	.450
	Ancilliary_Internat Banking	.113	.152	.256	.393	.450	1.000

6.3 POS

Correlation Matrix

		Deposit_PO S	Credit_PO S	Remittances_ POS	Forex_PO S	Invesment Banking_P OS	Ancilliary_P OS
Correlatio n	Deposit_POS	1.000	.201	.273	.169	-.042	.293
	Credit_POS	.201	1.000	.199	.374	.262	.275
	Remittances_POS	.273	.199	1.000	.374	.391	.342
	Forex_POS	.169	.374	.374	1.000	.559	.471

Invesment Banking_POS	-.042	.262	.391	.559	1.000	.478
Ancilliary_POS	.293	.275	.342	.471	.478	1.000

6.4 Mobile Banking

Correlation Matrix

		Deposit_Mobile Banking	Credit_Mobile Banking	Remittances_Mobile Banking	Forex_Mobile Banking	Invesment Banking_Mobile Banking	Ancilliary_Mobile Banking
Correlation	Deposit_Mobile Banking	1.000	.232	.340	.246	.015	.261
	Credit_Mobile Banking	.232	1.000	.195	.469	.121	.118
	Remittances_Mobile Banking	.340	.195	1.000	.255	.155	.268
	Forex_Mobile Banking	.246	.469	.255	1.000	.467	.428
	Invesment Banking_Mobile Banking	.015	.121	.155	.467	1.000	.420
	Ancilliary_Mobile Banking	.261	.118	.268	.428	.420	1.000

6.5 USSD

Correlation Matrix

		Deposit_US SD	Credit_US SD	Remittances_USSD	Forex_US SD	Invesment Banking_USSD	Ancilliary_USSD
Correlation	Deposit_USSD	1.000	.264	.429	.275	.031	.196
	Credit_USSD	.264	1.000	.198	.459	.151	.093
	Remittances_USSD	.429	.198	1.000	.424	.344	.382
	Forex_USSD	.275	.459	.424	1.000	.618	.474
	Invesment Banking_USSD	.031	.151	.344	.618	1.000	.508
	Ancilliary_USSD	.196	.093	.382	.474	.508	1.000

6.6 Constraints

Correlation Matrix

	Poor understanding/ acceptance and distrust of FINTECH innovation by customers	Regulatory challenges	Consumers unwillingne ss to pay higher prices for better FINTECH	Lack of qualified personne l	Lack of adequate finance for FINTECH innovation in the bank	Lack of adequat e informat ion on FINTEC H	Difficulty in finding reliable cooperation partners for FINTECH innovation	Inadequate access to infrastructure such as electricity and telecommunic ation	Lack of privacy and security hazards	High cost of maintenan ce compared to traditional system	Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking
Correlation	1.000	.807	.724	.584	.377	.347	.331	.586	.634	.302	.568

Regulatory challenges	.807	1.000	.824	.505	.273	.275	.304	.538	.512	.273	.636
Consumers unwillingness to pay higher prices for better FINTECH	.724	.824	1.000	.436	.192	.227	.213	.440	.446	.268	.628
Lack of qualified personnel	.584	.505	.436	1.000	.441	.327	.370	.696	.690	.302	.559
Lack of adequate finance for FINTECH innovation in the bank	.377	.273	.192	.441	1.000	.876	.802	.515	.584	.712	.521
Lack of adequate information on FINTECH	.347	.275	.227	.327	.876	1.000	.832	.511	.536	.748	.526
Difficulty in finding reliable cooperation partners for FINTECH innovation	.331	.304	.213	.370	.802	.832	1.000	.663	.670	.812	.630
Inadequate access to infrastructure such as electricity and telecommunication	.586	.538	.440	.696	.515	.511	.663	1.000	.858	.563	.767
Lack of privacy and security hazards	.634	.512	.446	.690	.584	.536	.670	.858	1.000	.558	.781
High cost of maintenance compared to traditional system	.302	.273	.268	.302	.712	.748	.812	.563	.558	1.000	.596
Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking	.568	.636	.628	.559	.521	.526	.630	.767	.781	.596	1.000

