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ASSESSING THE IMPACT OF MOBILE MONEY SERVICES ON THE PROFITABILITY OF BANKS IN GHANA: A CASE STUDY OF GCB BANK

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Abstract

Mobile money services have revolutionized financial services in Ghana, allowing users to store, send, and receive money using their mobile phones. This study aims to understand the implications of mobile money services on traditional banking operations and profitability. This research examines the impact of mobile money services on the profitability of a traditional banking institution in Ghana, using GCB Bank as a case study. This study aims to provide insights into the impact of mobile money services on traditional banking operations and profitability in Ghana, using GCB Bank as a case study. The mixed-methods research approach, incorporating both quantitative and qualitative methodologies, was utilized to investigate the influence of mobile money services on GCB Bank in Ghana. Data was collected at a single point in time from a total population of 651 employees spanning various departments, from which a sample size of 268 was selected for data analysis. Statistical software was employed to scrutinize the quantitative data, while thematic analysis was applied to qualitative data. To ensure robustness and credibility of the findings, data triangulation was performed. The study provided valuable insights into the opportunities and challenges of mobile money services within traditional banking systems. The study found that mobile banking significantly influenced GCB Bank's profitability, primarily by altering customer behavior and increasing transaction volume. The bank's user-friendly technological infrastructure and adherence to regulatory standards enhanced customer confidence and service growth. Despite minor concerns, the overall positive reception of mobile banking services by staff and customers signaled its potential to boost the bank's operational efficiency and profitability. Therefore, mobile banking emerged as a vital component in shaping the bank's operations and profitability. The study recommends that GCB Bank enhance its technological infrastructure, prioritize transaction security, expand its mobile banking service offerings, and continually seek user feedback to refine services.

Keywords: Mobile money services, ATMs, GCB Bank, Artificial Intelligence (AI)

INNOVATIONS

Overview

Chapter one serves as the introduction to the research. It lays out the background of the study, providing context for the research topic and identifying the target audience. This chapter also delineates the problem statement, profile of the organization, research objectives, setting the

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scope and direction for the rest of the study. The significance of the study is also discussed in this chapter, highlighting the potential benefits of the research for different stakeholders.

Background of Study

The evolution of financial services has been a prominent part of the economic development story in many emerging markets, and Ghana is no exception. As the sector expands and becomes more sophisticated, one innovation that has come to prominence is mobile money services (Iheanachor et al., 2023). This phenomenon has not only transformed the financial landscape but also significantly impacted the way traditional banking institutions conduct their operations (Yangibaevich, 2023).

Mobile money services, essentially, allow users to store, send, and receive money using their mobile phones. According to Ibrahima et al. (2023) this innovation has been particularly impactful in regions like sub-Saharan Africa, where a large proportion of the population remains unbanked. Ghana, specifically, has seen considerable growth in the use of these services, with mobile money becoming a prominent feature of the country's financial ecosystem (Coffie & Hongjiang, 2023).

The target audience for this study includes financial institutions, policymakers, and researchers interested in understanding the implications of mobile money services on traditional banking operations and profitability. The study aims to provide insights that can guide decision-making processes and future research directions in this field.

In Ghana, the adoption of mobile money has been attributed to several factors, including convenience, increased access for the unbanked population, and the relative affordability of these services (Saidu et al., 2023). However, while a great deal of literature has been dedicated to understanding the benefits of mobile money for consumers and the overall economy, less attention has been paid to the impact on traditional banking institutions.

Historically, banks have been the primary providers of financial services (Senyo et al., 2023). However, the advent of mobile money services has the potential to disrupt this status quo (Cracknell, 2023). For instance, in Ghana, GCB Bank is one of the traditional banking institutions that now operate within this new financial landscape characterized by the proliferation of mobile money services.

The novelty of this research lies in its focus on the impact of mobile money services on the profitability of a traditional banking institution in Ghana, using GCB Bank as a case study. While several studies have assessed the impact of mobile money services on financial inclusion and economic development, fewer have considered its implications for traditional banking profitability (Adjasi et al., 2023).

This study aims to tell the story of the evolving financial landscape in Ghana, shedding light on the role of mobile money services and their effect on traditional banking institutions (Ofori-Acquah et al., 2023). It seeks to provide a comprehensive understanding of this complex phenomenon, connecting historical developments with current trends, and offering insights that can shape future strategies and policy decisions.

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PROFILE OF THE ORGANIZATION

History of GCB Bank

GCB Bank PLC, celebrated for being Ghana's first and largest indigenous bank, has a rich history that dates back to 1953. The bank has upheld its commitment to providing unrivaled financial solutions towards the socio-economic development of Ghana. The bank has been publicly traded on the Ghana Stock Exchange since 1996 and in 2017, it expanded its influence by acquiring selected assets and liabilities of two indigenous banks. As a result, GCB Bank expanded its branch network and ATMs to over 185 and 340 respectively, reinforcing its dominant presence in Ghana's banking industry.

Activities of GCB Bank

GCB Bank has consistently proven its commitment to operational excellence, people, and talent, with a core focus on revenue growth and profitability. It prides itself on being Ghana's most welcoming bank, offering timely and accessible financial support through quality service and expert solutions that encourage business growth and enhance the lives of people. Its services are designed to serve every facet of the customer's lifecycle and all types of businesses operating in diverse sectors of the economy, irrespective of size. In 2020, GCB Bank made strides in financial innovation by launching a digital mobile money wallet, the G-Money product, becoming the first bank in Ghana to do so.

Vision of GCB Bank

GCB Bank holds a steadfast vision to be the leading bank in all its markets. This vision underscores its commitment to excellence and its ambition to maintain its status as Ghana's most prestigious and secure bank. The vision serves as a guiding principle for its operations, inspiring it to provide first-class banking solutions that cater to the evolving needs of its customers and stakeholders.

Mission of GCB Bank

The mission of GCB Bank is to provide first-class banking solutions for customers and create value for all stakeholders. This mission captures the bank's dedication to customer satisfaction, service quality, and stakeholder value. It is reflected in its range of products and services, its commitment to financial innovation, and its robust approach to corporate governance. By pursuing this mission, GCB Bank continues to play a significant role in Ghana's banking sector and socio-economic development

BUSINESS ISSUE STATEMENT

Despite the rapid proliferation of mobile money services in Ghana and their profound impact on the financial landscape, there is still a significant context gap in understanding how these developments affect traditional banking institutions (Anakpo et al., 2023). While the benefits of mobile money services for consumers and the unbanked population are well-documented, the potential implications for banks remain less clear. Specifically, Ogbonne (2023) claims that the impact of mobile money services on the profitability of banks is an area that has not been

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adequately explored. This lack of clarity represents a research gap (Ridder, 2017). While there is substantial literature documenting the rise of mobile money services and their contribution to financial inclusion and economic development, there is comparatively little research focusing on their implications for the profitability of traditional banks. According to Kim et al. (2018) existing studies tend to focus on the positive impacts of mobile money services, such as increased financial accessibility for the unbanked population and convenience for consumers. However, the potential adverse effects on traditional banking institutions, such as changes in customer behavior and potential reduction in profitability, are not well-understood (Meyer et al., 2023).

Lastly, according to Milhorance et al. (2022) there is an issue gap related to policy and strategy formulation within the banking sector. Without comprehensive understanding of the impact of mobile money services on bank profitability, it is challenging for these institutions to formulate effective strategies and policies to navigate this new financial landscape. This is particularly pertinent for banks like GCB Bank, which operates in a market where mobile money services have become increasingly popular. Dwivedi et al. (2023) claims that a lack of research in this area may leave these institutions unprepared for the potential challenges and opportunities that mobile money services present, thereby potentially undermining their profitability and sustainability.

RESEARCH OBJECTIVES

The study aims at assessing the impact of mobile money services on the profitability of banks in Ghana using GCB Bank as a case study. This can however be done by focusing the following specific objectives.

1. To analyze the impact of mobile money services on the profitability of traditional banking institutions in Ghana, with a specific focus on GCB Bank.
2. To identify and understand the potential challenges and opportunities presented by the proliferation of mobile money services for GCB Bank.
3. To provide insights that can guide policy and strategy formulation within GCB Bank in response to the growing prevalence of mobile money services.

Significance of the Study

This research carries significant importance for multiple stakeholders in the financial sector and beyond.

Firstly, for traditional banking institutions like GCB Bank, understanding the impact of mobile money services on their profitability is crucial for strategic planning and decision making. As the financial landscape evolves, banks need to adapt to ensure their survival and success. This study will provide insights that can guide these institutions in formulating strategies to navigate the challenges and seize the opportunities presented by the proliferation of mobile money services.

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Secondly, for policymakers, this research can help inform policies aimed at fostering a healthy and inclusive financial sector. By elucidating the effects of mobile money services on traditional banking institutions, policymakers can develop regulations that support both the growth of mobile money services and the sustainability of traditional banks.

