

KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

INSTITUTE OF DISTANCE LEARNING (IDL)

DEPARTMENT OF MARKETING AND CORPORATE STRATEGY

KNUST

**THE IMPACT OF INFORMATION TECHNOLOGY ON CUSTOMER SERVICE
DELIVERY: A CASE ON BANK OF AFRICA**

BY

DANIEL OBENG-ASANTE

PG 9211321

**A thesis submitted to the Department of Marketing and Corporate Strategy of the
School of Business, Kwame Nkrumah University of Science and Technology, Kumasi in**

Partial fulfilment of the requirements for award of

MASTERS OF SCIENCE MARKETING

NOVEMBER 2023

DECLARATION

I, Daniel Obeng-Asante hereby declare that, except for references in respect of other people's research, which have been duly acknowledged, this thesis is the outcome of my own research undertaken at the Kwame Nkrumah University of Science and Technology (KNUST) under the supervision of Prof. Bylon Abeeku Bamfo. Hence, I declare that this research work has neither in part nor in full, been presented to any other institution for an academic award.

Candidate Name

Daniel Obeng-Asante

PG9211321

Signature

Date

Certified by

Prof. Bylon Abeeku Bamfo.

Supervisor

Signature

Date

Certified by

Prof. Ahmed Agyapong

Head of Department

Signature

Date

DEDICATION

I dedicate this thesis to my parents, whose boundless love and selflessness have profoundly shaped my path. I am grateful for their unwavering belief in my potential and relentless efforts to ensure that I receive an education. Their sacrifices and support have been the driving force behind my pursuit of knowledge.

I also extend my gratitude to my siblings who sacrificed more than they had to ensure that I could pursue my educational goals. Their unwavering support and belief in me have been instrumental in my journey.

As I stand on the threshold of understanding, equipped with the tools to unravel the mysteries of our world and beyond, I am aware that this key signifies not only academic achievement but also resilience and determination. My family's influence has ignited my curiosity and instilled values that extend far beyond the pages of this thesis. Their sacrifices are deeply woven into every word I write, every discovery I make, and every aspiration I strive for.

To my parents, siblings, and family members who have been my guiding stars, pillars of strength, and unwavering champions, I want to express my heartfelt gratitude. This achievement is as much theirs as it is mine. I am forever grateful for the love and support they have bestowed upon me throughout my educational journey.

ACKNOWLEDGEMENT

All thanks to the Almighty God for the strength and life to complete this program and to my whole family for their support in diverse ways in these difficult times. Unqualified thanks also go to my Supervisor, Prof. Byron Abeeke Bamfo for the immense support throughout and the strict regime to bring out the very best.



ABSTRACT

Information Technology has made tremendous impact in the world of work, anything that was done in a conventional manner has been automated or digitized. The study is on the impact of information technology on customer service delivery. The research goal was to examine the relationship between cloud computing and of customer service delivery in Bank of Africa, to assess the impact of electronic banking on customer service delivery in Bank of Africa and to determine the impact of information technology on the perceptions customers in the banking sector.

The study hired the descriptive research design in combination with the quantitative research method for the study. The study further hired the questionnaire to gain information for the research. The SPSS was used for data analysis. The findings of the research showed that there is a relationship among cloud computing and customer service delivery. The change in cloud computing will cause an increase in customer service delivery. There is a relationship between electronic banking and customer service delivery. A change in electronic banking will cause a change in customer service delivery. A change in information technology will generate a change in perception of customers in the banking sector. It was demonstrated that there is an impact on information technology on perception of generation in the banking sector.

The study concluded that the impact of information technology on customer service delivery has been profound and transformative. The integration of advanced technologies has revolutionized how businesses interact with their customers, enhancing the overall customer experience and redefining service standards.

TABLE OF CONTENT

Contents	Page
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENT	vi
 CHAPTER ONE	 1
GENERAL INTRODUCTION	1
Introduction	1
1.1 Background of the study	1
1.2 Problem Statement	3
1.3 Research Objectives	4
1.4 Research Questions	5
1.5 Significance of the study	5
1.6 Brief Methodology	6
1.7 Scope of the study	6
1.8 Limitation of the study	7
1.9 Organization of the thesis	7
 CHAPTER TWO	 8
LITERATURE REVIEW	8
2.1 Introduction	8
2.2 Conceptual Review	8
2.2.1 Information and communication technology (ICT) in Banking Sector	8
2.2.2 Customer service delivery in the Banking Industry	9
2.2.3 Constructs explained in the context of customer service delivery	12
2.2.4 Cloud computing and reliability of customer service delivery in Bank of Africa	14
2.2.4.1 Infrastructure-as-a-Service	15
2.2.4.2 Platform-as-a-service	15
2.2.4.3 Software-as-a-Service	15
2.3 Relationship between banking and cloud banking	16
2.4 Electronic banking on customer service delivery in Bank of Africa	18
2.5 Functions of E-Banking Account Information	18

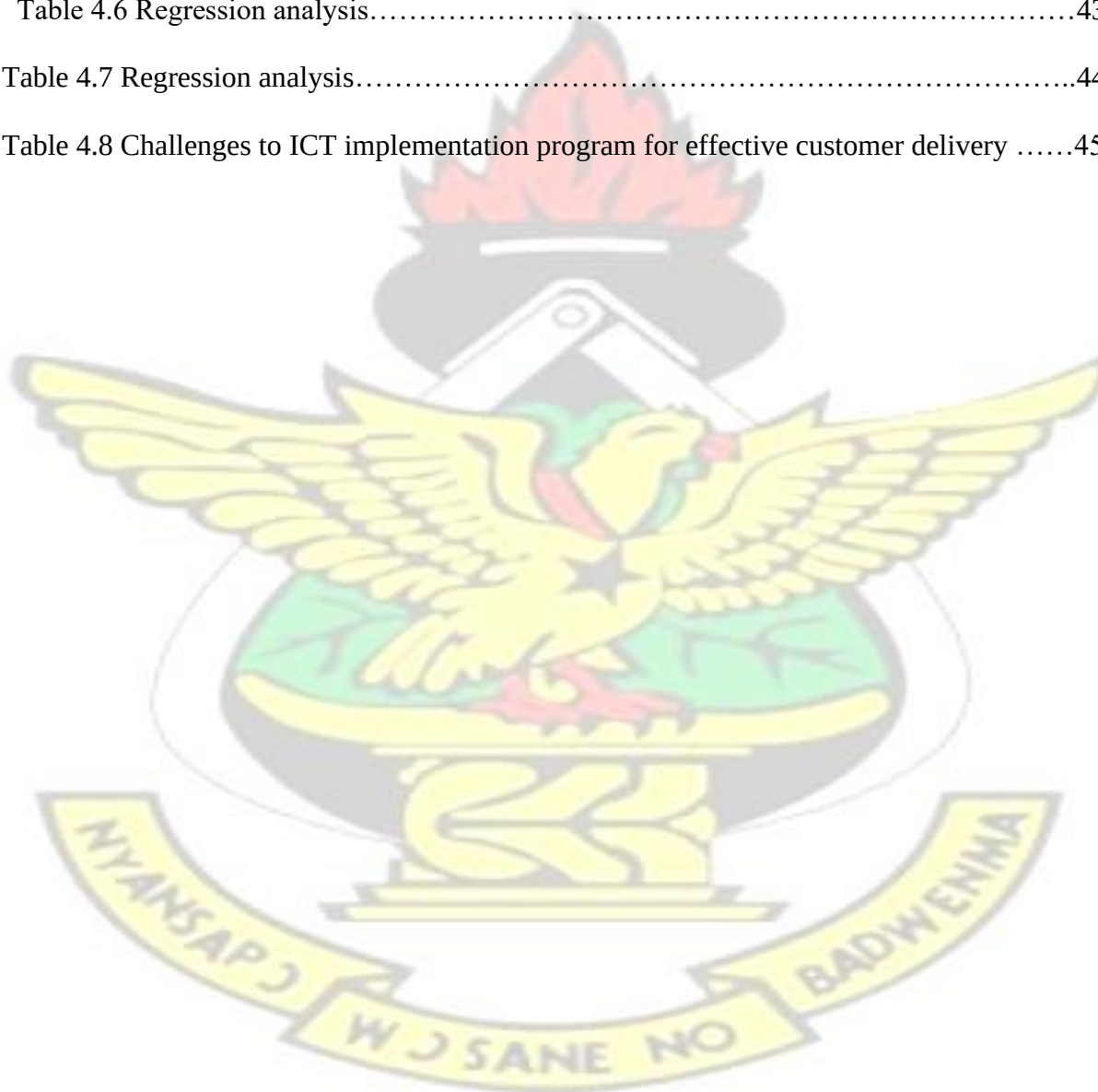
2.6 Merits of E-Banking	19
2.7 Complexity Nature of e-banking in Ghana	20
2.8 Bank teller's behavior on e-banking	20
2.8 Information technology on the perceptions of generation Z customers in the banking sector.	21
2.9 Challenges associated with implementing ICT programmes for effective customer delivery at Bank of Ghana.	23
CHAPTER THREE	25
RESEARCH METHODOLOGY	25
3.1 Introduction.....	25
3.2 Research paradigm.....	25
3.3 Purpose of the study.....	26
3.4 Sampling procedures.....	27
3.4.1 The population and sample	27
3.4.2 The sampling technique	28
3.5 Data collection instrument	29
3.5.1 Sources of data	29
3.5.2 Data collection tools	31
3.6 Data Analysis	32
3.7 Quality of the research	32
3.8 Research ethics.....	33
CHAPTER FOUR.....	35
DATA ANALYSIS AND DISCUSSION.....	35
4.0 Introduction.....	35
4.1 Demographic characteristics of respondents.....	35
4.2 Reliability test	36
4.3 Descriptive statistics	37
4.4: Correlation Matrix.....	38
4.5 Multi-collinearity Results	39
4.6 Regression and hypothesis test	41
4.6.1 The relationship between cloud computing and of customer service delivery	41
4.6.2 The impact of electronic banking on customer service delivery.....	42
4.6.3 Impact of information technology on the perceptions of generation	43
4.6.4 The challenges associated with implementing ICT programmes.....	44
4.7 Discussion	46

4.7.1 The relationship between cloud computing and of customer service delivery	46
4.7.2 The impact of electronic banking on customer service delivery.....	47
4.7.3 Impact of information technology on the perceptions of generation	48
4.7.4 The challenges associated with implementing ICT programmes.....	48
CHAPTER FIVE	50
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS	50
5.0 Introduction.....	50
5.1 Summary of findings.....	50
5.1.1 The relationship between cloud computing and of customer service delivery	50
5.1.2 The impact of electronic banking on customer service delivery.....	51
5.1.3 Impact of information technology on the perceptions of generation	51
5.2 Conclusion	51
5.3 Recommendation	52
REFERENCES	55
APPENDIX 1.....	61



LIST OF TABLE

Table 4.1 Demography of respondents.....	35
Table 4.2 Reliability test.....	37
Table 4.3 Descriptive statistics.....	38
Table 4.4: Correlation Matrix	39
Table 4.5 Multi-collinearity Results.....	41
Table 4.6 Regression analysis.....	43
Table 4.7 Regression analysis.....	44
Table 4.8 Challenges to ICT implementation program for effective customer delivery	45



CHAPTER ONE

GENERAL INTRODUCTION

Introduction

This chapter is the first chapter of the thesis and highlights the background of the study, problem statement, research objectives and questions, significance of the study, the scope of the study, brief methodology, limitations of the study and outline of the thesis.

1.1 Background of the study

Information Technology has made tremendous impact in the world of work, anything that was done in a conventional manner has been automated or digitized (Ho and Mallick, 2010). One way or the other, information technology has addressed the tremendous contrast between what organizations proclaim they are offering customers and what clients feel they are really receiving (Negi et al., 2011). In the banking sector, Information Technology have constantly and successfully answered the challenge of bulk of everyday complex data that emerges from among others (Brynjolfsson & McAfee, 2011); expansion in rivalry, expanded customer demand for both service provision as well as productivity (Chou & Shao, 2014), extension because of the surge in demand for services and so on (Venkitachalam & Ambrosini, 2017).