DO NOT

6.6 Financial Performance

Correlation Matrix

		Profitability grows consistently yearly.	Turnover grows consistently increase yearly.	Maintenance of a strong cash flow.	Increasing return on capital.	Invesment Banking
Correlatio n	Profitability grows consistently yearly.	1.000	.761	.548	.620	.494
	Turnover grows consistently increase yearly.	.761	1.000	.733	.770	.489
	Maintenance of a strong cash flow.	.548	.733	1.000	.683	.467
	Increasing return on capital.	.620	.770	.683	1.000	.476
	Invesment Banking_	.494	.489	.467	.476	1.000

DO NOT COPY. LEAD CITY UNIVERSITY

Appendix VII: KMO and Bartlett's Test

7.1 ATMs

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.809
Bartlett's Test of Sphericity	Approx. Chi-Square	159.767
	Df	15
	Sig.	.000

7.2 Internet Banking

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.693
Bartlett's Test of Sphericity	Approx. Chi-Square	80.883
	Df	15
	Sig.	.000

7.3 POS

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.719
Bartlett's Test of Sphericity	Approx. Chi-Square	141.127
	Df	15
	Sig.	.000

7.4 Mobile Banking

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.665
Bartlett's Test of Sphericity	Approx. Chi-Square	118.612
	Df	15
	Sig.	.000

7.5 USSD

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.691
Bartlett's Test of Sphericity	Approx. Chi-Square	174.930
	Df	15
	Sig.	.000

7.6 Constraints

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.860
Bartlett's Test of Sphericity	Approx. Chi-Square	1147.105
	Df	55
	Sig.	.000

7.7 Financial Performance

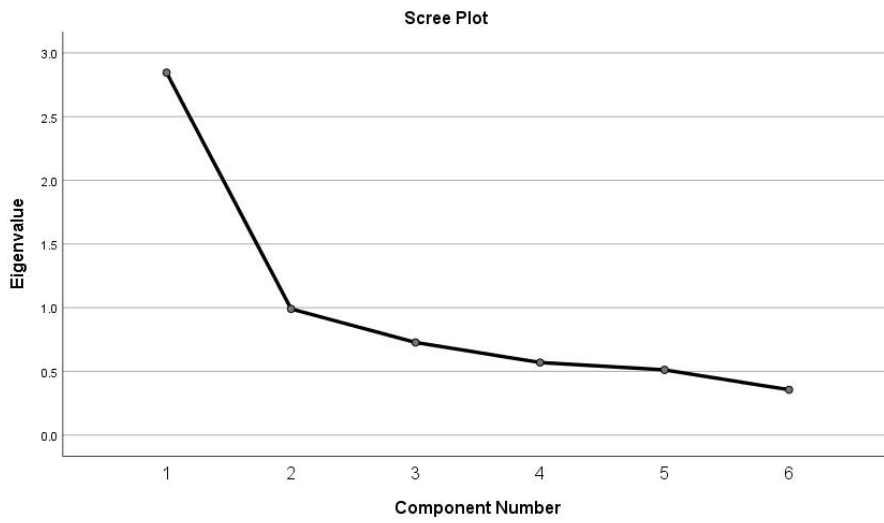
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.835
Bartlett's Test of Sphericity	Approx. Chi-Square	318.501
	Df	10
	Sig.	.000