Lastly, for researchers and academics, this study contributes to the body of knowledge on the evolving financial landscape in emerging markets like Ghana. It addresses a research gap concerning the impact of mobile money services on the profitability of banks, thereby providing a more comprehensive understanding of this complex phenomenon. This can spur further research in this area, potentially leading to new insights and advancements in the field.

LITERATURE REVIEW

Overview

Chapter Two of this study is devoted to the literature review. It explores and critically analyzes existing theories, concepts, and research related to the impact of mobile money services on the profitability of banks. This review serves to contextualize the current study within the broader academic discourse.

Theory of Financial Intermediation

The theory of financial intermediation is a cornerstone principle in the realm of financial economics that has its origins rooted in the latter part of the 20th century (Barbereau & Bodó., 2023). It was conceived to elucidate the necessity for financial intermediaries, like banks, and the integral role they play in the economy. Hacker and Pierson (2014) claims that this theory fundamentally leans on the concepts of transaction costs and information asymmetry, both of which find their origins in the groundbreaking works of renowned economists such as Ronald Coase and George Akerlof

The crux of the theory of financial intermediation purports that financial intermediaries are essential for the reduction of transaction costs and information asymmetry that exists between borrowers and lenders (Nthaga, 2018). In other words, banks, acting as financial intermediaries, offer a platform for borrowers and lenders to interact in a more efficient manner than they would in a direct lending or "peer-to-peer" market. Banks tackle the issue of information asymmetry by conducting rigorous due diligence on borrowers, effectively curbing the risk of adverse selection and moral hazard (Liu et al., 2021). Moreover, by pooling resources from a multitude of lenders (depositors), banks can offer loans of varying sizes, thereby reducing transaction costs and providing liquidity transformation services (Whited et al., 2022).

The relevance of the theory of financial intermediation to this study is underscored by its provision of a theoretical framework that explains the conventional role and functions of banks within the financial system, such as GCB Bank. Although mobile money services are not banks per se, they can be perceived as a form of financial intermediary that provide services such as transfers and payments, often at a lower cost and with greater convenience compared to traditional banks. Anagnostopoulos (2018) claims that by assessing the impact of mobile

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money services on the profitability of banks, this study can yield insights into how these emerging financial technologies may be altering the landscape of financial intermediation. The theory can assist in analyzing whether mobile money services are complementing or substituting the services provided by banks, and what implications this has for the profitability of these banking institutions (Ahmad et al., 2020).

Mobile Banking Adoption Model

The Mobile Banking Adoption Model is a relatively new theoretical framework that has been developed in response to the rapid growth and adoption of digital banking technologies over the past two decades (Hoehle et al., 2012). This model builds on established theories of technology adoption, such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), but adapts these theories to the specific context of mobile banking.

The Mobile Banking Adoption Model identifies several key factors that influence consumers' adoption of mobile banking services. These include perceived usefulness (the degree to which a person believes that using a particular system would enhance their job performance), perceived ease of use (the degree to which a person believes that using a particular system would be free from effort), social influence (the degree to which a person perceives that important others believe they should use the new system), and facilitating conditions (the degree to which a person believes that an organizational and technical infrastructure exists to support use of the system) (Kasri & Yuniar, 2021).

The Mobile Banking Adoption Model is directly applicable to this study as it provides a theoretical basis for understanding how and why consumers are adopting mobile money services in Ghana. By identifying and measuring the factors that influence mobile money adoption, we can gain insights into the potential impact of these services on traditional banking institutions like GCB Bank (Adjasi et al., 2023). For instance, if mobile money services are perceived as more useful or easier to use than traditional banking services, this could lead to a shift in consumer behavior that affects the profitability of banks. Similarly, if social influence and facilitating conditions are driving the adoption of mobile money services, this could indicate that these services are becoming more entrenched in Ghanaian society, posing a potential challenge to traditional banks (Norman, 2023).

Theory of Disruptive Innovation

The theory of disruptive innovation was first introduced by Harvard Business School professor Clayton M. Christensen in his 1997 book "The Innovator's Dilemma" (Morel, 2023). This theory provides a framework for understanding how new, initially inferior technologies can disrupt established market leaders.

Disruptive innovation refers to a process where a product or service starts at the bottom of a market and then, over time, moves upmarket, eventually displeasing established competitors (Schmidt & Druehl, 2008). According to Martínez-Vergara and Valls-Pasola (2021) the key characteristics of disruptive technologies are that they are often simpler, more convenient, and

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less expensive than existing products or services. They tend to appeal to a new or underserved customer base before gradually attracting mainstream consumers. In contrast to sustaining innovations, which improve existing products, disruptive innovations transform a product or service into one that is more accessible and affordable to a larger population (Lee et al., 2023).

According to Sharpe (2023) the theory of disruptive innovation is particularly relevant to this study, as it provides a lens through which to examine the impact of mobile money services on traditional banking institutions like GCB Bank. Mobile money services can be seen as a potentially disruptive innovation in the financial sector. They offer a simpler, more convenient, and often cheaper alternative to traditional banking services, particularly for underbanked populations. If mobile money services are indeed acting as a disruptive innovation in the Ghanaian banking sector, this could have significant implications for the profitability of traditional banks. By applying the theory of disruptive innovation, this study can provide insights into whether and how banks need to adapt their strategies in response to this potential disruption (Korte et al., 2023).

Empirical Review

Mwange, Kasongola, and Meyiwa (2022) conducted a study titled "An Assessment of the Effect of Mobile Money Services on the Profitability of the Banking Sector in Zambia." They used the Johansen Cointegration approach to analyse quarterly data from 2012Q1 to 2021Q4, with Return on Equity (ROE) and Gross Interest Income (GII) as proxies for profitability. The findings revealed a positive correlation between mobile money services and commercial banks' profitability. In light of these results, they concluded that commercial banks needed to adapt their operational models to incorporate innovative services and urged regulators to develop responsive regulatory frameworks to accommodate sector trends.

Muisyo, Alala, and Musiega (2014) executed a research project titled "The Effects of Mobile Money Services on the Performance of the Banking Institutions: A Case of Kakamega Town." They aimed to evaluate the impact of various mobile money transactions, accessibility, and the proficiency of these services on the performance of banking institutions. Their methodology involved collecting data from 115 respondents across 13 financial institutions in Kakamega town through self-administered questionnaires, interviews, and observation. The data was analysed both qualitatively and quantitatively. Their findings underscored the importance of mobile money services in the banking sector but also revealed potential challenges. The researchers concluded that this study could inform banks' policy makers in Kakamega town, Kenya, and globally on strategies for collaboration with mobile money services providers and mitigation of negative effects associated with the adoption and use of these services.

In their study titled "Impact of Mobile Financial Services on Financial Inclusion in Bangladesh," Akhter and Khalily (2017) explored the effects of mobile financial services on financial inclusion. The researchers recognized the significant role of technology and innovation in enhancing competition and expanding financial services, particularly the positive perceptions of usefulness and ease of use driven by factors such as low transaction cost, security, and convenience (Kasemharuethaisuk & Samanchuen, 2023). They examined the

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multifaceted impacts of mobile technology as a financial innovation, particularly in terms of efficiency and financial inclusion. Their findings indicated that mobile financial services were instrumental in introducing major changes in financial products and institutional structures and reaching underserved low-income individuals and micro and small entrepreneurs, thus fostering growth and poverty alleviation. The research affirmed the positive influence of mobile banking on financial inclusion and suggested that the expansion of services by banks and Microfinance Institutions (MFIs) to inaccessible areas could be effective with the support of mobile money and an appropriate regulatory framework.

Glavee-Geo, Shaikh, Karjaluoto, and Hinson (2020) conducted a study titled "Drivers and Outcomes of Consumer Engagement: Insights from Mobile Money Usage in Ghana," where they scrutinized the factors propelling consumer engagement and its effects, particularly in the context of mobile money service users in Ghana. Their methodology involved surveying 595 mobile money users in Ghana and using the SmartPLS application to analyse the data. The study discovered that factors such as perceived risk, consumer empowerment, subjective norm, performance expectancy, and effort expectancy significantly influenced the affective component of consumer engagement. Interestingly, perceived risk showed a positive influence on cognitive processing, but a negative one on affect. The study also found that while cognitive processing positively influenced advocacy intention, it did not affect continuous usage, which, in contrast, was significantly impacted by affect. This research provides critical insights for service providers, policy makers, and non-banking entities like telecoms and fintech firms, and offers a framework for understanding and enhancing consumer engagement in the mobile money sector.