IT engineered system in the banking industry like internet banking and Automated Teller Machine has resulted to higher productivity in terms of speed, information handling and storage, convenience, and improvement in the long queuing in most banking halls (good customer service) (Agbolade, 2011 & Narteh, 2015). Again, accounting information system is powered by information technology (Pan & Seow, 2016). A satisfying accounting information is relevant and pertinent to the customers' process as well as being delivered in a

timely, correct, consistence and usable manner (Sujud & Hachem, 2019), concerned with the provision of accounting information through the optimal (most productive and economic) use of resources.

Thus, direct debit payments, off-the-shelf core banking systems, and agent-access to e-money accounts are all made possible to the service of customers, thanks to information technology (Diakonova et al., 2019). Bank of Africa has maintained its stance and productivity in the banking sector as it consolidates its sales and marketing set up (Mwai, 2015), improves its operational structure (Mehra et al., 2011), strengthening its risk control (Luburić, 2017), and the marked improvement in its financial results (Cinaj et al., 2020) by the effective use of information technology tools like cloud computing mobile applications, user interfaces i.e., touch screens, and data and predictive analysis.

Moreover, information technology birthed electronic banking (Egala et al., 2021) as a means of replacing some of their already known banking functions. Indeed, IoT and blockchain have taken centre stage in modern banking due to its potential of greatly influencing how banks operate which Ghana is no exception (Duho et al., 2022). Electronic banking services like mobile and internet banking, and ATMs give a competitive edge to banks that deploy them. The banking industry is always responding to the changing needs, rising competition in the monetary sector (Akhisar et al., 2015).

Bank of Africa began to offer more computerized options for communications with their customers. Gen Z is the modern age of youngsters, they comprise of individuals brought into the world somewhere in the range of 1997 and 2012. This age is seen as people who have been growing up close by the digital transformation that our societies have been encountering. Likewise, they are known for being on the web regularly and basically utilizing on the online social communications among other age groups. With Gen Z's familiarity with

information technology, they are more satisfied with digital banking and are pleased with the service delivery of banks.

Information Technology software's and programming ensures optimum customer satisfaction. In service provision the customer plays an important role, many services require customers to participate in creating the service product. In using an ATM card to withdraw money or electronically sending money, the role of customers is central in any good service delivery. When people feel a need they are motivated to take an action to fulfill it. However, service delivery means conforming to customers' expectations on a consistent basis. In other words, firms which is on and off in its service delivery cannot be said to be offering quality and deliverable service to meet customer expectations. Lastly, Rathee et al., (2014) and Iberahim et al., (2016) assert that the consistency of performance and dependability of banking services is essential, as banks performs the service right the first time, it also means that the bank honours its promises. All this is termed as reliability.

1.2 Problem Statement

The level of intricacy by banks on automation (Kibria et al., 2020), specifically banking makes them prone to high risks (Gotthardt et al., 2020). Due to the rise and demand of digitization, banks in Ghana have partially embraced cloud computing, electronic banking in their day-to-day operation (Hussein Alghushami et al., 2020). This is a clear indication that IoT is the fuel in this digital era (ibid). Tools and applications of information technology in the banking sector has suffered maliciously in the hands of hackers and the financial industry of some advanced nations are investing huge sums of resources in cyber security in all sectors of the economy (Mosteanu, 2020).

ATMs security in the financial sector of Ghana (Kessey and Wesley, 2020) is in the infant stages. But they are constantly being confronted with cyber-attacks. These financial sectors, especially the banking sectors mainly take the assistance of two types of security: computer security and network security (Sweetman, 2022). Competition within the financial industry is becoming quicker as increasingly banking players enter the market. Due to competition and the quest of business growth, banks are embracing and consolidating cloud computing and electronic banking which in turn is intertwined with cyber thefts (Solms and Langerman, 2020). Accordingly, numerous monetary establishments are coordinating their procedures towards expanding cons service and reliability through further developed customer service quality.

This has required a consistent fortification and strengthening of electronically based services like Automated Teller Machine (ATM), Internet banking, Mobile banking, E-switch phone banking and numerous others. There is extant literature on information technology on customer service delivery in Ghana (YuSheng and Ibrahim, 2019), but this study seeks to fill the academic and industrial gap by assessing the effect of cloud computing and electronic banking on customer service delivery, and Gen Z customer perception on the impact of Information Technology in Bank of Africa using a quantitative phenomenological approach.

1.3 Research Objectives

The following are the specific research objectives of the study;

1. To examine the relationship between cloud computing and of customer service delivery in Bank of Africa
2. To assess the impact of electronic banking on customer service delivery in Bank of Africa.

3. To determine the impact of information technology on the perceptions customers in the banking sector.
4. To determine the challenges associated with implementing ICT programmes for effective customer delivery at Bank of Ghana.

1.4 Research Questions

The following are the specific research questions for the study;

1. What is the relationship between cloud computing and customer service delivery in Bank of Africa?
2. What is the impact of electronic banking on customer service delivery in Bank of Africa?
3. What is the impact of Information Technology on the perceptions of generation Z customers in the banking sector?
4. What are the challenges associated with implementing ICT programmes for effective customer delivery at Bank of Ghana?

1.5 Significance of the study

The study is useful for International and local branches of Bank of Africa and other financial institutions in reference to information technology systems on customer service delivery. Business researchers may reference this paper as it extensively reviews the impact of information technology on customer service delivery in Banks and financial agencies like Financial Non-Governmental Organizations (Mohamed et al., 2019).

It will also help banks to appreciate the benefits of deploying electronic banking platforms, cloud computing and prioritizing good customer service. The study will also help bankers and

stakeholders in the banking industry appreciate the emerging trend and the skill set required to stay relevant in the banking sector. Lastly, this study will add to existing literature on information technology on customer service delivery in Ghana.

1.6 Brief Methodology

The study is to assess the relationship between cloud computing and electronic banking on customer service delivery, and Gen Z customer perception on the impact of Information Technology in Bank of Africa. The discussion focuses on the population, sampling procedure and sample size, data collection procedure and data analysis. The research design for this work will be a sample survey (Abutabenjeh and Jaradat, 2018) of Bank of Africa staff. The number of tellers in the banks in Ghana will represent the population of the study. The sample size will consist of 240 tellers and other staff members. Questionnaires will be the instruments for data collection. The questionnaires shall be structured to allow respondents select the option for each questionnaire which they considered most appropriate. Secondary data will be obtained from the Banks website and journals. Data gathered was presented in tables correlation analysis and regression analysis using SPSS version 23.0

1.7 Scope of the study

Contextually the study examines the relationship between cloud computing and reliability of customer service delivery in Bank of Africa customer service delivery in Bank of Africa, assesses the impact of electronic banking on customer service delivery in Bank of Africa, and determines the generation Z customer perception on the impact of Information Technology in

Bank of Africa. Geographically the study was limited to the Bank of Africa branches in Accra Metropolis.

1.8 Limitation of the study

The study was limited to only the Bank of Africa branches in Accra Metropolis and again the study was limited by employing a cross-sectional study and purposive sampling (Wang and Cheng, 2020). Few employees were unable to effectively partake in the research due to a lack of time and resources and funding.

1.9 Organization of the thesis

The study is in five chapters. Chapter One provides an overview of the thesis. It begins with background information about the research problem statement objectives questions the relevance of the study scope brief methodology limitations and the structure of the thesis. Chapter Two reviewed theories concepts and theoretical and empirical literature. Chapter Three discusses the research methodology methods adopted in data collection population sampling techniques and research instruments. Chapter Four involves data presentation analysis and discussion of findings. Chapter Five involves a summary of key findings conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at the concept of the impact of information technology on customer service delivery, focusing on Bank of Africa as a case study.

2.2 Conceptual Review

2.2.1 Information and communication technology (ICT) in Banking Sector

Shahid et al., (2022) suggest that the banking sector as it is an information-based industry gathering and analyzing of information in the sector has been greatly impacted by technology. ICT can be defined as the modern handling of information by electronic means, which involves its access, storage, processing, transportation or transfer and delivery. Kiki and Ogutu (2021) writes that IT affects financial institutions by easing enquiry, saving time, and improving service delivery. Technology is important for the performance of the major functions in the banking sector. This makes the adoption of technology an important decision so that banks can compete at par with other banks (ibid).

Naimi-Sadigh et al., (2022) opine that ICT unrest has contorted the customary financial plan of action by making it workable for banks to break their usual ranges of familiarity and worth creation affix in order to permit client care delivery to be isolated into various organizations. Hence, for instance, basically technological banks appropriate protection and protections as well as banking products, however not every one of the products they delivery are created by their groups (Olaiya and Adekunle, n.d.).

Zouari and Abdelhedi. (2021) postulate that some of the banking services provided by technological means in the banking sector include; Internet banking, ATMs, telephone banking, mobile money and branch network among others services. There are five major services offered by banking sector that can be associated with technological innovation which has led to faster services by domestic and foreign banks; request of credit advances by customers, paying bills, ordering checks, transfer of funds between different accounts and viewing account balances together with transaction histories. Technology has led to a lower transaction processing cost enabling the banks to make more profits due to creation of new products and services for their customers (Hilmy et al., 2021).

Popelo et al., (2021) indicates that technology has also allowed easy access of information and products and services by banking customers and investors. This has led to the growth of customer base for the banking sector to include customers who are outside the country (Kitsios et al., 2021). Information Technology has made it convenient for banking customers to access their accounts anywhere and at any time. Thus, customers can use banking services even on weekends. Additionally, technology has led to real time information exchange and has led to the improvement of banks performance (López-Penabad et al., 2022).

2.2.2 Customer service delivery in the Banking Industry

YuSheng and Ibrahim (2019) argues that service delivery is a primary means of realizing expected financial performance and growth in many sectors of business. It offers an opportunity for service organizations to persuade customers and potential customers for their patronage (Danquah and Wireko, 2014). In the service sector, service delivery forms the framework of practices for attaining desired customer patronage, satisfaction and retention. Similarly, fortifying the relationship between service delivery and customer demand,

satisfaction and retention in the service sector is the guiding strategy to maximum organizational performance (Okoe et al., 2013). Service delivery offers a medium for banks to ensure quality of services to meet customer preferences and expectations in view of the high level of competition in the banking sector.

Ankrah (2012) suggests that in the service sector such as the banking sector, the service delivery of a customer is purposed for service quality, where service quality is said to be a measure of the appropriateness of service delivery. Service quality is defined as the result of comparing expectations with performance in service delivery. Service quality is the resulting condition of a service delivery strategy. Service delivery is said to determine service quality, which in turn affects customer satisfaction and retention (Cudjoe et al., 2015). As a result, appropriateness of service delivery is measured as service quality.

According to Minocha et al., (2005) a service is a means of delivering value to customers by facilitating the outcome customers want to achieve without ownership by customer of the specific process roles and risks. Service delivery is a set of processes that provide the architecture on how the service will be rendered (such as service creation, session control and protocols). In order to provide superior and unmatched services there is a need to integrate both telecommunication and information technology capabilities (Kawimbe, 2020). Customer care on the other hand involves putting systems in place to maximize customers' satisfaction and should be a prime consideration for every business to keen on keeping their customers happy. This is because sales and profitability depend on a satisfied customer. For customer service roles such as receptionists and tellers, customer care should be a criterion when recruiting and a core element of their job description and training (Patil, 2020).

Amiri Jobani et al., (2022) assert that banking is a customer-oriented service industry, and effectiveness and efficiency are critical particularly with respect to providing services to

customers for the industry to be successful. The extent to which a customer's expectation is met or matched by a perceived performance of a bank's client is known as the customer service delivery. Service quality is a key component in creating and sustaining worthy relationships with customers and keeping abreast with their ever-changing needs (Ramya et al., 2019). Also, banking service providers are using information technology to reduce costs and more importantly create value-based services for their customers in order to remain competitive.