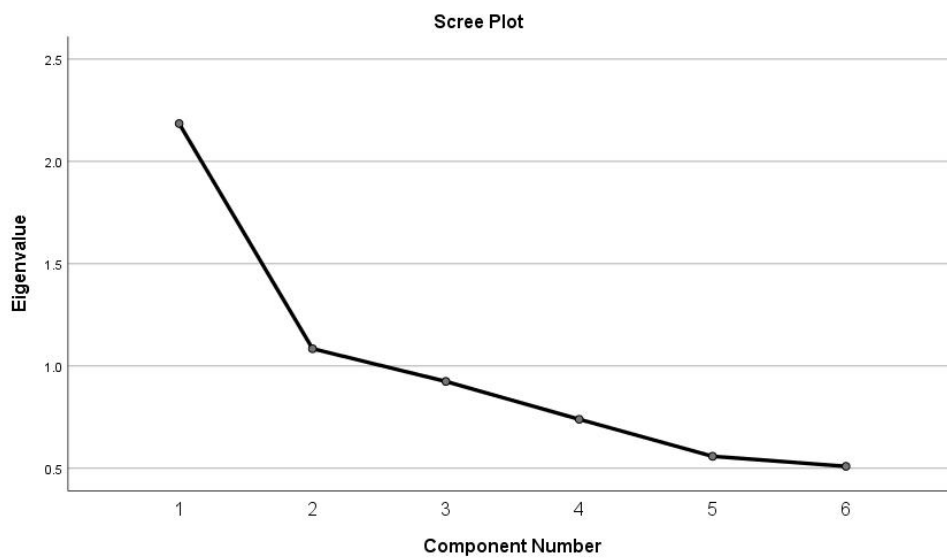
DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.