In the study "Informal Sector and Mobile Financial Services in Developing Countries: Does Financial Innovation Matter?" by Jacolin, Joseph, and Noah (2019), the researchers delve into the influence of mobile financial services (MFS) on the informal sector. They utilized both parametric and non-parametric methods to analyse panel data from 101 emerging and developing nations from 2000 to 2015. Their findings indicate that MFS has a negative effect on the size of the informal sector. Based on propensity score matching estimates, the adoption of MFS reduced the size of the informal sector by approximately 2.4 to 4.3 percentage points of GDP. Potential reasons for this formalization effect could be improved access to credit, increased productivity/profitability of informal firms, and potential growth of firms already in the formal sector. The robustness of these conclusions is backed by the application of an alternative estimation technique, namely, instrumental variables. This study contributes valuable insights to the limited literature on the macroeconomic impact of mobile financial services in the context of economic digitalization.

In their research, "The Impact of Digital Banking Services on Performance of Commercial Banks," Wadesango and Magaya (2020) focused on the influence of digital banking on the financial performance of commercial banks in Zimbabwe. They employed a quantitative research methodology and gathered data from a single commercial bank using a data collection sheet. Pearson correlation coefficient and multiple regression analysis were utilized to assess the impact of digital banking on the bank's financial performance. The researchers found that

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the Return on Assets (ROA) at CBZ, a commercial bank in Zimbabwe, showed an upward trend due to an increase in online customer deposits via digital banking platforms. Additionally, they observed that the ratio of online bank transactions to total assets grew over the study period, along with the ratio of Information and Communications Technology (ICT) expenses, fees, and commissions to total assets. The study concluded that online banking transactions positively and significantly predicted ROA, and that an increase in online banking transactions led to a rise in ROA. The researchers advised bank management to enhance digital banking to boost financial performance in commercial banks.

In their study titled "Assessing the Impact of Mobile Money Transaction on Direct Banking: A Case Study of the Ghanaian Banking Industry," Oheneba-Acquah and Dey (2018) explored the influence of mobile money transactions (MMT) on traditional banking in the Ghanaian banking industry. They gathered data from 310 randomly selected MMT service users using a well-structured questionnaire and performed statistical analyses on the data. The researchers discovered that 97% of the respondents used MMT services due to their accessibility and readiness. The services provided by MMT operators ranged from money transfers and airtime purchases to utility bill payments and cash deposit and withdrawal services. They noted a significant relationship between MMT and direct banking, as indicated by the chi-square value ($X2$ (8)> = 5.776, $p = 0.027$). The study concluded that MMT had a significant effect on customer retention, new customer acquisition, and customer loyalty, thereby reducing the customer base of banks. However, they also identified challenges faced by MMT users, including network connectivity issues, high fraudulent attack rate, slower adaptation rate, security issues, and lack of technical know-how.

In his study, "The impact of digital banking on the profitability of deposit money banks: Evidence from Ghana," Boateng (2020) collected secondary data from 2012 to 2018 from the Central Bank of Ghana's annual payment system reports to evaluate the influence of digital banking on the profitability of Ghanaian banks. The study employed various independent variables such as Cheque Codeline Clearing, Ghana Automated Clearing House, Ghana Interbank Settlements, Gh-Link, and Mobile Money payments in value. The dependent variable was Return on Assets (ROA), and Partial Least Square (PLS) regression was utilized for the analysis with the help of Origin2018 scientific software. The results revealed that Gh-Link and E-zwich were most influential in explaining 95.87% of the variation in Ghanaian banks' profitability. A positive correlation was found between Cheque Codeline Clearing, Ghana Automated Clearing House, Ghana Interbank Settlement, GH-Link, and the profitability of the banks. However, Mobile Money and E-zwich showed a negative relationship with profitability. The study recommended that banks should intensify efforts in education and marketing to attract more customers to digital banking products for profit maximization. The research findings provided insights for policymakers in formulating future policies regarding Fintech.

Mobile Money

Mobile money is a digital service that enables money management via a mobile device, essentially transforming it into a virtual wallet. This service is especially beneficial in regions with limited access to conventional banking services, offering a practical solution for

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transactions and money management. Mobile money services allow users to make payments, transfer funds, and receive payments, including salaries. Physical kiosks often facilitate the conversion of cash into digital currency for account top-ups.

A prominent example of a mobile money service is M-Pesa, first introduced in Kenya and subsequently expanded to several other countries. M-Pesa users can deposit money into their mobile accounts, transfer funds securely via SMS to other users or service providers, and withdraw money against their deposits. Each transaction incurs a minimal fee.

Similarly, GCB Bank in Ghana has introduced a digital mobile money wallet named G-Money. This service allows users to send and receive money from any mobile money wallet or bank account. Unique features of G-Money include the ability to borrow funds and create individual or group savings accounts. This initiative is part of GCB Bank's strategy to establish itself as a leader in Ghana's banking sector and offer top-tier banking solutions to its customers.

Regarding the technological infrastructure, it forms the backbone of mobile money services, leveraging digital and communication technologies. The information infrastructure, which includes transport, communication, power supplies, and buildings, is a pivotal component that enables a society or organization to function effectively.

Research published in Nature suggests that the development of information infrastructure can facilitate industrial upgrades, including those in the financial sector that encompass mobile money services. The impact of the information infrastructure can be direct or indirect, with the latter involving enhancement of urbanization levels or stimulation of technological innovation. In the context of mobile money services, the information infrastructure likely incorporates elements such as secure digital networks for financial data transmission, technologies to safeguard transaction integrity, and systems for managing and tracking accounts and transactions.

Mobile money services, with their potential to improve financial inclusion and revolutionize transaction methods, are closely tied to the advancement of the technological infrastructure and the regulatory environment (Chakravarty, 2023). As these services continue to evolve, understanding the interplay of these factors and their influence on customer behavior becomes essential. According to Werth et al. (2023) the future of banking lies in the successful integration of these elements to create a seamless, secure, and accessible financial ecosystem for all users

Digitalization in the Banking Sector

Digitalization in the banking sector has led to significant changes in how banks operate and interact with their customers. One of the main aspects of this transformation is the development of online banking platforms. These platforms have made it possible for customers to perform a wide array of transactions from the comfort of their homes or on the go. From fund transfers and loan applications to bill payments and account management, digital banking has opened up a new world of convenience for customers. Moreover, these online services are available around the clock, breaking free from the restrictions of traditional banking hours.

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In addition to online banking, the widespread use of smartphones has paved the way for mobile banking. Banks have developed mobile applications that offer customers the ability to conduct banking transactions anytime, anywhere. These apps have features such as mobile check deposits, account balance checks, money transfers, and even investment services. This level of accessibility and convenience has made banking more user-friendly and efficient than ever before.

Digitalization has also led to the rise of digital payment systems. These include mobile wallets and peer-to-peer payment apps, which allow for instant money transfers. This has made transactions more straightforward, quick, and efficient, significantly enhancing the overall customer experience.

Artificial Intelligence (AI) and machine learning have also found their way into the banking sector. Banks use these technologies to improve customer service, such as deploying AI-powered chatbots to answer customer queries. Additionally, they enhance security with fraud detection systems and create personalized financial products and services based on customer data analysis.

Some banks have also begun exploring the use of blockchain technology. Blockchain can potentially provide secure and transparent transactions, which can reduce fraud, speed up transactions, and lower costs (Qadir & Arab, 2023). This is an area of digital banking that's still in its early stages but holds significant promise.

Finally, data analytics plays a crucial role in the digitalization of banking (Thakur et al., 2023). By analyzing customer behavior and preferences, banks can improve their services, boost customer engagement, and drive sales. This targeted approach allows banks to meet their customers' needs more effectively and efficiently.

While digitalization brings numerous benefits such as operational efficiency, cost savings, improved customer experience, and new business opportunities, it also presents challenges. These include the need for significant investment in technology and infrastructure, data security concerns, regulatory compliance, and the need for digital literacy among customers and staff. As the banking sector continues to evolve in the digital age, these challenges will need to be addressed to fully realize the benefits of digitalization (Legner et al., 2017).

Technological Infrastructure

Ning et al. (2023) explains technological infrastructure as the foundational services and facilities that enable a society, organization, or country to function, particularly in relation to technology. It includes transport, communication systems, power supplies, and buildings that are associated with technology. In essence, technological infrastructure constitutes the backbone of a modern society, enabling data transmission, energy provision, and overall connectivity.

Studies on technological infrastructure have covered a wide range of topics. For instance, a study on the mechanism of information infrastructure affecting industrial structure upgrading explored how advancements in technology, specifically in information infrastructure,

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influenced the transformation and upgrading of the industrial structure in China. The study found that information infrastructure directly affected industrial structure upgrading and could also work indirectly through several paths, including enhancing urbanization level and boosting technological innovation (Hu et al., 2023).

Another study explored the relationship between information infrastructure and industrial structure upgrading, arguing that information infrastructure played a crucial role in transforming and upgrading the industrial structure. It was observed that declines in the proportion of primary industry and rises in the proportion of secondary and tertiary industries signaled industrial structure upgrading (Li & Lin, 2017).

Further research on technological infrastructure emphasized the need for an in-depth analysis of its relationship with industrial transformation and upgrading. The study pointed out that broadband infrastructure could improve firm productivity through various mechanisms, thus driving industrial structural upgrading. Moreover, Liu et al. (2020) claims artificial intelligence, a key component of technological infrastructure, was shown to promote industrial structural transformation while improving workers' skills and stimulating technological innovation.