ICT enabled services help to promote quality service, productivity and overall customer satisfaction. Some of the ICT enabled service delivery channels in use in the banking industry include automated teller machines (ATMs), internet banking and now mobile banking which has taken the industry by storm (ARORA, 2019). The blending of current technology and sound service design in today's commercial banks is a big dream which when realized will greatly improve service delivery and customer satisfaction (ibid). Moreover, Janahi and Al Mubarak (2017) indicates that customer service has become the basis for long-term relationship development for banks the world over. The success of enterprises is shaped by how well banks understand the value needs of customers and adequately meet such needs. Firms that understand this basic principle always compete favourably (ibid).

Competition in the marketplace is won by enterprises that set the customer at the centre of all organizational activities and decisions. Increasingly, customers are becoming disloyal to brands due to lack of proper and clear differentiation of value offerings on the market (Fader, 2020). Innovations and new products in the banking sector are being copied and imitated at greater speed than before leading to unsustain competitive advantage development. Relying on internal structures and processes to offer added customer benefit beyond the core product provides a more sustainable way of competing in turbulent business environments (Wonglimpiyarat, 2017).

Considering the important role customer service plays regarding bank survival (Al-Azzam, 2015), firms would have to develop an organization wide culture that engenders excellent service delivery on all fronts. Such endeavor would ensure strict adherence to sets of conduct that aim at satisfying every customer. An organization that does not develop a good culture cannot learn to take care of customers. A great IT environment supports excellent customer service and induces both employee and customer satisfaction (Porssa and Mirzazadeh, 2016). The rationale is that how an organization is run is predicated on the culture (beliefs, values and attitude), which affects its quality service delivery orientation. It is therefore important that companies and organizations have organized structures and distinctive set of rules to be able to deliver quality customer service to keep their customers and employees happy as well as improve upon the image of their organizations (ibid).

2.2.3 Constructs explained in the context of customer service delivery

- ***Self-Awareness:***

Nyerere and Wawire (2015) argue that it is the ability to know customers' and one's emotions, strengths, weaknesses, drives, values and goals and recognize their impact on others while using gut feelings to guide decisions (Bank of Africa).

- ***Self-Regulation:***

This involves controlling or redirecting one's disruptive emotions and impulses and adapting to changing circumstances of customers. This is based on the fact that customer taste, preferences or/demands keep changing with time (Chan and Wan, 2012).

- ***Social Skill:***

This involves managing relationships with customers to move them in the desired direction of patronage and retention.

- ***Empathy:***

This deals with considering customers' feelings, especially when making decisions about product/service packaging and customer-focused strategy implementation (Huo et al., 2019).

- ***Motivation:***

This is a psychological element that drives the service provider to achieve the highest level of customer patronage and satisfaction through service quality (ibid).

Felix (2017) avers that customer service delivery has gained interest just after the concern on improving the quality of products and services become increasingly important in the globe. Today, information and communication technology, competition, deregulation and globalization have changed the landscape of the banking industry in such a way that it is characterized based on the services the banks offer to customers across the globe (Oo, 2018). This is one of the major reasons why the banking industry is among the most intense in deploying high technology innovation. It is noticeable that online banking enabled banks to service customers not only in branches and other dedicated services sites but also in a numerous of other channels (Wali, 2013). Thus, delivering effective customer service is indeed an important marketing strategy, but the difficulty in defining customer service delivery in deploying a specific contextual instrument for measuring such constructs represents important constraints for the banks to approach their markets (Bahman et al., 2013).

2.2.4 Cloud computing and reliability of customer service delivery in Bank of Africa

Gong et al., (2010) argue that cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories:

- Infrastructure-as-a-Service (IaaS)
- Platform-as-a-Service (PaaS)
- Software-as-a-Service (SaaS)

According to Höfer and Karagiannis (2011) cloud service has three distinct characteristics that differentiate it from traditional hosting". It is sold on demand, typically by the minute or the hour; it is elastic that a user can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider (the consumer needs nothing but a personal computer and Internet access). Significant innovations in virtualization and distributed computing, as well as improved access to high-speed Internet and for a weak economy have accelerated interest in cloud computing (Boss et al., 2007). A cloud can be private or public. A public cloud sells services to anyone on the Internet. A private cloud is a proprietary network or a data centre that supplies hosted services to a limited number of people (Hon and Millard, 2018). When a service provider uses public cloud resources to create their private cloud, the result is called a virtual private cloud. Private or public, the goal of cloud computing is to provide easy, scalable access to computing resources and IT services.

2.2.4.1 Infrastructure-as-a-Service

Yenew (2019) asserts that infrastructure-as-a-Service like Amazon Web Services provides virtual server instance to start, stop, and access and configure their virtual servers and storage. In the enterprise, cloud computing allows a company to pay for only as much capacity as is needed, and bring more online as soon as required. Because this pay-for-what-you-use model resembles the way electricity, fuel and water are consumed; it's sometimes referred to as utility computing (Awadallah, 2016).

2.2.4.2 Platform-as-a-service

Ghule et al., (2014) platform-as-a-service in the cloud is defined as a set of software and product development tools hosted on the provider's infrastructure. Developers create applications on the provider's platform over the Internet. PaaS providers may use APIs, website portals or gateway software installed on the customer's computer. Developers need to know that currently, there are not standards for interoperability or data portability in the cloud. Some providers will not allow software created by their customers to be moved off the provider's platform (Buyya et al., 2008).

2.2.4.3 Software-as-a-Service

Fremdt et al., (2013) opines that in the software-as-a-service cloud model, the vendor supplies the hardware infrastructure, the software product and interacts with the user through a front-end portal. SaaS is a very broad market. Services can be anything from Web-based email to inventory control and database processing. Because the service provider hosts both the application and the data, the end user is free to use the service from anywhere. Cloud

computing isn't without risks. But companies can cover their assets by performing some due diligence before signing a service-level agreement (Cochran and Witman, 2011).

2.3 Relationship between banking and cloud banking

Banking being a service key to the growth of the economy of any country, the people in the country must have access to banking services so as to develop and maintain or preserve wealth. Banks provide products and services through which all these are achieved and for effective performance of their mandate banks then must adopt tools and technologies to enable them deliver. The different types of banking institutions will certainly require different systems to adequately satisfy the needs of their specific client niche and therefore over the years, banks have experienced different computing regimes leading to the now most talked about cloud Banking depended on the use of the internet to deliver results. A rapid shift in attitude towards cloud banking is happening within the financial services industry (Pramanik et al, 2019).

Omarini (2017) posits that, cloud banking should be innovative dedicated to this industry and transformation. It has the ability to drive creative destruction, as well as helping to improve or optimize an existing service or process, cloud banking can provide the wealth and the freedom to try completely new services and processes, such as reverse auctions and third-party core banking systems, maybe even running them in parallel.

According to Asadi et al (2017), successful new cloud services can displace the existing and dominant process for design, distribution or transacting in a disruptive way, rather than just incrementally improving them. Among the most attractive benefits of cloud banking is being able to deploy (in an economically feasible way) the “champion-challenger model. This adds a competitive dynamic to the way processes are improved and chosen. As banks

progressively replace people in the value chain with algorithmic operations to run processes and make decisions, their intellectual property increasingly resides in these algorithms. The value of people is not in running operations but in improving the AOs. Although the technology is still immature in many places, cloud is a top priority for banks that need to continue a long-term focus on efficiency and support the CEO's growth strategy by becoming more flexible and agile to support new business models, new markets, new channels, and new products.

A **private cloud** is one in which both the consumer of cloud services and the provider of those services exist within the same enterprise. The ownership of the cloud assets resides within the same enterprise providing and consuming cloud services (Cortet et al, 2016).

A **public cloud** is one in which the consumer of cloud services and the provider of cloud services exist in separate enterprises. The ownership of the assets used to deliver cloud services remains with the provider (Hon and Millard, 2018).

A **hybrid cloud** combines multiple elements of public and private cloud, including any combination of providers and consumers, and may also contain multiple service layers (King, 2010).

Awadallah (2016) indicates that for banks, cloud's potential to assist with their balance sheets and capital adequacy may resonate because of pressures, following recent global financial crises, to reduce operating costs, conserve capital and profits, and stay competitive. So, moving to the cloud was an important way of cutting the bank's IT budget, as some banks are working with Google, Amazon and Microsoft to migrate some of its data (Shatalova and Huseynov, 2021). Depending on the area where it was used cost savings could be 50%, but in some instances, some banks was able to eliminate up to 90% of costs. However, an adviser felt that cost savings should not be the main driver for banks, who are "increasingly

becoming IT institutions”. Banks need not use cloud to save money, but could bring services outsourced to “traditional” integrators inhouse and save on value-added tax, for instance. Similarly, a bank said, “People believe [cloud is] costeffective; maybe in the long-term, but that’s not the primary reason [we are interested in cloud]”. Banks are now considering cloud as “a growth driver”, not just costs-reducer, by allowing operational simplification, product innovation and increased agility.

2.4 Electronic banking on customer service delivery in Bank of Africa

Kwarteng (2016) opines that e-banking as an electronic framework which gives banking administrations through virtual means, rather than the conventional methodology that depends on actual parts of banks. Hence e-banking includes the arrangement of retail or discount banking administrations to individual and corporate customers over the web. Albeit for the most part seen as banking through the web, it is an idea which is bigger than simply the conveyance of banking administrations by means of the web. Simon et al., (2016) posits that E-banking, consequently, is a conditional web-based finance platform which contains frameworks that permit bank clients access their records on the web, attempt exchanges, as the framework permits, including purchasing of monetary products/services and make different enquiries through open or private organizations.

2.5 Functions of E-Banking Account Information

Vyas (2012) opines that data can be divided among individual Internet banking and portable banking. Clients can divide enlisted e-banking account data among channels, add enrolled accounts, share security certificate media, reset login secret phrase, and understand the

programmed dividing of payee data among channels. Also, payment item search and setting for payment without confirmation are streamlined for "Bill Payment" in close to home Internet banking, upgrading the taking care of proficiency and client experience of bill payment administration. Thus, Singh (2004) assert that foreign exchange trading is conceivable with corporate web banking. The capacity of it is accessible for corporate Internet banking and Bank-Enterprise Interlink. Clients can ask about trade citations and handle ongoing exchanges and entrustment trades.

Lipton et al., (2016) write that client asks about their own record data like the record's equilibrium and exchange articulation on a particular period. Clients can support move from one record to different records. The customer can likewise move assets between his own financial balances. Also, e-banking makes clients exchange the foreign trade and ask about the exchanges on the bank rates on the Internet. It additionally drops the orders. With e-banking, client can alter his own record subtleties' constraints of his privileges, for example, changing login secret key and holding or erasing his card's subtleties (ibid).

2.6 Merits of E-Banking

Financial institutions today work in an exceptionally globalized, changed, privatized and a savagely aggressive climate (Mosteanu, 2020). Data Technology has presented another plan of action. It is a vital stage towards the improvement of the financial business. The development of electronic banking can likewise be ascribed to the ascent of web (Sepashvili, 2020). Ochuko (2013) expressed that opening a financial account online is simple, easy to work, extremely quick, and effective, covering bills, moving assets between accounts, and so forth, clients can deal with banking tasks from any place and whenever, and overseeing and checking a few accounts effectively through putting money on the Internet by watching out

for each bank exchange and record subtleties constantly. This assists with realizing any deceitful movement subtleties or client account dangers (Nso, 2018). Besides, financial technologists, modelers and experts affirms that there is decrease in costs for profiting banking services, exchanges can be made 24 hours, without requiring the actual cooperation with the bank, the reaction of the medium is extremely quick, and clients can download their set of experiences of the records and deal with the assets adequately (Shahabi and Razi, 2019).

2.7 Complexity Nature of e-banking in Ghana

Domeher et al., (2014) recognized it as a huge issue for the advancement of e-banking in Ghana. As per Hanafizadeh and Ravasan (2018) e-banking frameworks are a mind boggling and troublesome development to take on. The apparent intricacy in utilizing e-banking frameworks is a vital hindrance to reception of e-banking projects." Implicitly, these remarks signal the probable dismissal of any innovation that is muddled to utilize and makes the occupation harder (not easy to use). The utilization of e-banking innovation in certain banks is troublesome and it needs security. This remark about frailty suggested that the actual framework was not appropriately evolved and that those liable for its execution had no trust in it (Abukhzam and Lee, 2010).