Appendix VIII: Scree Plot

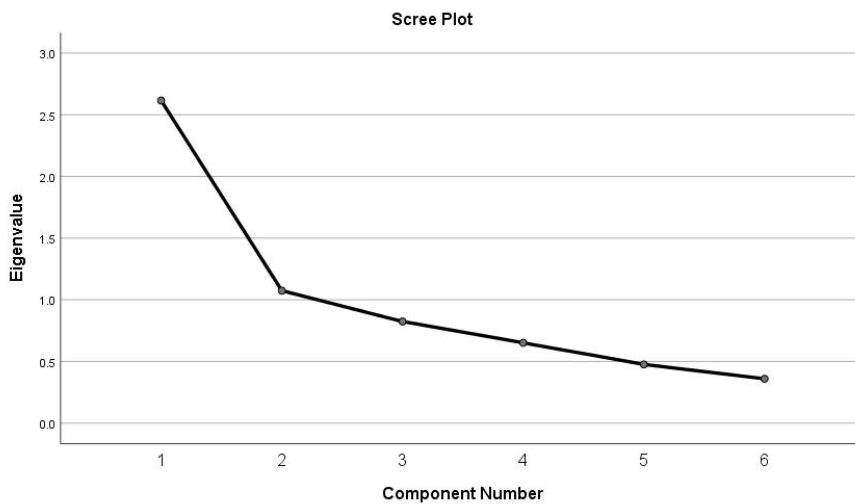
8.1 ATMs



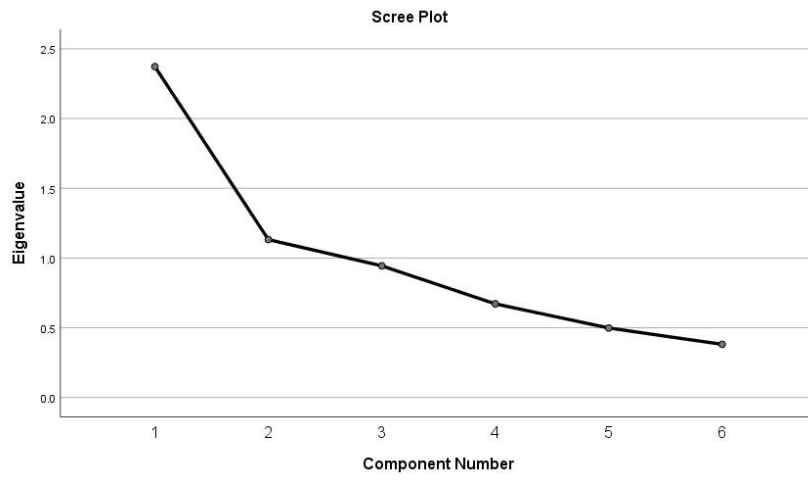
8.2 Internet Banking



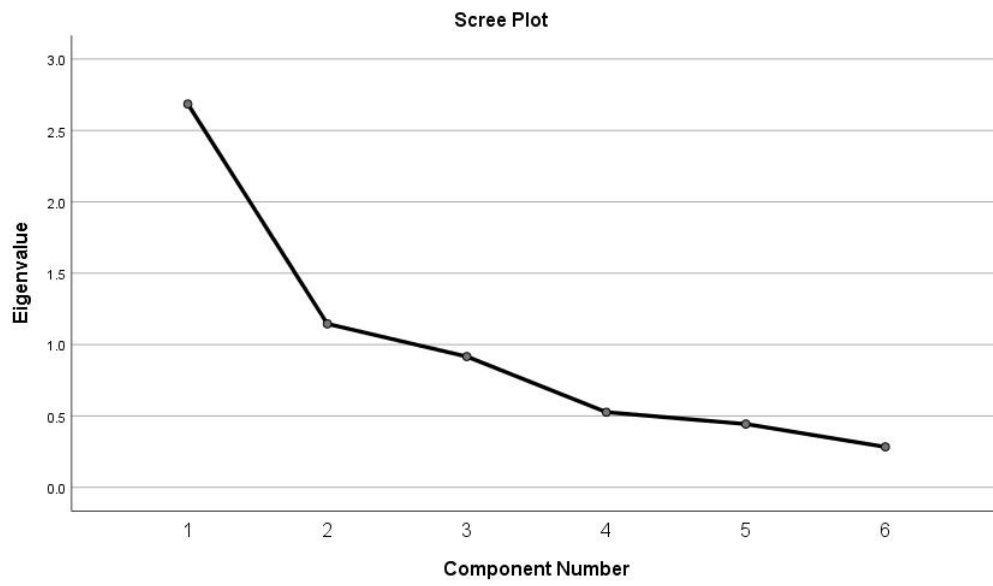
8.3 POS



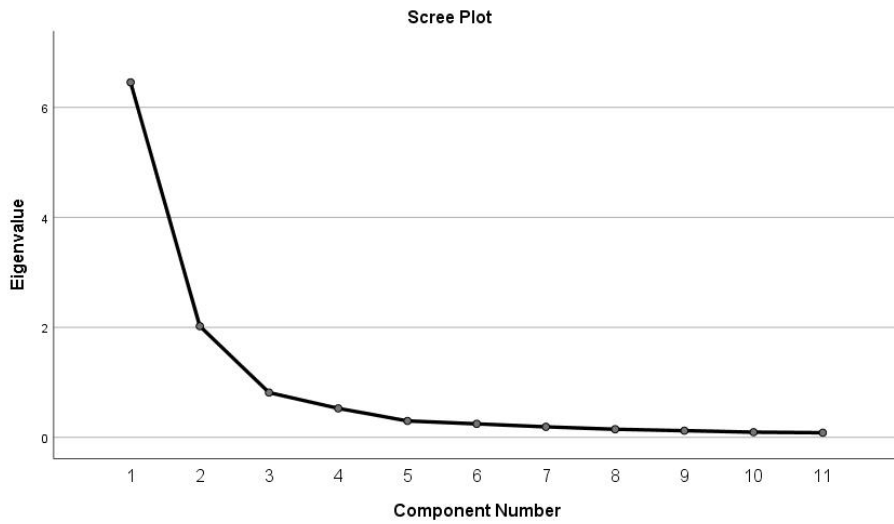
8.4 Mobile Banking



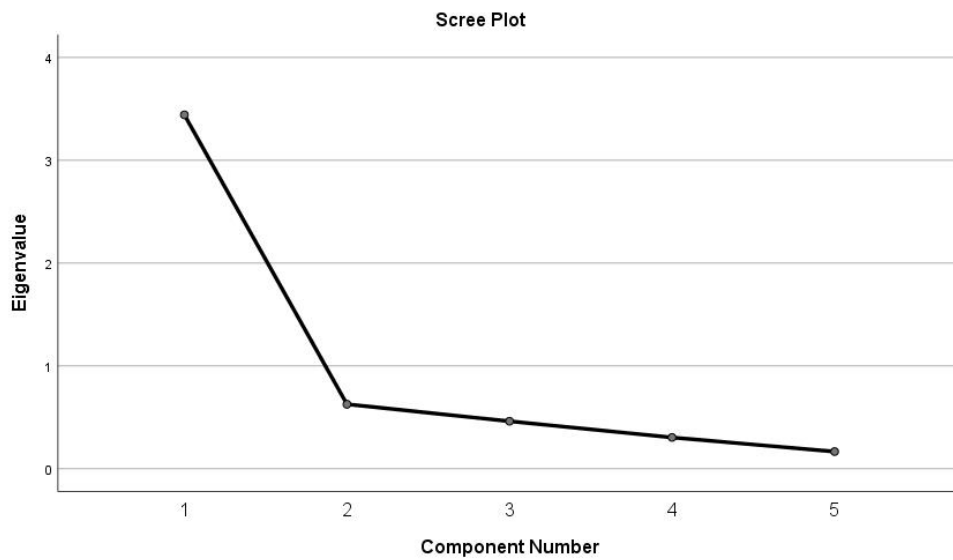
8.5 USSD



8.6 Constraints



8.7 Financial Performance



DO NOT COPY

NIGERIA.

Appendix IX: Component Matrix:

9.1 ATMs

Component Matrix^a

	Component 1
Forex_ATM	.824
Invesment Banking_ATM	.795
Ancilliary_ATM	.718
Remittances_ATM	.684
Credit_ATM	.668
Deposit_ATM	.322

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

9.2 Internet Banking

Component Matrix^a

	Component	
	1	2
Forex_Internet Banking	.739	
Ancilliary_Internat Banking	.717	
Invesment Banking_Internet Banking	.657	-.504
Remittances_Internet Banking	.620	
Credit_Internet Banking	.457	.621
Deposit_Internet Banking	.315	.585

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

9.3 POS

Component Matrix^a

	Component	
	1	2
Forex_POS	.793	
Ancilliary_POS	.751	
Invesment Banking_POS	.735	-.501
Remittances_POS	.653	
Credit_POS	.558	
Deposit_POS	.380	.866

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

9.4 Mobile Banking

Component Matrix^a

	Component	
	1	2
Forex_Mobile Banking	.806	
Ancillary_Mobile Banking	.690	
Remittances_Mobile Banking	.558	.406
Credit_Mobile Banking	.554	
Invesment Banking_Mobile Banking	.603	-.635