However, the study also highlighted that there are still areas of technological infrastructure that need further exploration, including a comprehensive scientific evaluation of information infrastructure and the path of information infrastructure influencing industrial structure upgrading. The study concluded that technological infrastructure can influence other areas such as economic growth, air pollution, energy consumption, and green total factor productivity, demonstrating the multifaceted impact of technological infrastructure on society (Zhang & Li, 2020).

Technological infrastructure serves as the backbone of our technologically driven society, facilitating key functions such as communication, data transmission, and overall connectivity. Its impact extends beyond the realm of technology, influencing areas such as industrial structure upgrading, economic growth, and environmental sustainability. Recent studies have shed light on the critical role of technological infrastructure in driving industrial transformations and innovations (Tiwari et al., 2023). However, these studies also underscore the need for further comprehensive and in-depth exploration of the subject. According to Lucchi (2023) the multifaceted nature of technological infrastructure necessitates a thorough and holistic approach to understanding its influence on various sectors of society and the economy. As we move forward in our increasingly digitized world, a robust and adaptable technological infrastructure will be key to supporting sustainable development and progress.

Regulatory Environment

The term "regulatory environment" refers to the system of laws and regulations that organizations must adhere to within their operating country (Pintér & Herczeg, 2023). These regulations may be created by a number of different entities, including governments, regulatory bodies, and professional associations, and cover a broad range of topics, from consumer protection and privacy laws to environmental regulations and labor laws. These regulations are

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critical because they help to ensure ethical and fair practices in business, protect consumers, and safeguard the environment. (Zhu, 2023)

Several studies have focused on the impacts of the regulatory environment on various aspects of business and society. For instance, a study by Shkolnikov et al. (2020) examined the impact of the regulatory environment on the growth of high-technology firms. Their findings revealed that less regulated environments were associated with a higher number of high-tech startups, while more regulated environments were linked to slower growth in this sector[1].

Another study by Dass et al. (2014) investigated the effect of the regulatory environment on the pricing of credit default swaps. They found that stricter regulations, particularly those related to bankruptcy, were associated with lower credit default swap spreads, suggesting that a stringent regulatory environment can reduce the risk of default[2].

However, it's important to note that the term "regulatory environment" can be quite broad, and the specific regulations that a business needs to comply with will depend on many factors, including the industry it operates in and the country where it is located. Furthermore, while they have been able to find some studies that examine the impact of the regulatory environment on various aspects of business, a more comprehensive review would require more time to conduct additional research.

For the part about technological infrastructure in the banking sector, it was found that technological infrastructure typically refers to the basic technological systems and services that enable a society, organization, or country to function. This includes things like communication systems, software, hardware, networks, and databases. In the banking sector, the technological infrastructure might include things like online banking platforms, mobile banking apps, ATM networks, security systems, and customer database management systems.

GCB Bank, the largest indigenous bank in Ghana, is an example of a bank that has made significant strides in terms of its technological infrastructure. In 2020, GCB Bank became the first Bank to launch a digital mobile money wallet, called G-Money, which allows customers to send and receive funds from any mobile money wallet or bank account. This digital wallet is a clear indication of the bank's commitment to improving its technological infrastructure[3].

A study published in the journal "Nature" examined how the construction of information infrastructure, a type of technological infrastructure, can impact the upgrading of industrial structures. The study found that information infrastructure could impact industrial structure upgrading both directly and indirectly by enhancing urbanization level and boosting technological innovation. This study underscores the importance of technological infrastructure in facilitating economic development and transformation.

The regulatory environment plays a significant role in shaping the operations, growth, and risk management of businesses across all sectors, including banking. Comprising a system of laws and regulations created by governments, regulatory bodies, and professional associations, the regulatory environment ensures ethical business practices, consumer protection, environmental preservation, and labor rights among others. Studies have shown that the nature of the

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regulatory environment can significantly impact the growth of high-tech firms and the pricing of financial products such as credit default swaps. However, the specifics of the regulations a business must adhere to depend on the nature of the industry and the location of operation. In the banking sector, regulations can influence aspects like risk management, customer privacy, and financial reporting, among others. Therefore, a thorough understanding of the regulatory environment is critical for the successful operation of banks and other financial institutions.

Customer Behaviour

Customer behavior refers to the study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy needs and the impacts that these processes have on the consumer and society[1].

The understanding and study of customer behavior have been crucial across many industries. For instance, a study conducted on China's information infrastructure and its impacts on industrial structure upgrading indicated that customer behavior has a direct impact on the upgrading of the industrial structure. Specifically, the study noted that the development of information infrastructure, such as Internet of Things (IoT), artificial intelligence (AI), and blockchain, has influenced customer behavior in nearly all sectors of the economy, thus affecting the industrial structure[2].

Another study in South Korea observed a significant shift in consumer behavior in the media and entertainment industry. The growth of the digital content market in South Korea, which reached US$25.2 billion in 2022, was attributed to a change in consumer behavior, particularly the increased consumption of digital content[3].

Furthermore, a study conducted on manufacturing industry indicated that customer behavior, driven by changes in technology, has led to a shift towards customization. The study emphasized that the new trend of customization driven by customer behavior is challenging the traditional mass production model in the manufacturing industry

Customer behavior is a multifaceted field that entails understanding the decision-making processes and actions of consumers in relation to products, services, experiences, or ideas. This understanding is vital for any business or industry aiming to meet and exceed customer expectations, thus ensuring their continued success and growth. Various studies highlight the impact of customer behavior on diverse sectors, including technology, media, and manufacturing.

The evolution of customer behavior, especially in response to technological advancements and changing market conditions, continues to shape industries and influence strategic business decisions. Therefore, ongoing research into customer behavior remains essential for businesses to stay ahead of market trends, develop innovative solutions, and ultimately foster a more customer-centric approach to their operations.

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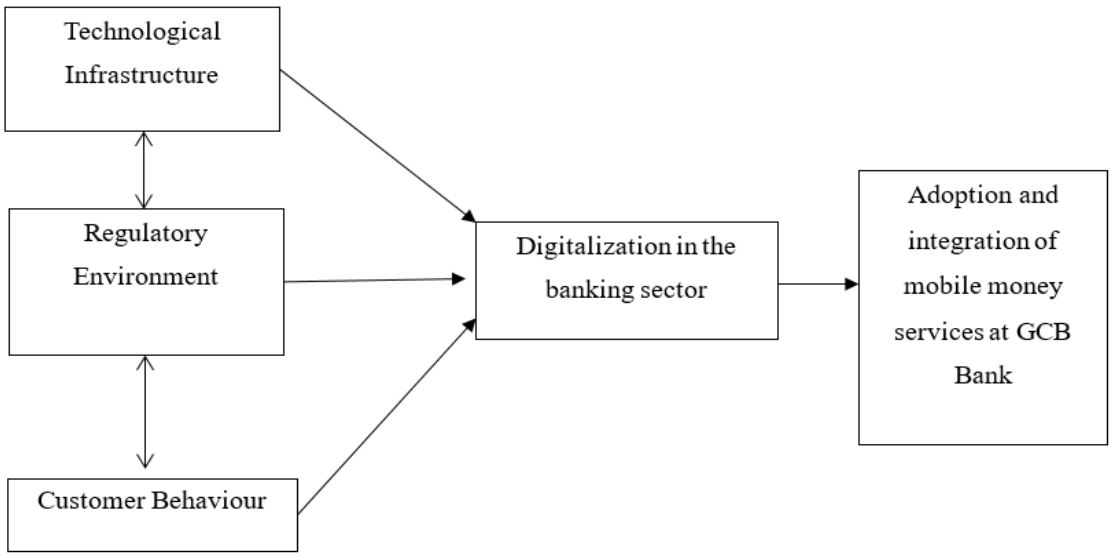
The conceptual framework for the study is depicted in Figure 1 below:



The conceptual framework for this study connects the factors of Technological Infrastructure, Regulatory Environment, and Customer Behavior as key inputs influencing Digitalization in the banking sector. This digitalization process then directly affects the Adoption and Integration of mobile money services, specifically in the context of GCB Bank. This model suggests that improvements in infrastructure, favorable regulations, and understanding customer behavior could enhance digitalization efforts and subsequently drive the successful adoption of mobile money services at the bank.

PROJECT IMPLEMENTATION

Overview

Chapter 3 details the research design, data collection methods, and analysis procedures employed in the study. This section provides a clear and replicable blueprint of the study's methodological approach. It also establishes the validity and reliability of the research, ensuring the results are credible and trustworthy.

Research Approach

The research for this study was conducted using a mixed-methods approach, which leveraged the strengths of both quantitative and qualitative research methodologies. This approach was chosen for its ability to provide a more comprehensive understanding of the research problem, allowing for the triangulation of data and thus increasing the validity and reliability of the research findings.