2.8 Bank teller's behavior on e-banking

Li et al., (2021) suggests that teller's view and assumptions towards banking advances are a pivotal component in the improvement of effective e-banking execution projects. Assuming tellers principally consider e-banking as a self-administration and helpful channel that

diminishes costs and if its reception will not influence their positions, then, at that point, they will take on it (Koskosas, 2011). Nonetheless, on the off chance that they see e-banking as a danger to their work possibilities and a method for losing clients, then, at that point, they will probably oppose its reception to keep clients in the branches and their positions. Teller's protection from innovation reception is a typical issue in the financial industry (Sanda, 2011). The presentation of innovation will undoubtedly cause an unsettling influence within firms and to people inside those firms as more seasoned advancements and frameworks are uprooted by new ones.

Research indicates that (Abubakar Aliyu and Tasmin, 2012 and Nwaolisa and Kasie, 2012) a considerable number of bank clients have come to acknowledge electronic financial services as increasing the ordinary conveyance service given by bank employees. It is in this way inferred that due to client and teller's social difficulties to the successful usage of the ATM innovation, some banks are not profiting from its maximum capacity as a client support conveyance apparatus (Ngumi, 2014), and furthermore as an essential responsibility reliever for tellers who render service to clients inside the financial lobbies (Omarova, 2011).

2.8 Information technology on the perceptions of generation Z customers in the banking sector.

In this period of Web and communication technology retailing has turned into a powerful industry. This is mostly in light of the fact that customers have become progressively innovation subordinate. As organizations keep on expanding their interest in IT, they are becoming mindful of the significance of IT acknowledgment and how its use is a precondition for accomplishing higher efficiency with IT. As Daehler et al (2021) have anticipated, the financial experience has immeasurably changed throughout the long term and

the quantity of shoppers counts on line has expanded decisively. Society exchanges information through smart phones, laptops and multi-touch tablets, while banking utilizes different inventive (smart) innovations to further develop the consumer experience.

According to Joseph and Stone (2003), most banks have grown completely virtual stores where clients can utilize their telephones to find items and buy them inside the bank. Besides, age is a significant consider the new advanced culture which is the reason there are contrasts in various classes of buyers, and in their assumptions as purchasers. Generation Z are youthful grown-ups who were brought into the world in 1995 or later and are profoundly taught, mechanically canny, imaginative and innovative. It is the original naturally introduced to a computerized world that lives on the web and for all intents and purposes incorporates and draws in with its #1 brands. Generation Z are weighty clients of innovation and they consider it to be an instrument for them. Generation Z is a test, since apparently, they act diversely to prior ages and this conduct can prompt changes in purchaser conduct. Dimitriou and AbouElgheit (2019) affirms that four patterns are probably going to portray Generation Z as customers:

- 1) An interest in new advancements,
- 2) An emphasis on convenience,
- 3) A craving to have a real sense of security, and
- 4) A craving to briefly get away from the real factors they face.

They have encountered a lot in their short lifetimes and have experienced political, social, mechanical and financial changes. Das and Nayyar (2020) provided that, purchasers are less faithful to retailers and they anticipate that retailers should get the item to them, as a result retailer feel strain to track down better approaches to snatch and hold buyers' consideration. They have better standards, no brand faithfulness and care more about the experience.

2.9 Challenges associated with implementing ICT programs for effective customer delivery at Bank of Ghana.

Mahmud et al (2008) posit that, there are dependably possibilities of emergency which cause the bank to get through a deficiency; high level ICT upheld by a better instrument control is expected than verify that ICT has accomplished the necessary cycles inadequacy; hence, high level data framework upheld by a better component control is expected than verify that ICT has accomplished the expected cycles. A survey of a few related written works uncovers that ICT may basically influence adversely banks proficiency and may lessen efficiency. Nonetheless, since 1970s to the time Solow was guaranteeing that there was a gigantic decelerating in development as the innovations were becoming pervasive. On a similar vein, the paradox has been defined by Turban, et al. (2008) as the "error between proportions of interest in ICT and proportions of result at the public level". ICT has been one of the most fundamental powerful factors relating all endeavours; it cannot improve banks' profit. This was revealed in a broad review directed in USA for the time of 1989-1997 by Gordon (2012) on the other hand, there are different literary works that expose Solow's guaranteeing in entirety and endorse the positive effects of Information and Communication Technology costs to business esteem.

In comprehensive research conducted by Van Wegberg et al (2017) in USA inside the time span of 1971-1979 uncovers that the interest of organization impact is huge in using a Computerized Teller Machines. Milne (2006) likewise energizes and upheld the thought of the above creators. Curiously, Sufian (2011) researches the impact of the ICT development on the benefit and cost adequacy of the financial business inside the specify time of 1992-2003. For this period, the review proclaims a huge connection between the executed ICT, efficiency and cost reserve funds. The modernization of ICT has made way for unprecedented improvement in financial strategies all through the world. For example, the improvement of

overall organizations has extensively diminished the expense of worldwide assets move. Moudud-Ul-Huq et al (2020) reveal that, banks that are utilizing ICT related items, for example, web-based banking, electronic payments, security ventures, data trades, monetary associations can deliver great client administrations delivery to clients with less exertion. Barnett (2007) calls for attention to that "ICT contribute essentially to firm even out yield." They establish that Data Innovation capital contributes 81% peripheral expansion in yield, while non-information Innovation capital contributes 6%. Similarly, they outline that Data Framework experts are over two times as useful as non-Data Framework experts. Hilbert (2011, November) showed that the relationship concerning information and communication technology and banks" execution have two empowering results.

1. ICT can cut down the functional expenses of the banks (the expense advantage). For example, web innovation works with and speeds up banks systems to achieve normalized and low worth added transactions for example, charge payments and equilibrium requests processes by means of online organization (Silvestro and Lustrato, 2014).

2. ICT can advance exchanges between clients inside a similar organization (the organization impact). ICT has totally reshaped the scene and the component of contest in the financial business. Following the presentation of web-based banking, ATMs and Versatile banking, which are the underlying achievements of electronic banking, the dissemination of ICT and expanded infiltration of Web has added another difficulties and conveyance channel to retail banking: internet banking for the conveyance of administrations and items (Mwalwiba, 2020).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This study snippet evaluates the procedures applied while executing a look-under-look. It addresses the research's design, data sources, target population, sample size and sampling technique, study instrument, validity, data analysis technique, and statistical collection techniques for data collection. This also provided insight into the methodology employed to accomplish the fundamental goals of the investigations.

3.2 Research paradigm

A paradigm is a set of propositions that shape how researchers conceptualize the world. It provides a worldview and helps researchers make sense of the complexities of the real world by determining what is significant, necessary, legal, and reasonable (Guba, 1990). According to Guba and Lincoln (1990), A research paradigm is entrenched in three main components: ontology (the nature of reality), epistemology (the nature of knowledge), and technique (the methods used to conduct research).

According to Easterby et al. (2012) extend the notion that there exist two primary research ideologies: positivism as well as phenomenology or sociological constructionist. The positivism philosophy is factual and quantitative, whereas the phenomenology philosophy are qualitative or non-positivist. According to Easterby et al. (2012), the central assumption underlying the positivist model is that social phenomena may be impartially studied through empirical methods rather than being deduced intuitively via sense, reflection, or inference. Given that positivism includes ontological and epistemological concepts that clarify how analysis may be carried out utilizing these techniques, it is also argued that positivist is

equivalent to quantitative processes. According to Saunders et al. (2011), the positivism conceptual paradigm also assumes that the investigator operates independently of the examination and that it neither influences nor has an effect on it. The empirical positivist approach analyzes statistics and employs mathematical methods for research.

The positivist approach is often influenced by the research questions being addressed and the existing literature on the topic. The positivist approach is particularly suitable for research questions that require deductive reasoning and seek to establish objective relationships between variables.

3.3 Purpose of the study

There are three types of study designs: descriptive, exploratory, and explanatory. The choice of a type is influenced by the goals and purposes of the investigation. The present investigation embraced a descriptive method for research because it is suitable for social scientists, and it also allows for the collection of primary data from larger groups that will be particularly witnessed in addition to respondents. Questionnaires are recognized to be useful for learning about people's opinions, actions, and interpretations as well as the connections between the causes and consequences (Saunders et al., 2011). It involves recording participants' communication habits through the utilization of surveys or methods of interviews. According to Saunders et al. (2011), questionnaires represent a common or commonly utilized method for providing response regarding "who," "what," "where," "how much," and "how many" in corporate and leadership study.

The researcher decided to use the quantitative method, specifically employing both descriptive and inferential statistics. According to Zikmund (2000), the quantitative method

involves the collection and analysis of numerical data to understand the relationships between variables. It aims to establish objective and measurable links between two or more variables, where one is considered the dependent variable, and the other is the independent variable. This method is commonly used in natural sciences and often involves large sample sizes that require various statistical techniques.

Descriptive statistics are used to summarize and describe the main features of a dataset. It helps to organize and present data in a meaningful way, providing insights into the central tendency, variability, and distribution of the variables being studied (Zikmund, 2000). Inferential statistics, on the other hand, involve making inferences or predictions about a population based on a sample of data. It allows researchers to draw conclusions and test hypotheses about relationships between variables with a certain level of confidence. The researcher decision to adopt the quantitative method with descriptive and inferential statistics in this study is likely driven by the need to examine the link between variables in the objective and measurable devices. Since the study aims was to understand the relationships between different factors, quantitative analysis provides a structured approach to analyse the data and draw meaningful conclusions.

3.4 Sampling procedures

This is the technique that was employed to sample the study's population. detailed discussion concerning the research's demographic or sampling methodology.

3.4.1 The population and sample

The participant population of a research project is the group of items or components that contain the data the researcher is looking for and to where allusions are provided (Malhotra (2010). According to Burns & Bush (2000), a population is further described as the complete group that is being studied by the researcher in accordance with the objectives of the research. This All management and employees of Bank of Africa branches in Accra make up the study's target demographic. It is anticipated that 250 respondents would participate in the survey.

In order to determine the features of the complete population, a sample is extended by choosing a number of instances or individuals among the population. Bush and Burns (2000). In line with Zickmund (2013), researchers frequently are unable to directly annotate every member of the population. Annotations from a sample of people's data are used by the researcher to generalize about the full population. According to the statistical model developed by Krejcie and Morgan in 1970, the sample size for the management and employees of Bank of Africa is 152 people.

3.4.2 The sampling technique

As stated by Jebreen (2012), Sampling is a fundamental concept in research that involves selecting a subset of individuals, elements, or units from a larger population to study and draw inferences about the entire population. The process of selecting this subset is known as the sampling process, and the subset itself is called the sample. Jebreen (2012) further stated that there are two main types of sampling methods probability and non-probability sampling.

In probability sampling, every member of the population has a known and non-zero chance of being selected in the sample. Probability sampling methods ensure that the sample is more likely to be representative of the population. Common probability sampling methods include simple random sampling, stratified sampling, systematic sampling, and cluster sampling (Jebreen 2012).

In non-probability sampling, the selection of individuals or elements in the sample is not based on random chance. Instead, the researcher uses judgment, convenience, or other criteria to select the sample. Non-probability sampling methods may introduce potential biases and may not be as representative of the population. Common non-probability sampling methods include convenience sampling, judgmental sampling, snowball sampling, and quota sampling (Patton 2002). The study employed the convenient sampling technique being part of the non-probability sampling techniques.

3.5 Data collection procedure

According to Duvvuri & Umar (2014) a data collection instrument is a tool or method used by researchers to gather data from participants or sources in a systematic and structured manner. It is a crucial component of the research process as it helps collect the information needed to address research questions and objectives. The choice of the data collection instrument depends on the research design, the type of data required, the target population, and the research context. The researcher hired the use of a structured questionnaire for data collection. This consist of a 5-point scale questionnaire.

3.5.1 Sources of data

Sources of data refer to the places or locations from which researchers collect information for their study. These sources vary depending on the research objectives, methodology, and the nature of the data required (Kalu et al., 2018). The researcher only employed primary form of data for the study.