Deposit_Mobile Banking	.514	.624

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

9.5 USSD

Component Matrix^a

	Component	
	1	2
Forex_USSD	.848	
Invesment Banking_USSD	.716	-.528
Remittances_USSD	.699	
Ancillary_USSD	.697	-.367
Credit_USSD	.492	.470
Deposit_USSD	.487	.682

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

9.6 Constraints

Component Matrix^a

	Component	
	1	2
Lack of privacy and security hazards	.876	
Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking	.864	
Inadequate access to infrastructure such as electricity and telecommunication	.860	
Difficulty in finding reliable cooperation partners for FINTECH innovation	.801	-.499
Lack of adequate finance for FINTECH innovation in the bank	.754	-.494
Lack of adequate information on FINTECH	.744	-.523
High cost of maintenance compared to traditional system	.737	-.467
Poor understanding/ acceptance and distrust of	.733	.496

FINTECH innovation by customers		
Lack of qualified personnel	.702	
Regulatory challenges	.692	.583
Consumers unwillingness to pay higher prices for better FINTECH	.623	.607

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

9.7 Financial Performance

Component Matrix^a

	Component 1
Turnover grows consistently increase yearly.	.918
Increasing return on capital.	.866
Maintenance of a strong cash flow.	.834
Profitability grows consistently yearly.	.831
Invesment Banking	.680