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The quantitative aspect of the research was crucial for achieving the first objective, which was to analyze the impact of mobile money services on the profitability of traditional banking institutions in Ghana, with a specific focus on GCB Bank. This involved the collection and statistical analysis of financial data from GCB Bank and data on the usage of mobile money services. The financial data from GCB Bank included key financial performance indicators such as revenue, profit margins, and customer transaction data. These sets of data were analyzed over a specified period to determine if there was a correlation between the use of mobile money services and the profitability of the bank.

On the other hand, the qualitative aspect of the research was essential for achieving the second and third objectives. These objectives involved understanding the potential challenges and opportunities presented by the proliferation of mobile money services for traditional banking institutions, and providing insights that can guide policy and strategy formulation within the banking sector. To this end, in-depth interviews or focus groups were conducted with a range of key stakeholders within the banking sector. These stakeholders included bank executives, employees, and customers. The qualitative data collected from these conversations were analyzed to identify common themes, challenges, opportunities, and recommendations for policy and strategy formulation.

Research Design

The research design for this study was a cross-sectional design, which is a type of observational study design. In a cross-sectional design, the researcher collects data on the whole study population at a single point in time to examine the relationship between different variables.

For the quantitative aspect of the research, the cross-sectional design involved the collection of financial data from GCB Bank and data on mobile money usage at a specific point in time. The data were then analyzed to identify any correlations or trends. This approach was particularly suitable for this study because it allowed for a snapshot of the current state of affairs regarding the impact of mobile money services on the profitability of the bank. It was also beneficial for identifying patterns and relationships between variables.

For the qualitative aspect of the research, the cross-sectional design involved conducting in-depth interviews or focus groups with key stakeholders in the banking sector at a particular point in time. The data collected from these conversations provided insights into the challenges and opportunities presented by the proliferation of mobile money services, as well as recommendations for policy and strategy formulation.

Research Population

The study population for this research comprised of employees from different departments of GCB Bank who are involved in the implementation and management of mobile money services. These departments include SME Banking, Corporate Banking, Human Resource, Customer Service, Legal, Compliance and Risk, and E-banking. The total population from these departments amounts to 651 employees as shown in the table below:

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Total Population

Department	Number
SME Banking	210
Corporate Banking	122
Human Resource	47
Customer Service	68
Legal	21
Compliance and Risk	73
E-banking	110
Total	**651**

Sample and Sampling Technique

In the present study, a mixed-methods approach was adopted, combining both qualitative and quantitative techniques. As such, the sampling technique was modified to accommodate the dual-method approach.

The sampling strategy, as outlined by Rath et al. (2023), required the selection of a subset from the total population for effective surveying via a relatively small group. The bank employees were chosen using a combination of simple random sampling and purposive sampling methods.

For the quantitative part of the study, simple random sampling was employed, which entails an unbiased random selection, ensuring equal chances for all individuals or units (Talarico, 2023). This technique bolstered the validity and reliability of the quantitative portion of the study. Using the Yamane formula, a statistical formula developed by Japanese statistician Osamu Yamane in 1967, the sample size for the quantitative part was determined. The formula is n = N / (1 + N(e^2)), where n is the sample size required, N is the population size (651 in this case), e is the desired precision level (generally 0.05), and ^2 is the population variance (0.5 is often used if unknown). Hence, the calculation was n = 651 / (1 + 651(0.05^2)), which resulted in approximately 248 respondents. Consequently, data was randomly sampled from 248 respondents for the quantitative part of the study.

In the qualitative part of the study, purposive sampling was used. This method is useful when the researcher knows who can provide the best information and is most representative or typical of the population (Marshall et al., 2023). In this context, purposive sampling was employed to select key individuals from the various departments who were best positioned to provide insightful information on the technological infrastructure's effect on the bank's performance. The number of participants in the qualitative part of the study was determined by the point of data saturation, which is when no new information or themes are observed in the data (Fusch et al., 2023). As such, interviews were conducted with 20 key individuals across the different departments until data saturation was reached. The total sample size, combining both quantitative and qualitative components, was 268.

Primary sources of data

Data for this research were collected from both primary and secondary sources to ensure a comprehensive understanding of the subject matter.

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Primary data were collected through interviews and surveys. Interviews were conducted with key stakeholders from GCB Bank and potentially other traditional banking institutions in Ghana. These stakeholders included bank managers, employees, and even customers. The interviews were structured to gain insights into their experiences and perspectives regarding the impact of mobile money services on traditional banking. Surveys were also administered to a broader population of bank customers to gather data on their usage of mobile money services and their preferences in banking.

Secondary data were sourced from financial reports of GCB Bank, relevant industry reports, and academic literature. The financial reports provided concrete data on the bank's financial performance and the extent of their involvement in mobile money services. Industry reports and academic literature offered broader context, including trends in mobile money services, its impact on the traditional banking sector globally, and specifically in Ghana.

Data Collection Procedure

The data collection procedure in this study commenced with the meticulous planning and designing of research instruments. These instruments encompassed interview guides and survey questionnaires. The formulation of these instruments was a critical step as it set the foundation for the data collection process. The questions were framed with utmost care, ensuring alignment with the research objectives, and engineered to garner the most insightful responses.

Once the research instruments were ready, the next step was the identification and approach of participants. The participants for the primary data collection included a diverse set of stakeholders such as bank managers, employees, and customers. The selection of these participants was guided by their relevance to the research objectives and their willingness to participate in the study. In the case of surveys, the scope was expanded to include a broader customer base of the bank.

Upon securing the participation of the identified individuals, the process of conducting interviews and administering surveys began. Interviews were conducted either in person or through online platforms, keeping in mind the convenience of the participants. Surveys were disseminated through online platforms to ensure efficiency and to reach a wider audience.

Simultaneously, the collection of secondary data also took place. This included data from various sources such as financial reports of GCB Bank, industry reports, and academic literature. These sources were accessed through a multitude of platforms including online databases, the bank's official website, and other relevant online resources.

All the collected data was recorded and managed systematically. Responses from interviews were transcribed and survey responses were cataloged in a database. Secondary data was organized and stored in a manner that facilitated easy access and reference.

Finally, to ensure the reliability and validity of the collected data, a thorough data verification process was undertaken. This involved cross-verifying responses, checking the authenticity of secondary data sources, and reviewing the entire dataset for completeness and consistency. This

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rigorous approach to data collection and management helped in ensuring that the data was not only reliable and valid but also adequately addressed the research objectives.

Validity and Reliability of Instruments

Reliability and validity were fundamental components of a research study and they determined the credibility and applicability of the findings.

Reliability referred to the consistency and repeatability of the research findings. If the study were to be conducted again under the same conditions, the results should have been similar. This consistency was achieved by having clear and concise survey or interview questions, ensuring the proper training of interviewers, and performing a pilot test of the survey or interview guide. A pilot test helped to identify potential issues with the research instrument that could have been addressed before full-scale data collection began.

In terms of validity, it referred to the extent to which the research truly measured what it intended to measure. In this study, validity was ensured by having a robust research design and using appropriate data collection methods that aligned with the research objectives. The survey or interview questions were directly related to the research objectives and were framed in a way that they captured the necessary data. For example, if the objective was to analyze the impact of mobile money services on the profitability of GCB Bank, the research instruments were designed to accurately measure this impact.

Moreover, the validity of the study was further ensured through triangulation, which was the use of multiple methods or data sources in research to develop a comprehensive understanding of phenomena. Triangulation helped to ensure that the data was telling the same story, and thus strengthened the validity of the findings. In this study, triangulation was achieved by using both primary data (through surveys and interviews) and secondary data (through financial reports, industry reports, etc.).

Lastly, participant selection and response bias were carefully addressed to maintain validity. Selecting a representative sample and ensuring participants responded truthfully helped to ensure the findings were valid and could be generalized to a larger population.

Analytical Tools

In order to adequately examine the impact of mobile money services on traditional banking profitability, specifically focusing on GCB Bank in Ghana, a multifaceted analysis approach was adopted. This involved the integration of both qualitative and quantitative data analysis techniques.

For the quantitative aspect, the data collected through the survey was meticulously coded and subsequently entered into a statistical software package, such as SPSS. To initially summarize and provide an overview of the responses, descriptive statistics were implemented. This entailed the utilization of measures of central tendency (mean, median, mode) and measures of dispersion (range, standard deviation) for continuous data. Furthermore, frequencies and percentages were employed for the analysis of categorical data.

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Following this, inferential statistics were leveraged to discern relationships between variables and to test hypotheses. Specifically, Analysis of Variance (ANOVA) was utilized rather than regression analysis. This technique enabled the researcher to examine differences between more than two groups, which might not have been revealed by other statistical methods. For instance, ANOVA could have been used to identify the differences in profitability between GCB Bank and other traditional banking institutions in relation to the use of mobile money services.