According to Vuong et al. (2018), Primary data is collected directly from original sources specifically for the research at hand. Researchers gather primary data through methods like surveys, interviews, observations, experiments, and focus groups. This data is fresh and has not been previously collected or used for any other study. The researcher used a combination of self-administered questionnaires and interviews as their data collection method. Self-administered questionnaires were given to the respondents to complete on their own, while interviews were of direct interactions between the researcher and the participants.

The respondents played an active role in providing the required information for the evaluation. They were given questionnaires to fill out independently, allowing them to express their unbiased opinions. The researchers used both questionnaires and interviews to collect data. Questionnaires were used to obtain responses to specific questions from a larger group of participants efficiently. On the other hand, interviews were used to clarify any ambiguous or unclear responses and to gain deeper insights into the respondents' perspectives (Kalu et al., (2018). The interviews were recorded, likely using audio or video recording equipment. This recording process helps ensure accurate and comprehensive capturing of the interview data, allowing the researchers to analyze the responses thoroughly (Kotler & Kevin 2012).

3.5.2 Data collection tools

A data collection tool, also known as a data collection instrument or data collection instrument, is a specific tool or method used to gather data from participants or sources in a research study. It serves as a structured and standardized means of collecting information that is relevant to the research objectives (Saunders et. al., 2015). The choice of a data collection tool depends on the research design, the type of data required, and the characteristics of the target population.

The research used was a cross-sectional descriptive survey. Cross-sectional studies collect data at a single point in time from different participants. Descriptive surveys aim to describe and gather information about a specific population or phenomenon. The researcher used both self-administered questionnaires and interviews as data collection methods. Self-administered questionnaires involve participants filling out the questionnaire on their own, while interviews involve direct interactions between the researcher and the participants (Malhotra 2010).

The researcher chose to use questionnaires because they were suitable for the research topic under investigation. Questionnaires are relatively easy to administer, convenient to review, and allow for generating standardized responses suitable for data analysis (Saunders et. al., 2015). The use of closed-ended questions in the questionnaires likely contributed to ease in data analysis. The interviews were used as a supplementary data collection tool to clarify any unclear responses or to obtain more in-depth information that could not be adequately captured through the questionnaires. The data collection process took approximately two weeks to complete.

3.6 Data Analysis

Data analysis is a critical phase in the research process that involves inspecting, cleaning, transforming, and interpreting collected data to draw meaningful insights and make informed conclusions. The primary objective of data analysis is to extract valuable information from the data and provide answers to the research questions or hypotheses.

After collecting data from the respondents using questionnaires and interviews, the collected facts were processed and organized in a meaningful manner. This step involves reviewing and structuring the data to make it more manageable and easier to analyse. The raw data collected from the questionnaires and interviews were carefully edited to remove any inconsistencies and errors. Data editing ensures that the data is clean and accurate, reducing the risk of bias or misinterpretation during analysis.

The edited data were then coded to facilitate enumeration and analysis. Coding involves assigning numerical or categorical codes to different responses or categories. This process helps in organizing the data and simplifying the analysis. The coded data were tabulated, meaning that they were organized into tables or matrices for further analysis. Tabulation allows the researcher to summarize and present the data in a structured format. The researcher used the Statistical Package for the Social Sciences (SPSS) version 23 software to conduct statistical analysis. Data were being put into tables, correlation and regression format.

3.7 Quality of the research

The quality of research refers to the degree to which a study's design, data collection, analysis, and reporting meet rigorous standards and produce valid and reliable findings. High-

quality research is essential to ensure that the results are trustworthy and contribute valuable knowledge to the field (Lohr, 2004). The researchers aimed to identify any weaknesses in the questionnaire design and instrumentation. The researcher used pilot test to help ensure that respondents understand the questionnaire items correctly, and also allows for item reliability analysis. After addressing the issues identified, the pilot test help to improve the final version of the questionnaire (Cooper et al., 2006).

Validity is the extent to which a research study accurately measures what it intends to measure. The researchers considered validity by asking a series of questions to ensure that their study tool (questionnaire) effectively targeted the research objectives. Reliability refers to the consistency and stability of research results. In the context of this research, the researchers ensured reliability by analysing item reliability from the pilot test data (Joppe, 2000). If the questionnaire items consistently produce similar responses among respondents, it indicates that the instrument is reliable. The researcher believes that the information obtained from the study is reliable and valid for other researchers and institutions in Ghana.

3.8 Research ethics

Researchers approach their study with sympathetic impartiality, meaning they are being empathetic and fair in their interactions with participants. This ensures that the researcher is considerate of participants' feelings and experiences (Malhotra & Birks 2007). Participant privacy and secrecy concerns were considered by the research. Participants had the right to keep their personal information private and confidential. The researcher provided prior consent to the participants before their involvement in the research. Providing participants with information about the study's goals and how their data will be used allows them to make an informed decision about participating.

Participant were engaged in their participation. Engagement were voluntary, that is the participants will not be coerced or forced to take part. Participants were given the freedom to choose whether they want to participate or not. The researcher ensured that participants' names were not recorded on the instruments (questionnaires or interviews) to maintain anonymity. The researcher demonstrates a commitment by protecting the interests and rights of the participants. The researcher Respected the ethical guidelines to maintain the trust of participants and ensure the integrity and credibility of the research findings.



CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.0 Introduction

This portion of the research study presents the findings obtained from the analysis of the collected data. This chapter aims to explore and discuss the results in relation to the research objectives and research questions. The findings provide essential insights into the research topic, contributing to the existing body of knowledge in the field.

4.1 Demographic characteristics of respondents

This part of the research deals with the demographic part of the research respondents. This incorporate sex, education and age of respondents.

Table 4.1 Demography of respondents

Variable	Item	Frequency	Percentage
Sex	Male	88	57.9
	Female	64	42.1
Age of respondents	Less than 20years	-	-
	20-29 years	43	28.3
	30-39 years	68	44.7
	40 and above	41	26
Educational background	HND	24	15.8
	Masters	42	27.6
	Degree	86	56.6
	PhD	-	-

Source: Field survey 2023

With reference to table 4.1, the analysis proves that in respect to the sex part of the respondent 88 of them were male with a percentage of 57.9 while female had 64 respondents with a percentage of 42.1.

In that of the age of the respondents, less than 20 had no responses with zero percentage. 20-29 years had 43 response with a percentage of 28.3. Moreover, 30-39 had 68 responses with a percentage of 44.7 while 40 and above had 41 responses with a percentage of 26.

4.2 Reliability test

A reliability test is a statistical analysis method used to assess the consistency and stability of a measuring instrument or a set of items within that instrument. Its purpose is to determine the level of reliability or the degree to which the instrument produces consistent and dependable results over time (Devellis 2016). According to Field (2009) reliability also refers to the consistency or stability of measurements or data over time, across different conditions, or by different researchers. It is an important aspect of research methodology as it ensures that the results obtained are consistent and reproducible.

According to Hair et al., (2013), One way to establish reliability is through the use of reliable measurement instruments or scales. Internal consistency reliability is used to assess the consistency of responses within a measurement instrument. The most commonly used measure of reliability is Cronbach's alpha, which calculates the internal consistency of a scale or questionnaire. It assesses the extent to which all the items in the instrument correlate with each other, indicating a reliable measurement tool. Values above 0.7 are generally considered acceptable for most research purposes. Values above 0.8 indicate high levels of reliability. Values below 0.7 suggest that the instrument may need revision or further development (Hair et al., (2013). From table 4.2 cloud computing had an alpha value of .802, customer service

delivery had an alpha value of .773, electronic banking had alpha value of .791, customer perception has an alpha value of .750 and challenges had an alpha value of .841. All construct is above the minimum threshold of .70 making the variables reliable.

Table 4.2 Reliability test

Construct	No. of items	Cronbach alpha
Cloud computing	7	.802
Customer service delivery	9	.773
Electronic banking	8	.791
Customer perception	8	.750
Challenges	7	.841

Source: Field survey 2023

4.3 Descriptive statistics

The researcher assessed the descriptive statistics of all the variable with the usage of mean, standard deviation, minimum and maximum. According to table 4.3, there were 152 valid responses to the study through a five-point Likert scale ranging 1-5.

The descriptive summary of the variables indicates that cloud computing had a mean of 4.59 and a standard deviation of 1.467. Again, customer service delivery had a mean of 4.63 with a standard deviation of 1.447. Moreover, electronic banking had a mean of 4.49 with a standard deviation of 1.657. Furtherly, customer perception had and mean of 4.45 providing a standard deviation of .980

Whiles challenges to associated to the implementation of ICT had a mean of 4.44 with a standard deviation of .821. This is showed in table 4.3

Table 4.3 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Cloud computing	152	1	5	4.59	1.467
Customer service delivery	152	1	5	4.63	1.447
Electronic banking	152	1	5	4.49	1.657
Customer perception	152	1	5	4.45	.980
Challenges	152	1	5	4.44	.821

Field survey 2023

4.4: Correlation Matrix

In this part of the research, the researcher will analyse the correlation matrix of the variables in the research. According to table 4.4, cloud computing had a correlation coefficient of 1 to itself and .105, .169, .079, .080 to customer service delivery, electronic banking, customer perception and challenges respectively. Again, customer service delivery had correlation coefficient of 1 to itself and .199, .073, and .053 to electronic banking, customer perception and challenges respectively. Moreover, electronic banking has correlation coefficient of 1 to itself and .170, .197 to customer perception and challenges respectively while challenges had correlation coefficient of 1 to itself with .080, .053, .197, and .465 to cloud computing, customer service delivery, electronic banking, and customer perception respectively. This is demonstrated in table 4.4

Table 4.4: Correlation Matrix

Variable	CC	CSD	EB	CP	CH
CC	1				
CSD	.105	1			
EB	.169	.199	1		
CP	.079	.073	.170	1	
CH	.080	.053	.197	.465	1

Field survey 2023

4.5 Multi-collinearity Results

Multi-collinearity is a statistical concept that refers to the correlation between two or more predictor variables in a regression model. When these variables are highly correlated, they provide redundant or overlapping information about the response variable. This redundancy can pose challenges in accurately estimating the effects of individual variables on the response variable.

Hair et al. (1998) highlighted that as multi-collinearity increases, it becomes more challenging to determine the unique impact of each predictor variable. This is because the interrelationships among the variables make it difficult to isolate their independent effects. Consequently, the coefficients for the predictors may become biased or misleading.

When multi-collinearity is present, the regression model may struggle to distinguish the individual contributions of the correlated predictors. This can lead to unstable or unreliable coefficient estimates, making it difficult to interpret the relationships between the predictors and the response variable properly. It is important to address multi-collinearity to ensure the

accuracy and robustness of regression analysis. Various techniques, such as variance inflation factor (VIF) analysis and principal component analysis (PCA), can help identify and mitigate the effects of multi-collinearity in statistical models.

According to Pallant (2010), Field (2009), and Tabachnick and Fidell (2007), there are two commonly used methods to identify multi-collinearity. The first method involves examining the matrix of multivariate and bivariate correlations. By looking at these correlations, researchers can identify variables that are highly correlated with each other, which could indicate multi-collinearity.

The second method involves assessing the effect of variance inflation factors (VIF) and tolerance. VIF measures the inflation in the variances of the regression coefficients due to multi-collinearity. Tolerance, on the other hand, measures the proportion of variance in a predictor variable that is not shared with other predictor variables. High VIF values and low tolerance values suggest the presence of multi-collinearity. To perform the multi-collinearity test, the researcher likely calculated VIF values for each predictor variable in the regression model. If any predictor variable has a VIF value above a certain threshold (typically 5 or 10), it indicates a high degree of multi-collinearity. Additionally, the researcher would have examined the tolerance values for each predictor variable. Low tolerance values (below 0.2 or 0.1) also indicate the presence of multi-collinearity. By analysing both the matrix of correlations and the VIF values/tolerance, the researcher can identify potential issues of multi-collinearity in the regression model. It is important to address multi-collinearity as it can lead to unreliable coefficient estimates and potentially affect the interpretation of the results.

From table 4.5 the tolerance level for sex, age, education, cloud computing, electronic banking, customer perception and challenges are all beyond the minimum accepted level of

0.2. Again, the variance inflation factor for sex, age, education, cloud computing, electronic banking, customer perception and challenges are lesser to 5. This shows that Multi-collinearity is not in the research.