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

DO NOT COPY. LEAD CITY

Appendix X: Result of the Investigation of the Effect of Financial Technology Tools on the Financial Performance of Deposit Money Banks in Nigeria.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.487 ^a	.237	.198	.90207930

a. Predictors: (Constant), Unstructured Supplementary Service Data (USSD), Internet Banking, Automated Teller Machine (ATMs), Mobile Banking, Point of Sales (POS)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.824	5	4.965	6.101	.000 ^b
	Residual	79.747	98	.814		
	Total	104.571	103			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Unstructured Supplementary Service Data (USSD), Internet Banking, Automated Teller Machine (ATMs), Mobile Banking, Point of Sales (POS)

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.006	.089		.064	.949
	Automated Teller Machine (ATMs)	0.349	0.092	0.349	3.778	0.000
	Internet Banking	0.360	0.092	0.358	3.909	0.000
	Point of Sales (POS)	0.268	0.095	0.266	2.813	0.006
	Mobile Banking	0.171	0.096	0.170	1.770	0.080
	Unstructured Supplementary Service Data (USSD)	0.207	0.096	0.206	2.147	0.034

a. Dependent Variable: Financial Performance

Appendix XI: Result of the Investigation of the Effect of Financial Technology on the Financial Performance of Deposit Money Banks in Nigeria.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224 ^a	.050	.041	.98681708

a. Predictors: (Constant), Financial Technology

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.243	1	5.243	5.384	.022 ^b
	Residual	99.328	102	.974		
	Total	104.571	103			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Financial Technology

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.002	.097		.025	.980		
	Financial Technology	.224	.096	.224	2.320	.022	1.000	1.000

a. Dependent Variable: Financial Performance

Appendix XII: Result of the Assessment of the Effect of Constraints to Technology Integration on Financial Performance of Deposit Money Banks in Nigeria.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.216 ^a	.047	.028	.98973600

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.027	1	.027	.027	.870 ^b
	Residual	106.823	105	1.017		
	Total	106.850	106			

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Constraints

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.005	.098		-.055	.956		
	Constraints	-.016	.098	-.016	-.164	.870	1.000	1.000

a. Dependent Variable: Financial Performance

**Appendix XIII
Questionnaire**

**Department of Management and Accounting,
Faculty of Management and Social Science,
Lead City University, Ibadan.**

**Research Questionnaire on Technology Integration and Financial Performance
of Deposit Money Banks in Nigeria**

Dear Sir/Madam,

As a postgraduate student of the department of Accounting, Faculty of Management and Social Sciences in the Lead City University, Ibadan. I am currently carrying out a research on the above-named topic and the main objective is to determine the extent to which deposit money banks in Nigeria have integrated technology into financial services and to analyze the constraints. The questionnaire has been designed to elicit relevant information in this regard.

I hereby seek your assistance and cooperation in gathering the needed information by completing the questionnaire as objectively as possible. The information you provide will be treated with utmost confidence and is purely for academic purpose. In no way will your name appear in the final research report. Your assistance and cooperation will be highly appreciated.

Yours Faithfully,

Abimbola Japheth, OSISANWO.

SECTION A (Personal Data)

Please supply the information as requested and tick (✓) as applicable in the spaces provided.

Gender:	Male:0		Female:1		
MStatus:	Single:0	Married:1	Divorced:2	Separated:3	
Age:	18-25:0	26-35:1	36-45:2	45 and Above:3	
Edu:	NCE/OND:0	HND/B.Sc:1	M.Ed/M.Sc:2	PhD:3	
	Others: write the name				
Years of experience in the banking industry					
	Less than 1:0	1-3:1	4-6:2	7-10:3	Above 10:4

For each of the following sections, there are five options: Very Large Extent (VLE), Large Extent (LE), Some Extent (SE), Minor Extent (ME) and Not At All (NAA), please indicate the extent to which you agree or disagree with the following statements by ticking (✓) the appropriate cell.