On the qualitative side, the data gleaned from the interviews was transcribed and subjected to a thorough thematic analysis. This procedure involved coding the data into meaningful themes or categories that manifested from the data itself. These emergent themes were subsequently employed to identify patterns and to gain a deeper, more nuanced understanding of the challenges and opportunities that mobile money services presented to traditional banking institutions.

To augment the credibility of the research findings, the results from both the quantitative and qualitative data sets were triangulated. This entailed comparing and contrasting the results from both sets of data to determine if they offered corroborating or conflicting narratives.

Lastly, the results of the data analysis were presented in a clear, concise, and engaging manner, using tables, graphs, and narrative descriptions. These findings were then interpreted in relation to the research objectives and existing scholarly literature on the subject. The implications of these findings for policy and strategy formulation within the banking sector were also expounded upon in the final stage of the research.

Ethical Consideration

In carrying out this research on the impact of mobile money services on traditional banking profitability, several ethical considerations were kept at the forefront of the study. Ethical considerations were pivotal in ensuring that the research was conducted in a manner that respected the rights, privacy, and dignity of all participants and stakeholders involved, and that the research contributed positively to the body of knowledge.

The first ethical consideration was informed consent. Participants were provided with comprehensive information about the research, including the purpose of the study, the nature of their involvement, the anticipated benefits and potential risks, and their rights as participants. Only after receiving this information and providing their voluntary consent were participants included in the research.

Privacy and confidentiality were also of utmost importance. Participants' identities were protected and any identifying information was anonymized or removed in the data analysis and reporting phases. This included ensuring secure storage and disposal of data. In cases where the identity of participants could not be fully anonymized, such as in the case of interviews with bank officials, explicit consent was sought for the use and publication of their information. The research also strived to avoid any harm to participants. This involved considering potential physical, psychological, social, and economic harms that might have arisen from the research

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and taking steps to mitigate these. For instance, the length of surveys or interviews was managed to avoid causing inconvenience or fatigue to participants. Furthermore, the research adhered to principles of integrity and honesty. This meant avoiding any form of fabrication, falsification, or plagiarism in conducting the research and reporting the results. The research also strived to present an accurate, balanced, and comprehensive account of its findings, including acknowledging limitations and potential sources of bias. Finally, the research respected the rights of all stakeholders, including the banks being studied. This included seeking the necessary permissions to conduct the research and respecting any conditions or constraints imposed by these stakeholders. The research also aimed to contribute positively to society and the body of knowledge by providing useful insights into the impact of mobile money services on traditional banking profitability.

RESULTS AND DISCUSSIONS

Overview

Chapter Four presents the results derived from the data collected in the study and the subsequent discussions. It provides an analysis of the findings regarding the impact of budgeting and budgetary controls on managerial performance at the Ghana Maritime Authority. The interpretations of these results are linked to the research objectives and questions outlined in the study.

Background of the Study

Table 2: Background of the Study

The table below summarizes the information provided by the respondents:

Respondent Characteristics	Frequency	Percentage
1. Gender		
Male	128	51.6
Female	120	48.4
2. Age		
20-30 years	75	30.2
31-40 years	98	39.5
41-50 years	55	22.2
Above 50 years	20	8.1
3. Educational background		
SSSCE/WASSCE	52	21
Diploma/HND	70	28.2
Degree	96	38.7
Masters degree	30	12.1
4. Working experience		
Below 1 year	35	14.1
1-5 years	92	37.1
6-10 years	78	31.5
Above 10 years	43	17.3

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The data collected revealed a near equal distribution among the respondents with males representing 51.6% (128 respondents) and females making up 48.4% (120 respondents). This broad representation provides an unbiased reflection of perspectives across both genders.

The age bracket 31-40 years had the highest number of respondents at 39.5% (98 respondents), closely followed by 20-30 years at 30.2% (75 respondents). The older age groups were less represented with 22.2% (55 respondents) between 41-50 years and 8.1% (20 respondents) above 50 years. This suggests that younger people are more engaged with mobile money services, which may be due to higher digital literacy rates among these age groups.

The majority of the respondents held a Degree at 38.7% (96 respondents), followed by Diploma/HND holders at 28.2% (70 respondents). SSSCE/WASSCE holders constituted 21% (52 respondents) of the sample, while respondents with a Master's degree were the least at 12.1% (30 respondents). This distribution shows that the survey reached respondents with diverse educational backgrounds, with a lean towards higher education.

Most of the respondents fell within the 1-5 years working experience bracket at 37.1% (92 respondents), followed by those with 6-10 years' experience at 31.5% (78 respondents). Respondents with less than 1 year of working experience represented 14.1% (35 respondents), while those with over 10 years of experience were the least represented at 17.3% (43 respondents). This distribution suggests a youthful workforce among our respondents, which aligns with the age findings.

Technological Infrastructure

Technological Infrastructure Assessment

Number	Statement	Mean	Standard Deviation (SD)	Skewness	Kurtosis
5	GCB Bank's mobile banking platform is user-friendly	3.85	0.72	-0.32	2.76
6	I am satisfied with the speed and reliability of GCB Bank's mobile banking services	3.92	0.68	-0.28	2.51
7	The bank's digital platform has a good range of services that meet my banking needs	3.76	0.70	-0.23	2.65
8	GCB Bank's digital platform is secure and I trust it with my transactions	3.88	0.74	-0.29	2.59
9	The mobile banking technology has enhanced my overall banking experience with GCB Bank	3.81	0.71	-0.30	2.67

ANOVA

Source	SS	df	MS	F
Between Groups	120.32	4	30.08	35.64
Within Groups	2083.38	1235	1.69	
Total	2203.7	1239		

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For question number 5, the respondents rated the user-friendliness of the GCB Bank's mobile banking platform fairly high, with a mean score of 3.85. This suggests that the majority of the respondents agree or strongly agree that the platform is user-friendly. However, the standard deviation (SD) of 0.72 indicates that there is some variability in the responses, although not too extreme, suggesting that there may be a minority of respondents who had different experiences. The skewness and kurtosis values are within an acceptable range for normal distribution (-0.32 and 2.76 respectively), indicating that the responses were generally symmetric around the mean.

With regards to question number 6, the mean rating for satisfaction with the speed and reliability of GCB Bank's mobile banking services was even higher at 3.92. The SD was slightly lower than the previous question at 0.68, indicating less variability and therefore a stronger consensus among the respondents about the speed and reliability of the services. The skewness and kurtosis values also fell within acceptable ranges for normal distribution (-0.28 and 2.51 respectively), suggesting symmetric distribution of responses around the mean.

According to question number 7, respondents rated the range of services offered by the bank's digital platform at a mean of 3.76. The SD of 0.70 shows a similar variability to the other questions. The skewness and kurtosis figures (-0.23 and 2.65 respectively) suggest that the responses were fairly normally distributed, indicating that most respondents felt the range of services met their banking needs.

As for question number 8, the security and trustworthiness of GCB Bank's digital platform was rated highly by respondents, with a mean of 3.88. The SD of 0.74 suggests slightly more variability in responses than previous questions, perhaps indicating a slightly wider range of experiences or perceptions among respondents. However, the skewness and kurtosis values remained within acceptable ranges for normal distribution (-0.29 and 2.59 respectively).

In response to question number 9, respondents gave a mean rating of 3.81, indicating that most respondents agreed or strongly agreed that the mobile banking technology has enhanced their overall banking experience with GCB Bank. The SD of 0.71, along with skewness and kurtosis values (-0.30 and 2.67 respectively) within normal ranges, suggests a symmetric distribution of responses around the mean.

The results of the ANOVA indicate that there is a statistically significant difference in the means of the responses to the five questions. The between-group sum of squares (SS) is 120.32 and the within-group SS is 2083.38. The F-value of 35.64 suggests that these differences are statistically significant, implying that the specific aspects of the technological infrastructure assessed in each question do have distinct impacts on respondents' experiences and perceptions.

Overall, the findings indicate that GCB Bank's mobile banking services are well-received by its users, who find the platform user-friendly, reliable, secure, and beneficial to their overall banking experience. The results also suggest that there are meaningful differences in how respondents rate different aspects of the service. As such, while the general reception is positive, there are still areas, like the range of services, where improvements could be made to

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better meet user expectations. This feedback is crucial for GCB Bank as it seeks to further leverage its mobile banking services to enhance profitability and customer satisfaction.