Table 4.5 Multi-collinearity Results

Model	Collinearity Statistics	
	Tolerance	VIF
Sex	.967	1.035
Age	.978	1.022
Education	.924	1.082
Cloud computing	.949	1.054
Electronic banking	.910	1.098
Customer perception	.889	2.792
Challenges	.890	3.757

Dependent Variable: Customer service delivery

4.6 Regression and hypothesis test

For the researcher test the main hypothesis of the study, a regression analysis was conducted.

The outcome of the analysis is showed in table 4.6

4.6.1 The relationship between cloud computing and of customer service delivery

The study tests the hypothesis concerning cloud computing and customer service delivery.

The research used customer service delivery as a dependent variable whiles cloud computing as an independent variable.

From table 4.6 model 1, it was indicated that there is a relationship among cloud computing and customer service delivery. The change in cloud computing will cause an increase in 9.3 percent of customer service delivery. The model ($\beta = .291$, $t = 3.932$, $p < 0.01$) indicate that there is a connection between cloud computing and customer service delivery.

4.6.2 The impact of electronic banking on customer service delivery

The researcher hypothesises on the effect of electronic banking on customer service delivery. The analysis used electronic banking as an independent variable and customer service delivery as the dependent variable. The study shows that there is a relationship between electronic banking and customer service delivery. According to table 4.6 model 2, a change in electronic banking will cause a change of 12.4 percent in customer service delivery. The model ($\beta = .190$, $t = 4.600$, $p < 0.01$) demonstrate that there is an effect of electronic banking to customer service delivery.

Table 4.6 Regression analysis

Variables	Customer service delivery	
	Model 1	Model 2
	Beta (t-value)	Beta (t-value)
(Constant)		
<i>Cloud computing</i>	.291(3.932)	
<i>Electronic banking</i>		.190(4.600)
Model Indices		
R	.306	.352
R Square	.093	.124
Adjusted R Square	.087	.118
ΔF	15.457	21.158
Sig.	.000	.000

Source: Field study, (2023)

4.6.3 Impact of information technology on the perceptions of generation

The third objective of the researcher was to determine the impact of information technology on the perceptions of customers in the banking sector. The researcher used information technology as an independent variable while's perception of generation customers as a dependent variable. The analysis shows that a change in information technology will generate a change of 2.9 percent in perception of customers in the banking sector. The model ($\beta = .301$, $t = 4.600$, $p < 0.05$) demonstrating that there is an impact on information technology on perception of generation in the banking sector.

Table 4.7 Regression analysis

Variables	Consumer perception
	Model
	Beta (t-value)
Constant	
ICT	.301. (2.119)
Model Indices	
R	.170
R Square	.029
Adjusted R Square	.023
ΔF	4.489
Sig.	.036

Source: Field study, (2023)

4.6.4 The challenges associated with implementing ICT programmes

The final objective of the study was to determine the challenges associated with implementing ICT programmes for effective customer delivery at Bank of Ghana. The researcher analysed that using the mean score and the standard deviation to determine whether respondent agreed, had mere view or disagreed. This outcome is portrayed in table

4.8

Table 4.8 Challenges to ICT implementation program for effective customer delivery

Category	No.	Mean	Standard deviation	Remark
Lack of ICT infrastructure	152	4.51	.575	Agreed
Energy and electricity concern	152	4.43	.794	Agreed
Poor network connectivity	152	4.48	.789	Agreed
Consumers are scared to use the internet for transaction	152	4.44	.688	Agreed
Difficulty in studying and using software	152	4.34	.710	Agreed
Lack of trust on systems integrity	152	4.45	.659	Agreed
Lack of trust on system security	152	4.48	.772	Agreed
Total		4.45		Agreed

Source: Field survey 2023

The item was summarized by the investigator within the headings of highly agreed, agreed, neutral, disagreed, and strongly disagreed. The weighted mean score, which was calculated based on the five-point scale used in the inquiry to determine the sample size, was used to make conclusions about all of the items. $1+2+3+4+5 = 15/5 = 3.0$, according to calculations. Items with a mean score of 3.0 or above were deemed Agreed, those with a mean score of 2.1-2.99 were deemed Neutral, and those with a mean score of 2.0 or lower were deemed Disagreed.

According to table 4.8, item one had a mean score of 4.51 showing respondent agreed that information communication technology is being challenge by lack of ICT infrastructure. This has a standard of .575.

The second item had a mean of 4.43demonstrating participants agreed information communication technology implementation is being abstracted by energy and electricity concern. This has a standard deviation of .794.

The third item had a mean of 4.48 indicating respondents agreed that ICT implementation is being obstructed by poor network connectivity. This has a standard deviation of .688.

Moreover, item four had a mean of 4.44 showing respondents agreed information communication technology implementation in the banking sector is hindered by consumers being scared to use the internet for transaction. This had a standard deviation of .688

Also, item five had a mean of 4.34 demonstrating respondents agreed information communication technology implementation in the banking sector is impeded through difficulty in studying and using software. This had a standard deviation of .710.

The sixth item got a mean of 4.45 showing respondents agreed that information communication technology is being impeded by lack of trust on systems integrity. This had a standard deviation of .659. The last item had mean of 4.48 indicating ICT implementation is being impeded by Lack of trust on system security. On the total an average mean of 4.45 showing respondent agreed that all the variables are factors impeding ICT implementation

4.7 Discussion of findings

This part of the thesis deals with the deliberation of the research findings in relation to the literature connecting to the research. The investigator discussed the study finding to affirm whether it conform to the literature in the research.

4.7.1 The relationship between cloud computing and of customer service delivery

The study finding revealed that there is a relationship among cloud computing and customer service delivery. The change in cloud computing will cause an increase in 9.3 percent of

customer service delivery. The model ($\beta = .291$, $t = 3.932$, $p < 0.01$) indicate that there is a connection between cloud computing and customer service delivery.

The literature according to Omarini (2017) posits that, cloud banking should be innovative dedicated to this industry and transformation. It has the ability to drive creative destruction, as well as helping to improve or optimize an existing service or process, cloud banking can provide the wealth and the freedom to try completely new services and processes, such as reverse auctions and third-party core banking systems, maybe even running them in parallel. According to Asadi et al (2017), successful new cloud services can displace the existing and dominant process for design, distribution or transacting in a disruptive way, rather than just incrementally improving them.

4.7.2 The impact of electronic banking on customer service delivery

The outcome of the study revealed that there is a relationship between electronic banking and customer service delivery. A change in electronic banking will cause a change of 12.4 percent in customer service delivery. The model ($\beta = .190$, $t = 4.600$, $p < 0.01$) demonstrate that there is an effect of electronic banking to customer service delivery.

The literature according to Simon et al., (2016) posits that E-banking, consequently, is a conditional web-based finance platform which contains frameworks that permit bank clients access their records on the web, attempt exchanges, as the framework permits, including purchasing of monetary products/services and make different enquiries through open or private organizations.

4.7.3 Impact of information technology on the perceptions of generation

The analysis shows that a change in information technology will generate a change of 2.9 percent in perception of customers in the banking sector. The model ($\beta = .301$, $t = 4.600$, $p < 0.05$) demonstrating that there is an impact on information technology on perception of generation in the banking sector.

The literature also state that customers have become progressively innovation subordinate. As organizations keep on expanding their interest in IT, they are becoming mindful of the significance of IT acknowledgment and how its use is a precondition for accomplishing higher efficiency with IT. As Daehler et al (2021) have anticipated, the financial experience has immeasurably changed throughout the long term and the quantity of shoppers counts on line has expanded decisively. Society exchanges information through smart phones, laptops and multi-touch tablets, while banking utilizes different inventive (smart) innovations to further develop the consumer experience. According to Joseph and Stone (2003), most banks have grown completely virtual stores where clients can utilize their telephones to find items and buy them inside the bank. Besides, age is a significant consider the new advanced culture which is the reason there are contrasts in various classes of buyers, and in their assumptions as purchasers.

4.7.4 The challenges associated with implementing ICT programs

The findings of the research reveal that the challenges associated with implementing ICT programmes consist of lack of ICT infrastructure, energy and electricity concern, poor network connectivity, consumers are scared to use the internet for transaction, difficulty in

studying and using software, lack of trust on systems integrity and lack of trust on system security.

The literature by Mahmud et al (2008) posit that, there are dependably possibilities of emergency which cause the bank to get through a deficiency; high level ICT upheld by a better instrument control is expected than verify that ICT has accomplished the necessary cycles inadequacy; hence, high level data framework upheld by a better component control is expected than verify that ICT has accomplished the expected cycles. A survey of a few related written works uncovers that ICT may basically influence adversely banks proficiency and may lessen efficiency. Nonetheless, since 1970s to the time Solow was guaranteeing that there was a gigantic decelerating in development as the innovations were becoming pervasive.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This part of the research typically focuses on the discussion and analysis of the research findings. It provides an overview of the results obtained and their implications for the research objectives. The chapter presents the outcomes of the research and highlights the analysis of collected data. Its purpose is to provide a clear and comprehensive presentation of the research findings, addressing the research questions or objectives set in the study

5.1 Summary of findings

The researcher was to examine the relationship between cloud computing and of customer service delivery in Bank of Africa, to assess the impact of electronic banking on customer service delivery in Bank of Africa, to determine the impact of information technology on the perceptions customers in the banking sector and to determine the challenges associated with implementing ICT programmes for effective customer delivery at Bank of Ghana.

5.1.1 The relationship between cloud computing and of customer service delivery

The study finding revealed that there is a relationship among cloud computing and customer service delivery. The change in cloud computing will cause an increase in customer service delivery.

5.1.2 The impact of electronic banking on customer service delivery

The outcome of the study revealed that there is a relationship between electronic banking and customer service delivery. A change in electronic banking will cause a change in customer service delivery.

5.1.3 Impact of information technology on the perceptions of generation

The analysis shows that a change in information technology will generate a change in perception of customers in the banking sector. It was demonstrated that there is an impact on information technology on perception of generation in the banking sector.

5.2 Conclusion

The impact of information technology on customer service delivery has been profound and transformative. The integration of advanced technologies has revolutionized how businesses interact with their customers, enhancing the overall customer experience and redefining service standards.

The introduction of various digital tools such as chatbots, AI-driven customer service platforms, and personalized recommendation systems has led to improved response times, greater accessibility, and tailored solutions for individual customer needs. This has not only streamlined operations but also empowered customers to receive quick and efficient assistance, fostering a sense of satisfaction and loyalty. The utilization of data analytics and CRM systems has allowed companies to gain valuable insights into customer preferences, behaviors, and pain points. This data-driven approach has facilitated targeted marketing

strategies, enabling businesses to offer relevant products and services, thereby enhancing the overall customer engagement and increasing sales.

However, it's crucial to note that while information technology has brought numerous benefits, challenges have also emerged. The potential for impersonal interactions, data privacy concerns, and technological glitches must be acknowledged and actively managed to maintain trust and positive customer relationships. The continuous evolution of information technology will likely introduce even more sophisticated solutions such as virtual reality support, seamless omni-channel experiences, and further advancements in AI. It will be essential for businesses to strike a balance between technological innovation and human touch, ensuring that customer service remains empathetic, efficient, and adaptive to changing customer expectations. The impact of information technology on customer service delivery is a journey of empowerment, where businesses have harnessed the capabilities of technology to better serve their customers. By embracing these advancements thoughtfully and addressing challenges proactively, companies can cultivate lasting customer relationships and position themselves for sustained success in the dynamic digital landscape.

5.3 Recommendation

The researcher came out with these recommendation base on the study outcome. Banks should enhance personalization and predictive analytics. To deepen customer relationships, companies can invest in advanced predictive analytics and machine learning to anticipate customer needs. By proactively offering solutions, products, or assistance before customers even realize they need them, businesses can demonstrate their commitment to satisfaction and provide an unmatched level of service.

Also, banks should implement voice and speech recognition. Integrating voice and speech recognition technologies can streamline the customer service experience. This enables customers to interact with your services through voice commands, improving accessibility and efficiency. Voice-activated systems can help customers get information, make transactions, or access support more conveniently.