SECTION B: Financial Services

To what extent does your bank engage in the following Financial Services						
S/N	Financial Services	VLE	LE	SE	ME	NAA
1	Deposit facilities (current, savings and term deposit accounts)	4	3	2	1	0
2	Credit facilities (term loans, cash credit, bills discounting, vehicles loans, agriculture loans, corporate credit, retail loans)					
3	Remittances and payments (payment of bills, collection of cheques and bills, Real-Time Gross Settlement (RTGS) Electronic Clearing Service (ECS), National Electronic Funds Transfer (NEFT), and Society for Worldwide Interbank Financial Transfers (SWIFT))					
4	Export, import and foreign exchange facilities (Export and import credit, foreign letters of credit, cross country payments, currency exchange, remittance from abroad)					
5	Investment banking and wealth management (personal banking, asset management, executor and trusteeship arrangements)					
6	Ancillary services (safe custody and safe deposit locker facilities, solvency certificates, insurance and mutual fund services, credit and debit cards, and sale of gold coins)					

SECTION C: Financial Technology

To what extent does your bank uses the following technology to perform Deposit Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					
To what extent does your bank uses the following technology to perform Credit Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					

To what extent does your bank uses the following technology to perform Remittances and Payment Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					
To what extent does your bank uses the following technology to perform Export, Import and Foreign Exchange Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					
To what extent does your bank uses the following technology to perform Investment Banking and Wealth Management Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					
To what extent does your bank uses the following technology to perform Ancillary Services						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	ATM					
2	Internet Banking					
3	POS					
4	Mobile Banking					
5	USSD					

SECTION D: Technology Constraints

To what extent does your bank experience the following constraints in using Financial Technology						
S/N	FINTECH	VLE	LE	SE	ME	NAA
1	Poor understanding/ acceptance and distrust of FINTECH innovation by customers					
2	Regulatory challenges					
3	Consumers unwillingness to pay higher prices for better FINTECH					
4	Lack of qualified personnel					
5	Lack of adequate finance for FINTECH innovation in the bank					
6	Lack of adequate information on FINTECH					
7	Difficulty in finding reliable cooperation					

	partners for FINTECH innovation					
8	Inadequate access to infrastructure such as electricity and telecommunication					
9	Lack of privacy and security hazards					
10	High cost of maintenance compared to traditional system					
11	Security threat which can prevent data transactions or allow unauthorized access to the accounts through network attacks or hacking					

SECTION E: Financial Performance

S/N	Financial Performance	VLE	LE	SE	ME	NAA
1	Profitability grows consistently yearly.					
2	Turnover grows consistently increase yearly.					
3	Maintenance of a strong cash flow.					
4	Increasing return on capital.					
5	Dividend is constantly being paid					

Bio Data

A. Personal Data:

Name: Abimbola Japheth Osisanwo
Email address: osisanwo2000@gmail.com
Phone number: 08067389551
House address: Plot 5(No, 23) Orange Drive, Elebu, Oluyole Extension, Ibadan.
Date of birth: December 12th 1972
Place of birth: Ijebu-ode
Nationality: Nigerian
Marital Status: Married
Next of kin: Dr. Bukonla Grace Osisanwo
Address: Plot 5(No, 23) Orange Drive, Elebu, Oluyole Extension, Ibadan.

B. Educational Background

Educational Institution Attended With Dates

- i. Primary Education: Christ Apostolic Church School Ijebu-Ode
- ii. Secondary Education: Ijebu Muslim College Ijebu-Ode
- iii. Higher Educational Institution
 - Tai-Solarin College of Education 1993-1996 (N.C.E)
 - University of Uyo 1997-2002 (Bsc)
 - Obafemi Awolowo University 2006-2008 (MBA)

C. Working Experience With Dates

- i. Guaranty Trust Bank 2008 Till date
Position: Operations Head
- ii. Stanbic IBTC Bank 2004-2008
Position: Cash Officer

Signature

Date

University Compliance Certification

This is to certify that this thesis written by Abimbola Japheth OSISANWO with Matric Number LCU/PG/001739 in the Department of Management and Accounting, Faculty of Management and Social Sciences, Lead City University, Ibadan is in full compliance with the approved University format and style.

Signature

Date

DO NOT COPY. LEAD CITY UNIVERSITY, NIGERIA.