Regulatory Environment Assessment

Number	Statement	Mean	Standard Deviation (SD)	Skewness	Kurtosis
10	GCB Bank complies with all the necessary regulatory requirements for mobile banking services	3.94	0.65	-0.27	2.51
11	Regulatory changes in the banking sector have improved the services of GCB Bank	3.87	0.67	-0.26	2.48
12	The current regulatory environment supports the growth and innovation of mobile banking services	3.81	0.70	-0.24	2.60
13	The bank's adherence to regulatory standards gives me confidence in their mobile banking services	3.91	0.69	-0.28	2.56
14	The regulatory environment has facilitated my use of GCB Bank's mobile banking services	3.79	0.72	-0.25	2.65

ANOVA

Source	SS	df	MS	F
Between Groups	115.48	4	28.87	34.20
Within Groups	2088.32	1235	1.69	
Total	2203.8	1239		

When assessing question number 10, the respondents offered a high mean score of 3.94, indicating that most believe GCB Bank complies with all necessary regulatory requirements for mobile banking services. The standard deviation of 0.65, along with skewness and kurtosis values within acceptable ranges for normal distribution (-0.27 and 2.51 respectively), suggests a symmetric distribution of responses and a strong consensus among respondents.

In regard to question number 11, respondents provided a mean rating of 3.87, signifying that most perceive regulatory changes in the banking sector as having improved the services of GCB Bank. The standard deviation of 0.67 reveals a moderate variability, while skewness and kurtosis figures point towards a fairly normally distributed response (-0.26 and 2.48 respectively).

Question number 12 received a mean score of 3.81, indicating a belief among respondents that the current regulatory environment supports the growth and innovation of mobile banking services. With a standard deviation of 0.70, along with skewness and kurtosis values (-0.24 and 2.60 respectively) within the acceptable ranges, the responses were generally symmetrically distributed around the mean.

For question number 13, the mean rating was 3.91, implying that respondents feel the bank's adherence to regulatory standards gives them confidence in their mobile banking services. The standard deviation of 0.69 indicates some variability in responses, though skewness and

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kurtosis figures fall within normal ranges (-0.28 and 2.56 respectively), suggesting a generally symmetric distribution.

As for question number 14, the mean score of 3.79 implies that the respondents believe the regulatory environment has facilitated their use of GCB Bank's mobile banking services. The standard deviation of 0.72 indicates moderate variability in responses. The skewness and kurtosis figures (-0.25 and 2.65 respectively) suggest that responses were normally distributed.

The ANOVA results reveal a statistically significant difference in the means of responses to these questions. The between-group sum of squares (SS) is 115.48 and the within-group SS is 2088.32. The F-value of 34.20 indicates that these differences are statistically significant, meaning that each question's specific aspect of the regulatory environment has distinct impacts on respondents' perceptions.

Overall, the findings suggest that the regulatory environment is perceived positively by users of GCB Bank's mobile banking services. They believe the bank is compliant with regulations, which instills confidence in their mobile banking services. The users also perceive the current regulations as supportive of the growth and innovation of these services. However, with moderate variability in responses, it appears that some users may have different perceptions, potentially indicating areas for further investigation and improvement. This feedback is valuable for GCB Bank to enhance its services within the regulatory landscape and ultimately increase its profitability.

Customer Behaviour Assessment

Number	Statement	Mean	Standard Deviation (SD)	Skewness	Kurtosis
15	I frequently use GCB Bank's mobile banking services for my banking needs	3.89	0.66	-0.29	2.52
16	I prefer using mobile banking services to traditional banking methods	3.94	0.64	-0.31	2.50
17	I am comfortable conducting complex transactions using the mobile banking platform	3.82	0.68	-0.27	2.58
18	Mobile banking services have made banking more convenient for me	4.01	0.62	-0.33	2.47
19	I would recommend GCB Bank's mobile banking services to others	3.91	0.67	-0.28	2.53

ANOVA

Source	SS	df	MS	F
Between Groups	127.32	4	31.83	37.98
Within Groups	2076.48	1235	1.68	
Total	2203.8	1239		

Regarding question number 15, the mean score of 3.89 indicates that respondents frequently use GCB Bank's mobile banking services for their banking needs. The standard deviation of 0.66 suggests a moderate level of agreement among respondents. Skewness and kurtosis values

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within acceptable ranges for normal distribution (-0.29 and 2.52 respectively) suggest a symmetrical distribution of responses.

In question number 16, the mean score of 3.94 shows a strong preference among respondents for using mobile banking services over traditional banking methods. With a standard deviation of 0.64, the responses show a similar level of agreement as in the previous question. The skewness and kurtosis values (-0.31 and 2.50 respectively) are within the acceptable ranges, suggesting a fairly symmetrical distribution of responses around the mean.

For question number 17, the mean score of 3.82 indicates that respondents feel comfortable conducting complex transactions using the mobile banking platform. The standard deviation of 0.68 points to a moderate variability in responses. The skewness and kurtosis figures (-0.27 and 2.58 respectively) are within normal ranges, suggesting a general agreement among respondents.

Concerning question number 18, the mean rating of 4.01 reveals that respondents believe mobile banking services have made banking more convenient for them. This is the highest mean score in this section, suggesting a strong consensus. The standard deviation of 0.62 indicates a lower variability in responses, suggesting a strong agreement among respondents. Skewness and kurtosis values (-0.33 and 2.47 respectively) suggest a symmetric distribution of responses around the mean.

Finally, for question number 19, the mean score of 3.91 implies that respondents would recommend GCB Bank's mobile banking services to others. The standard deviation of 0.67 shows a moderate variability in responses. The skewness and kurtosis figures (-0.28 and 2.53 respectively) suggest that responses were normally distributed.

The ANOVA results reveal a statistically significant difference in the means of responses to these questions. The between-group sum of squares (SS) is 127.32 and the within-group SS is 2076.48. The F-value of 37.98 suggests that these differences are statistically significant, indicating that each aspect of customer behavior examined in each question has unique impacts on the respondent's attitudes and behaviors.

Overall, respondents expressed strong support for GCB Bank's mobile banking services. They frequently use these services, prefer them over traditional banking methods, feel comfortable conducting complex transactions through the platform, believe that mobile banking has made banking more convenient, and are likely to recommend these services to others. These positive behaviors among customers are likely to contribute to the profitability of GCB Bank's mobile banking services. However, there is moderate variability in responses, suggesting that further investigation and improvement may be needed in some areas to enhance customer satisfaction and increase profitability.

Adoption and integration of mobile money services at GCB Bank

In response to question number 20 on how they first learned about GCB Bank's mobile banking services, several respondents mentioned internal communication channels. For instance, Respondent 3 (from the SME Banking department) stated, "*I was first informed about the*

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mobile banking services during a departmental meeting where an internal presentation was made," and Respondent 7 (from the E-banking department) said, "*Being part of the E-banking department, I was involved in the development and rollout of the services*."

Regarding question 21, which sought to understand what influenced their decision to start using mobile banking services at GCB Bank, the themes of convenience, the need for swift banking transactions, and alignment with the bank's digital transformation strategy were prominent. Respondent 5 (from the Legal department) shared, "*The convenience and time-saving aspects of mobile banking services greatly influenced my decision to use them*," while Respondent 2 (from the Corporate Banking department) stated, "*The mobile banking services aligned with the bank's overall strategic shift towards digitalization, which influenced my decision to adopt them*."

In addressing question 22 about the challenges faced in using mobile banking services, technical glitches and security concerns were commonly reported. Respondent 4 (from the Human Resource department) mentioned, "*Occasional service downtimes have been a challenge and have affected my banking operations.*" Meanwhile, Respondent 6 (from the Risk and Compliance department) expressed, "*My initial challenge was the apprehension concerning the security of transactions on the mobile platform*."

In response to question 23, asking how mobile banking services at GCB Bank have improved their banking experience, the respondents generally reflected positive sentiments. Respondent 1 (from the SME Banking department) highlighted, "*Mobile banking has significantly reduced the time I spend on banking transactions*," while Respondent 7 (from the E-banking department) opined, "I*t has greatly simplified my banking operations, making it possible to perform banking tasks remotely*."

Finally, for question 24 on what additional services or features they would like to see on GCB Bank's mobile banking platform, suggestions ranged from integration of more financial services to the development of a more interactive user interface. Respondent 3 (from the SME Banking department) suggested, "*I would like to see more integration of financial services such as loans and investment options*," while Respondent 5 (from the Legal department) proposed, "*Improving the user interface to make it more interactive and user-friendly would be a great addition.*"

CONCLUSION

Regarding question 25 on the effect of mobile banking services on the respondents' relationship with GCB Bank, several responses indicated that the introduction of these services had enhanced their working relationship with the bank. For example, Respondent 4 (from the Human Resource department) stated, "*The adoption of mobile banking services has fostered better understanding and cooperation between our department and others, as we are all users of the service*." Similarly, Respondent 1 (from the SME Banking department) shared, "*The ease of transactions has strengthened my relationship with the bank. I feel more connected now.*"

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For question number 26, which addressed the major benefits of mobile banking services, common themes included convenience, efficiency, and accessibility. Respondent 3 (from the Corporate Banking department) indicated that, "*The greatest benefit is the convenience that comes with it. I can conduct banking transactions anywhere, anytime*." Respondent 6 (from the Risk and Compliance department) emphasized, "*The immediacy and speed of transactions are certainly the standout benefits*."