Moreover, there should emphasize multi-channel support. In today's interconnected world, customers often switch between various communication channels. Therefore, businesses should provide consistent and seamless support across channels like email, phone, chat, and social media. The ability to maintain a coherent conversation and access information across different platforms is crucial.

In addition, institutions should incorporate data-driven decision-making. Utilize the wealth of customer data and feedback to inform business decisions. Data-driven insights can help identify trends, customer preferences, and areas for improvement. Regularly analysing this information can lead to more strategic planning and refined customer service strategies.

There should be 24/7 Availability. Thus, institutions should offer round-the-clock customer support through automation or distributed teams in different time zones. This ensures that customers can access assistance when it's convenient for them, which can significantly boost satisfaction, especially for global businesses.

Similarly, banking institutions should incorporate human-AI collaboration. Banks must Promote collaboration between AI and human agents in customer service. AI can provide data and insights, while human agents bring empathy and problem-solving skills. These two working together can provide a well-rounded customer service experience.

Besides, banking institutions must have a proactive issue resolution. Banks should anticipate and address potential IT-related issues before they impact customers. Conduct regular system checks and quality assurance to prevent service disruptions, ensuring uninterrupted customer satisfaction.

Too, banks should foster Customer Communities. Banks should Create online communities or forums where customers can connect, share experiences, and assist each other. This not only provides a valuable resource for customers but also promotes a sense of belonging and loyalty to your brand.

Likewise, Banks should also continuous feedback loops. Financial institutions should establish a system for ongoing customer feedback, and regularly implement changes based on that feedback. This iterative approach ensures that your IT-driven customer service remains adaptable and responsive to evolving customer needs. Finally, I recommend that further research be done with the usage of different mythologies and sample size. Incorporating these recommendations into your customer service strategy will help you harness the full potential of information technology to enhance customer satisfaction and loyalty. It's crucial to maintain a customer-centric approach and adapt to technological advancements as they arise.

REFERENCES

- Abubakar Aliyu, A., & Tasmin, B. H. (2012). The impact of information and communication technology on banks' performance and customer service delivery in the banking industry.
- Abutabenjeh, S., & Jaradat, R. (2018). Clarification of research design, research methods, and research methodology: A guide for public administration researchers and practitioners. *Teaching Public Administration*, 36(3), 237-258.
- Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. *International Journal of Management Reviews*, 18(2), 180-205.
- Adewoye, J. O. (2013). Impact of mobile banking on service delivery in the Nigerian commercial banks. *International Review of Management and Business Research*, 2(2), 333.
- Al-Azzam, A. F. M. (2015). The impact of service quality dimensions on customer satisfaction: A field study of Arab bank in Irbid city, Jordan. *European Journal of Business and Management*, 7(15), 45-53.
- Amiri Jobani, F., Esmailpour, H., & Shahroodi, K. (2022). Designing a customer-oriented banking service model in Refah Bank with a content analysis approach. *International Journal of Nonlinear Analysis and Applications*.
- Ankrah, E. (2012). Technology and service quality in the banking industry in Ghana. *Information and knowledge management*.
- ARORA, R. (2019). Customer Service: A Study of Private Banks in India. *Think India Journal*, 22(3), 613-624.
- Asadi, S., Nilashi, M., Husin, A. R. C., & Yadegaridehkordi, E. (2017). Customers perspectives on adoption of cloud computing in banking sector. *Information Technology and Management*, 18(4), 305-330.
- Awadallah, N. (2016). Usage of cloud computing in banking system. *International Journal of Computer Science Issues (IJCSI)*, 13(1), 49.
- Awadallah, N. (2016). Usage of cloud computing in banking system. *International Journal of Computer Science Issues (IJCSI)*, 13(1), 49.
- Bahman, S. P., Kamran, N., & Mostafa, E. (2013). The effect of marketing mix in attracting customers: Case study of Saderat Bank in Kermanshah Province. *African Journal of Business Management*, 7(34), 3272-3280.
- Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of management review*, 32(3), 794-816.
- Blome, C., & Schoenherr, T. (2011). Supply chain risk management in financial crises—A multiple case-study approach. *International journal of production economics*, 134(1), 43-57.
- Boss, G., Malladi, P., Quan, D., Legregni, L., & Hall, H. (2007). Cloud computing. IBM white paper, 321, 224-231.
- Buyya, R., Yeo, C. S., & Venugopal, S. (2008, September). Market-oriented cloud computing: Vision, hype, and reality for delivering it services as computing utilities. In 2008

10th IEEE international conference on high performance computing and communications (pp. 5-13). Ieee.

Chan, K. W., & Wan, E. W. (2012). How can stressed employees deliver better customer service? The underlying self-regulation depletion mechanism. *Journal of Marketing*, 76(1), 119-137.

Cochran, M., & Witman, P. D. (2011). Governance and service level agreement issues in a cloud computing environment. *Journal of Information Technology Management*, 22(2), 41-55.

Conley, J. M., & Williams, C. A. (2011). Global banks as global sustainability regulators? The equator principles. *Law & Policy*, 33(4), 542-575.

Cortet, M., Rijks, T., & Nijland, S. (2016). PSD2: The digital transformation accelerator for banks. *Journal of Payments Strategy & Systems*, 10(1), 13-27.

Cudjoe, A. G., Anim, P. A., & Nyanyofio, J. G. N. T. (2015). Service quality and customer satisfaction in the Ghanaian banking industry (A case of Ghana commercial bank). *European Journal of Business and Management*, 7(3), 123-140.

Daehler, T. B., Aizenman, J., & Jinjara, Y. (2021). Emerging markets sovereign CDS spreads during COVID-19: Economics versus epidemiology news. *Economic Modelling*, 100, 105504.

Danquah, E. M. E. L. I. A., & Wireko, T. B. (2014). The impact of each element of emotional intelligence on customer service delivery: A customer satisfaction perspective. *International Journal of Sales & Marketing Management Research and Development*, 4(2), 9-20.

Das, S., & Nayyar, A. (2020). Effect of consumer green behavior perspective on green unwavering across various retail configurations. In *Green marketing as a positive driver toward business sustainability* (pp. 96-124). IGI Global.

Dimitriou, C. K., & AbouElgheit, E. (2019). Understanding generation Z's travel social decision-making. *Tourism and hospitality management*, 25(2), 311-334.

Fader, P. (2020). *Customer centricity: Focus on the right customers for strategic advantage*. University of Pennsylvania Press.

Felix, R. (2017). Service quality and customer satisfaction in selected banks in Rwanda. *Journal of Business & Financial Affairs*, 6(1), 246-256.

Fremdt, S., Beck, R., & Weber, S. (2013, January). Does cloud computing matter? An analysis of the cloud model software-as-a-service and its impact on operational agility. In *2013 46th Hawaii International Conference on System Sciences* (pp. 1025-1034). IEEE.

Ghule, S., Chikhale, R., & Parmar, K. (2014). Cloud computing in banking services. *International Journal of Scientific and Research Publications*, 4(6), 1-8.

Gong, C., Liu, J., Zhang, Q., Chen, H., & Gong, Z. (2010, September). The characteristics of cloud computing. In *2010 39th International Conference on Parallel Processing Workshops* (pp. 275-279). IEEE.

Gordon, R. J. (2012). Is US economic growth over? Faltering innovation confronts the six headwinds (No. w18315). National Bureau of Economic Research.

Gotthardt, M., Koivulaakso, D., Paksoy, O., Saramo, C., Martikainen, M., & Lehner, O. (2020). Current state and challenges in the implementation of smart robotic process automation in accounting and auditing. *ACRN Journal of Finance and Risk Perspectives*.

Hilbert, M. (2011, November). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damned lies, and statistics. In *Women's Studies International Forum* (Vol. 34, No. 6, pp. 479-489). Pergamon.

Hilmy, H. M. A., Ilma, M. A. F., & Sajith, S. A. (2021). Comparative study between online banking facilities offered by Islamic and conventional financial institutions in Sri Lanka.

Höfer, C. N., & Karagiannis, G. (2011). Cloud computing services: taxonomy and comparison. *Journal of Internet Services and Applications*, 2(2), 81-94.

Hon, W. K., & Millard, C. (2018). Banking in the cloud: Part 1–banks' use of cloud services. *Computer law & security review*, 34(1), 4-24.

Hon, W. K., & Millard, C. (2018). Banking in the cloud: Part 1–banks' use of cloud services. *Computer law & security review*, 34(1), 4-24.

Huo, Y., Chen, Z., Lam, W., & Woods, S. A. (2019). Standing in my customer's shoes: Effects of customer-oriented perspective taking on proactive service performance. *Journal of Occupational and Organizational Psychology*, 92(2), 255-280.

Hussein Alghushami, A., Zakaria, N. H., & Mat Aji, Z. (2020). Factors influencing cloud computing adoption in higher education institutions of least developed countries: evidence from Republic of Yemen. *Applied Sciences*, 10(22), 8098.

Irvine, P. J., Park, S. S., & Yıldızhan, Ç. (2016). Customer-base concentration, profitability, and the relationship life cycle. *The Accounting Review*, 91(3), 883-906.

Janahi, M. A., & Al Mubarak, M. M. S. (2017). The impact of customer service quality on customer satisfaction in Islamic banking. *Journal of Islamic Marketing*.

Japee, G. P. (2019). *Outbound Cross-Border M & A deals on Automotive Sector*. Rudra Publications.

Joseph, M., & Stone, G. (2003). An empirical evaluation of US bank customer perceptions of the impact of technology on service delivery in the banking sector. *International Journal of Retail & Distribution Management*, 31(4), 190-202.

Karam, A. A., & Saydam, S. (2015). An analysis study of improving brand awareness and its impact on consumer behavior via media in North Cyprus (A case study of fast food restaurants). *International Journal of Business and Social Science*, 6(1).

Kawimbe, S. (2020). Digital Disruption and the Impact of Service Delivery by Banks in Zambia: Customers' Perspectives.

Kessey, K. D., & Wesley, M. B. A. (2020). Financial Electronic Technology and Innovation for Banking Services Delivery in Ghana: Operations of the Automated Teller Machine Facility from Customers' Perspective. *International Journal of Innovative Finance and Economics Research*, 8(2), 24-41.

Kibria, R., Chowdhury, S. R., Hasan, S., & Hoque, M. R. (2020). Computerization of banking operation in Bangladesh. *International Journal of Technology for Business (IJTB)*, 2(1), 30-35.

Kiki, J., & Ogutu, M. (2021). INFLUENCE OF INFORMATION TECHNOLOGY ON CUSTOMER RETENTION IN COMMERCIAL BANKS. *International Research Journal of Business and Strategic Management*, 2(1).

King, B. (2010). *Bank 2.0: How customer behaviour and technology will change the future of financial services*. Marshall Cavendish International Asia Pte Ltd.

Kitsios, F., Giatsidis, I., & Kamariotou, M. (2021). Digital transformation and strategy in the banking sector: Evaluating the acceptance rate of e-services. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(3), 204.

KWARTENG, P. A. (2016). The effect of electronic banking on customer service delivery in Kumasi metropolis (Doctoral dissertation, Kwame Nkrumah University of Science and Technology).

Lipson, H., & Kurman, M. (2013). *Fabricated: The new world of 3D printing*. John Wiley & Sons.

Lipton, A., Shrier, D., & Pentland, A. (2016). *Digital banking manifesto: the end of banks?*. USA: Massachusetts Institute of Technology.

López-Penabad, M. C., Iglesias-Casal, A., Neto, J. F. S., & Maside-Sanfiz, J. M. (2022). Does corporate social performance improve bank efficiency? Evidence from European banks. *Review of Managerial Science*, 1-39.

Mahi, S. A. (2018). *Analyzing Customer Satisfaction: A Study of General Banking Activities in Southeast Bank Ltd*.

Mahmud, S., Haque, M. S., & Bashir, G. M. M. (2008). Deficiencies of existing mass transit system in Metropolitan Dhaka and improvement options. *Codatu XIII, Vietnam*.

Mazzucato, M. (2011). The entrepreneurial state. *Soundings*, 49(49), 131-142.