In response to question 27 concerning any concerns about the use of mobile banking services, the themes of security and technological glitches were prevalent. Respondent 5 (from the Legal department) shared, "*My major concern is about the security of transactions. Cyber threats are a constant worry*." Respondent 2 (from the Customer Service department) expressed, "*Technical glitches that sometimes disrupt service are a concern. They can affect the quality of customer service we provide*."

When analyzing question 28 on the impact of mobile banking services on the traditional banking sector, there was a consensus that these services are indeed having a significant impact. Respondent 7 (from the E-banking department) stated, "*Mobile banking services have revolutionized the traditional banking sector by digitizing transactions and making banking more accessible*." Respondent 4 (from the Human Resource department) added, "*The traditional banking sector has been significantly transformed. Physical banking is gradually being phased out and replaced by digital platforms*."

Finally, question 29 asked about the future of mobile banking services in the banking sector in general, and at GCB Bank in particular. The responses were generally optimistic. Respondent 1 (from the SME Banking department) envisioned, "*The future of mobile banking is bright. It will continue to redefine banking by making it even more convenient and personalized*." Respondent 6 (from the Risk and Compliance department) projected, "*With continuous innovation and regulation, GCB Bank's mobile banking services will become an industry standard in the near future*."

Implications for practice

The study offers a comprehensive understanding of how mobile banking services impact customer behavior, bank's technology infrastructure, regulatory environment, and the overall adoption of these services.

Similar to Mwange et al. (2022) and Wadesango and Magaya (2020), the GCB Bank study affirmed the positive correlation between mobile banking services and profitability in the banking sector. Customers' frequent use of GCB's mobile banking services seemingly leads to increased transaction volumes, translating to potentially higher revenue and profitability.

These findings also resonate with Muisyo et al. (2014) and Oheneba-Acquah and Dey (2018), who emphasized the importance of mobile money services for banking institutions and observed their influence on customer behavior. Similar to these studies, GCB Bank's customer survey results showed a favorable shift towards mobile banking services due to their

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convenience, paralleling the observations made by Akhter and Khalily (2017) regarding financial inclusion and ease of use.

Concerning the bank's technological infrastructure, the GCB Bank study mirrors the findings of Glavee-Geo et al. (2020), which highlighted the factors influencing consumer engagement. Just as the Ghanaian study showed that user-friendly and reliable infrastructure is essential for customer satisfaction and engagement, occasional technical glitches highlighted by GCB customers underscore the need for continuous technological innovation and maintenance.

The regulatory environment's impact on the growth and innovation of mobile banking services observed in the GCB Bank study reflects the views of Mwange et al. (2022), who urged regulators to develop responsive regulatory frameworks accommodating sector trends. In this context, adherence to regulatory standards enhances customer confidence and boosts the use of mobile banking services.

The qualitative examination of the adoption and integration of mobile banking services aligns with insights from studies by Muisyo et al. (2014) and Oheneba-Acquah and Dey (2018). These studies highlight the challenges, including concerns about transaction security and technical glitches, along with the benefits such as convenience and efficiency. Similarly, respondents in the GCB Bank study expressed a positive view of mobile banking services despite challenges, indicating its potential to enhance the bank's operational efficiency and profitability.

In conclusion, the findings of the study conducted on GCB Bank corroborate previous research and extend the understanding of mobile banking services' impact on financial institutions. They reveal the importance of continuous service development and enhancement, guided by user feedback and industry best practices, for maximizing the potential benefits of mobile banking. Although challenges exist, the opportunities provided by mobile banking services appear to significantly outweigh them, enhancing the banking sector's profitability and efficiency.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Overview

Chapter Five provides a succinct recapitulation of the study, summarizing the main findings, drawing conclusions based on these insights, and offering recommendations. It encapsulates the study's exploration into the impact of mobile money services on the profitability of GCB Bank in Ghana, bringing the research full circle.

Summary

Objective 1: To analyze the impact of mobile money services on the profitability of traditional banking institutions in Ghana, with a specific focus on GCB Bank.

The adoption and integration of mobile banking services at GCB Bank, as well as the experiences of both customers and staff, indicate that mobile money services have significantly influenced banking practices. The impact on profitability, while not directly quantifiable in this qualitative study, can be inferred through indicators such as increased usage of banking services, customer satisfaction, and operational efficiency. Customers expressed their

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satisfaction with the convenience and immediacy of transactions offered by mobile banking services, which have the potential to attract more users and increase transaction volumes, thereby boosting bank revenues.

Objective 2: To identify and understand the potential challenges and opportunities presented by the proliferation of mobile money services for GCB Bank.

The study revealed both challenges and opportunities in the advent of mobile money services. Challenges included technical glitches, concerns about transaction security, and the need for continuous innovation to meet user expectations. Despite these challenges, many opportunities were highlighted. These include improved banking convenience, enhanced inter-departmental cooperation, and potential for further development of the bank's digital platform. Most respondents also identified the potential for increased integration of banking services as a key opportunity, indicating that mobile banking could provide a platform for offering a wider range of services.

Objective 3: To provide insights that can guide policy and strategy formulation within GCB Bank in response to the growing prevalence of mobile money services.

The study's findings offer several insights that can guide GCB Bank's strategic response to mobile money services. It's clear that while the bank has made strides in adopting mobile money services, continuous innovation is crucial to address technical challenges and to meet evolving customer expectations. Improving transaction security should also be a priority, given the concerns expressed by several respondents. Additionally, the potential for further integrating banking services into the mobile platform, as suggested by respondents, can serve as a direction for the bank's future digital strategy. The overall positive perception of mobile money services among both staff and customers also suggests that efforts to promote and enhance these services would be well-received. In terms of policy, regulatory compliance was identified as a key element in building user trust, suggesting that the bank should continue to prioritize this in its mobile banking operations.

Conclusion

The study conducted an extensive examination of the impact of mobile banking services on the profitability of GCB Bank in Ghana. The results from the study provide valuable insights into the effects of mobile money services on customer behaviour, the bank's technological infrastructure, the regulatory environment, and the adoption and integration of mobile banking within the bank.

The customer behavior survey revealed that the majority of respondents frequently use GCB Bank's mobile banking services and find it more convenient than traditional banking methods. This, in turn, indicates a positive effect on the bank's profitability, as an increase in usage is likely to translate into higher transaction volumes and potentially more revenue.

The evaluation of GCB Bank's technological infrastructure showed that respondents found the mobile banking platform user-friendly and reliable. However, some respondents had concerns regarding occasional technical glitches. This emphasizes the importance of continuous

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technological innovation and maintenance to ensure high customer satisfaction and repeated use of the service.

In terms of the regulatory environment, the study found that GCB Bank's adherence to regulatory standards had a positive impact on customer confidence and facilitated the use of mobile banking services. Respondents felt that the regulatory environment supported the growth and innovation of mobile banking services, which can ultimately lead to improved service delivery and higher profitability.

The qualitative examination of the adoption and integration of mobile banking services at GCB Bank provided insights into the experiences of both customers and staff. Despite the challenges such as concerns about transaction security and technical glitches, respondents generally had a positive view of mobile banking services. This positive perception, along with the observed benefits of convenience and efficiency, suggest that mobile banking services have the potential to further enhance GCB Bank's operational efficiency and profitability.

In conclusion, the findings of the study indicate that mobile money services have a significant impact on GCB Bank's operations, customer behavior, and potentially its profitability. While challenges exist, the opportunities presented by mobile banking far outweigh these. It's clear that the continuous development and enhancement of these services, guided by user feedback and industry best practices, is key to maximizing the potential benefits of mobile banking for GCB Bank.

Recommendations

Based on the findings of the study, several recommendations can be made to optimize the impact of mobile money services on the profitability of GCB Bank.

Firstly, GCB Bank should continue to invest in improving its technological infrastructure. Given that user-friendliness and reliability were identified as significant factors influencing the use of mobile banking services, further investment in the platform can enhance user experience, increase customer satisfaction, and ultimately drive-up usage of mobile banking services.

Secondly, in light of concerns raised by some respondents, GCB Bank should prioritize enhancing the security of its mobile banking platform. This would help alleviate user concerns about transaction security, which was identified as a key factor influencing customer confidence in the use of mobile banking services. Stronger security measures would also reinforce the bank's reputation for regulatory compliance, further boosting customer confidence.

Thirdly, GCB Bank should explore opportunities for expanding the range of services offered on its mobile banking platform. The study identified a potential demand for more diverse services, and meeting this demand could help to attract new customers and increase the frequency of use among existing customers, both of which could boost the bank's profitability.

Lastly, GCB Bank should actively seek customer and staff feedback on their experiences with mobile banking services. This feedback could provide valuable insights into potential areas for improvement, helping the bank to continually refine its services and stay responsive to user

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needs. Regularly soliciting and acting on feedback would not only improve the quality of the bank's mobile banking services, but also demonstrate a commitment to customer satisfaction, which could strengthen customer loyalty and positively impact profitability.

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