McKenzie-Mohr, D. (2011). *Fostering sustainable behavior: An introduction to community-based social marketing*. New society publishers.

Minocha, S., Dawson, L. H., Blandford, A., & Millard, N. (2005). Providing value to customers in E-commerce environments: The customer's perspective. In *Contemporary Research in E-Marketing, Volume 2* (pp. 119-146). IGI Global.

Mohamed, M. D., Mohamed, H. H., Jama, A. A., Achot, C. C., Dibit, H. A., Magutu, P. O., & Nyaoga, R. B. (2019). information systems outsourcing drivers and service delivery of commercial banks in Kenya. *Noble International Journal of Business and Management Research*, 3(1), 10-24.

Mosteanu, N. R. (2020). Artificial Intelligence and Cyber Security—A Shield against Cyberattack as a Risk Business Management Tool—Case of European Countries. *Quality-Access to Success*, 21(175).

Moudud-Ul-Huq, S., Asaduzzaman, M., & Biswas, T. (2020). Role of cloud computing in global accounting information systems. *The Bottom Line*, 33(3), 231-250.

Mwalwiba, L. (2020). the impact of digital banking in furthering financial inclusion in Tanzania (Doctoral dissertation, Mzumbe University).

Naimi-Sadigh, A., Asgari, T., & Rabiei, M. (2022). Digital transformation in the value chain disruption of banking services. *Journal of the Knowledge Economy*, 13(2), 1212-1242.

Nyerere, K. J., & Wawire, B. P. (2015). The influence of emotional intelligence on service delivery.

Okoe, A. F., Adjei, J. S., & Osarenkhoe, A. (2013). Service quality in the banking sector in Ghana. *International Journal of Marketing Studies*, 5(2), 81.

Olaiya, A. C., & Adekunle, O. E. Central Bank of Nigeria's Bank Verification Number Policy and its Effect on Deposit Money Banks' Customers; Empirical Evidence from Nigeria.

Omarini, A. (2017). The digital transformation in banking and the role of FinTechs in the new financial intermediation scenario.

Oo, C. Z. (2018). EMPLOYEE PERCEPTION ON INFORMATION AND COMMUNICATION TECHNOLOGY PRACTICES IN CO-OPERATIVE BANK (Doctoral dissertation, MERAL Portal).

Panda, T. K. (2001). Creating customer life time value through effective CRM in financial services industry.

Patil, J. S. (2020). Customer Analytics Improves Banks Performance: A Descriptive Study of Analytical CRM among Private, Cooperative and Nationalised Banks. *Test Engineering & Management*, 83(1), 10464-10470.

Popelo, O., Dubyna, M., & Kholiavko, N. (2021). World experience in the introduction of modern innovation and information technologies in the functioning of financial institutions. *Baltic Journal of Economic Studies*, 7(2), 188-199.

Pramanik, H. S., Kirtania, M., & Pani, A. K. (2019). Essence of digital transformation—Manifestations at large financial institutions from North America. *Future Generation Computer Systems*, 95, 323-343.

Rosenberg, N. (2010). Why do firms do basic research (with their own money)?. In *Studies on science and the innovation process: Selected works of Nathan Rosenberg* (pp. 225-234).

Shahid, M., Bhatti, F. A., Mohtesham, M. M. J., & Mahadi, N. F. B. (2022). The Value Propositions and The Nature of The Islamic Banks Products and Services in Providing The Solution/s for The Financial Needs of Bimb Business Customer Segments. *El Barka: Journal of Islamic Economics and Business*, 5(1), 105-134.

Shatalova, E. P., & Huseynov, R. M. (2021). Cloud technologies in banking. In *Socio-economic Systems: Paradigms for the Future* (pp. 41-48). Springer, Cham.

Silvestro, R., & Lustrato, P. (2014). Integrating financial and physical supply chains: the role of banks in enabling supply chain integration. *International journal of operations & production management*.

Simon, V. T., Thomas, A. S. R., & Senaji, R. (2016). Effect of electronic banking on customer satisfaction in selected commercial banks, Kenya. *International Academic Journal of Human Resource and Business Administration*, 2(2), 41-63.

Solms, J. V., & Langerman, J. (2020, August). Risks and Threats Arising from the Adoption of Digital Technology in Treasury. In *International Information Security Conference* (pp. 1-19). Springer, Cham.

Sufian, F. (2011). Profitability of the Korean banking sector: Panel evidence on bank-specific and macroeconomic determinants. *Journal of economics and management*, 7(1), 43-72.

Sweetman, A. (2022). The London Clearing Banks and Computer Security: 1960–1977. In *Cyber and the City* (pp. 25-65). Springer, Cham.

Tidd, J., & Bessant, J. R. (2020). *Managing innovation: integrating technological, market and organizational change*. John Wiley & Sons.

Van Wegberg, R. S., Klievink, A. J., & Van Eeten, M. J. G. (2017). Discerning novel value chains in financial malware. *European Journal on Criminal Policy and Research*, 23(4), 575-594.

Vyas, S. D. (2012). Impact of e-banking on traditional banking services. *arXiv preprint arXiv:1209.2368*.

Wali, A. F. (2013). Information technology infrastructure and customer service delivery. *British Journal of Marketing Studies*, 1(2), 17-32.

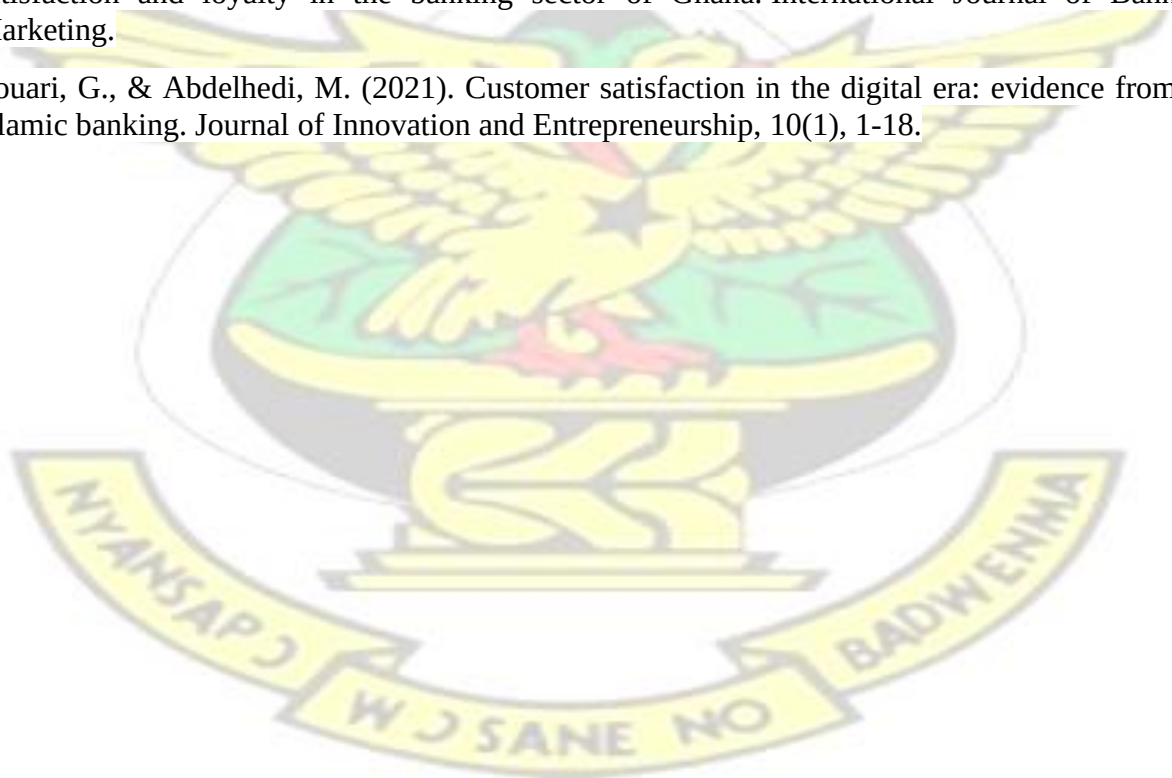
Wang, X., & Cheng, Z. (2020). Cross-sectional studies: strengths, weaknesses, and recommendations. *Chest*, 158(1), S65-S71.

Wonglimpiyarat, J. (2017). FinTech banking industry: a systemic approach. *foresight*, 19(6), 590-603.

Yenew, M. (2019). Designing cloud computing architecture for bank industry the case of Dashen bank.

YuSheng, K., & Ibrahim, M. (2019). Service innovation, service delivery and customer satisfaction and loyalty in the banking sector of Ghana. *International Journal of Bank Marketing*.

Zouari, G., & Abdelhedi, M. (2021). Customer satisfaction in the digital era: evidence from Islamic banking. *Journal of Innovation and Entrepreneurship*, 10(1), 1-18.



APPENDIX 1
KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
KNUST SCHOOL OF BUSINESS, KUMASI
THE IMPACT OF INFORMATION TECHNOLOGY ON CUSTOMER SERVICE
DELIVERY

This is being conducted to assess the impact of information technology on customer service delivery. I will be pleased if you could take some time to complete this questionnaire.

Evidence provided for this study as a result of your completing this questionnaire will be used for academic purposes only. I undertake to keep the information strictly confidential and not to disclose it to any other person(s). Please tick (✓) the correct answer in the appropriate boxes and specify if applicable.

SECTION A-Demographic Information of Respondents

1. Sex

☐ Male

☐ Female

2. Age

☐ Less than 20years

☐ 20 – 29 years

☐ 30 – 39years

☐ 40years and above

3. Education background

☐ First degree

☐ Master's degree

☐ HND

☐ Diploma

SECTION B- Cloud computing

Please tick(s) as appropriate. SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-strongly disagree.

S/N		SD	D	N	A	SA
1	I think adopting Cloud Computing services will improve my performance					
2	I think adopting Cloud Computing services will improve my productivity					
3	I think adopting Cloud Computing services will be useful for my overall work					
4	I will be confident in using Cloud Computing services					
5	I will have experience in using Cloud Computing services so fast					
6	I am confident about the security available with Cloud Computing technology					
7	I am confident about the privacy and integrity of data made available through Cloud Computing					

SECTION C-Customer services delivery

Please tick(s) as appropriate. SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-strongly disagree.

S/N		SD	D	N	A	SA
1	Our services are access through the use of ICT					
2	Our customers are satisfied with the services that our bank provide					
3	Staff at excellent banks will have a professional appearance					
4	Excellent banks will have visually appealing physical facilities.					
5	Our bank keeps their promises to do things by a certain time.					
6	The bank shows a sincere interest in solving customers' problems.					
7	Our bank performs services correctly the first time.					
8	The bank provides services within the promised time-frame.					
9	Our bank insists on error-free records					

SECTION D-Electronic banking

Please tick(s) as appropriate. SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-strongly disagree.

S/N	ICT	SD	D	N	A	SA
1	Electronic banking transaction is secure enough					
2	e-banking security features should be increased					
3	Bank correct transaction errors as soon as possible					
4	Link in e-bank web page are relevant and usable					
5	Satisfied with e-bank working hours					
6	Satisfy with e-bank services					
7	E-bank protect information					
8	e-bank inform customers to with transactions details					
9	Bank remind customers to change their password if theft is detected					

SECTION D-Customer perception

Please tick(s) as appropriate. SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-strongly disagree.

S/N		SD	D	N	A	SA
1	I am willing to perform transaction with the bank anytime					
2	Feel free about privacy of information					
3	I have sufficient information feeling trustiness					
4	The system quality makes trustiness					
5	Feeling pleasant doing business with the bank					
6	Products are desirable than price					
7	More confidence on well-known company					
8	Easy using the bank electronic services					

SECTION E-Challenges face by ICT usage in service delivery

Please tick(s) as appropriate. SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-strongly disagree.

S/N		SD	D	N	A	SA
1	Lack of ICT infrastructure					
2	Energy and electricity concern					
3	Poor network connectivity					
4	Consumers are scared to use the internet for transaction.					
5	Difficulty in studying and using software					
6	Lack of trust on systems integrity					
7	Lack of trust on system security					

THANK YOU

