KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

KUMASI,

COLLEGE OF HUMANITIES AND SOCIAL SCIENCE

SCHOOL OF BUSINESS

IMPACT OF ELECTRONIC BANKING CHANNELS ON BANK GROWTH IN GHANA.

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MSC ACCOUNTING AND FINANCE

A THESIS SUBMITTED TO THE DEPARTMENT OF ACCOUNTING AND FINANCE, SCHOOL OF BUSINESS, KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

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DECLARATION

I sincerely declare that this work is my own work for the award of master's degree in accounting and finance. It contains no research or study published by another person or study which has been accepted already for the award of any other degree of the University of other University in the world. All words, which are not mine, has been dully referenced.

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DEDICATION

I dedicate this work to my Husband Mr Justice Keelson Essel and my adorable kids, Adwoa and Kwame Keelson Essel and to my mother Margaret Korang of blessed memories.

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To Almighty God I lift my hands with praise and gratitude for grace and strength to complete this programme.

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Most importantly, I am grateful to my family for their affections, unconditional love and support.

ABSTRACT

This study examines the relationship between electronic banking channels and banks growth among commercial banks in Ghana. Using a quantitative research approach, the study adopted a survey research strategy with the use questionnaires to collect data through self-administration to customers, employees and managers of all commercial banks. The statistical population of this research was all commercial banks in the Tema metropolis and a convenience sampling technique selects 250 respondents, out of which 207 questionnaires were obtained. Average Variance Extract (AVE), Factor Loading (FL) and Cronbach's alpha (CA) tested the validity and reliability of the scales. Linear regression was used to assess the impact of electronic banking, which includes internet banking, automatic teller machines (ATMs), mobile banking, and point of sales (POS) on banks' growth. The results indicated that some of these channels, including internet banking, POS, mobile banking and ATMs, positively affect a bank's growth in diverse ways. The findings of this study reveals a positive relationship between electronic banking and bank growth and expand the understanding of how bank managers can grow their banks by developing innovative electronic banking channels. Individual with high literacy rate demonstrate greater understanding of the usage of electronic banking products and services. The understanding of relevance and risks associated with the usage of electronic banking, which enables them to make informed financial decisions effectively. The findings emphasize the need for consistent educational programs to improve financial decisions and foster responsible electronic banking products usage. This work can guide policymakers, financial institutions and all other individuals in developing effective and efficient technological strategies on the use of electronic banking products

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1.1 Background of the Study

The introduction of Information Technology has sped up the growth and development of the banking sector, elevating it to a position of prominence on a global scale (Boustani, 2021). This is furthered by the advent of electronic banking, which is the use of a remote delivery channel for banking services, such as viewing accounts, verifying account transactions, balance checking, statements printing, monitoring uncredited and unpaid checks, and many more (Amoh et al., 2020). Banking services are now delivered in an electronic format, which is the newest method of delivering services in the industry. Electronic banking has different meanings to different scholars to some extent. The distribution of services and goods via a medium like computers, televisions, or cell phones, however, is a common thread that unites the concept. Shankar & Jebarajakirthy, (2019) defined e-banking as the practice of providing customers with bank services online. To be more precise, Simon et al., (2016) define electronic banking as the delivery of banking services and goods to clients via electronic and communication networks. In actuality, e-banking does away with geographical and physical restrictions and constraints on banking services (Kimiagari & Baei, 2022; Nso, 2018). Globally, banks, brokerage firms, insurance companies, as well as business press, regulators, and lawmakers are becoming increasingly interested in Internet banking.

Electronic banking and payments are likely to evolve more or less in tandem with e-commerce and its rapid and substantial expansion, which has contributed to this focus. The banks' judgment of the profitability of such a delivery system for their

services will undoubtedly determine whether or not this extreme view is accurate (Salem *et al*., 2019). The budding effects of electronic banking, on banks' income increment, risk profiles, and cost reductions have also sparked significant curiosity and rumors about how the Internet may affect the banking sector (Islam *et al*., 2020). In order for banks to better serve their consumers, they have made electronic channels like ATMs, telephone banking, and online banking available (Inegbedion, 2018; Nazaritehrani & Mashali, 2020a). The banking industry's structure has changed as a result of the impact of information technology and customers have grown more sophisticated as a result of the shift, and new items are now available which has changed the cost structure and improved competitiveness among banks' profitability (YuSheng & Ibrahim, 2020). Additionally, Oppong (2015) claimed that electronic banking goods including mobile and internet banking, and ATM products, the new delivery technologies are currently taking the place of the conventional delivery methods to improve service in the financial industry (Addai *et al*., 2015; Owusu Kwateng *et al*., 2019). Banks' operations have been completely transformed as a result of the adoption of Information and Communication Technologies (ICT) and the provision of top-notch customer service has improved significantly as well. Therefore, the purpose of this study is to examine how electronic banking has impacted Ghana's banking sector.

1.2 Statement of the Problem

In Ghana, banks dominate the financial system and has experience restricting and transformation and a recent clean-up of the banking industry in 2018. The banks that survived the clean-up exercise by the Bank of Ghana are faced with a quickly evolving market situation with an increased rate of mergers and acquisition leading to a tougher competition between these banks. Due to this, the traditional methods of providing banking services are no longer adequate for effective and efficient

operation of these banks in the ever-changing global market (Rahmayati, 2021). Reports show that one of the major driving force in the banking industry currently is information technology to meet customer expectation and bank growth (Pattnaik & Patra, 2018; Ugwuanyi *et al*., 2021; Yao *et al*., 2018; YuSheng & Ibrahim, 2019). Notwithstanding the impacts and importance of electronic banking in bank growth, many authors have worked on specific banks and have also focused on performance, Davcik NS, Grigoriou N (2016), How Dynamic Marketing Capabilities Affect Market Share Performance Output, market share, Tash MN, Mahmodpour K, Saravani Z (2014) Evaluation of bank market share and its affective determinants, customer satisfaction (Asiyanbi & Ishola, 2018; Firdous & Farooqi, 2017; Khatoon *et al*., 2020; Rahi *et al*., 2020), factors influencing the implementation of e-banking banking (Adadevoh, 2018; Agyei *et al*., 2022; Alalwan *et al*., 2018; Inegbedion, 2018), again Nazaritehrani and Mashali (2020) evaluated the development of E-banking channels and market share in developing countries, however their study focused on a single bank their population sample also focused on managers, deputies, and experts of the selected bank ignoring the contributions of end uses (customers usage) of e-banking systems.

Customers plays a significant role in the acceptance and usage of innovations created by the banks. The banking growth or market share will depend on how much customers use the innovation created (e-banking system). This paper bridges the gap by evaluated the development of E-banking channels on banking growth in the Ghanaian banking industry which no researcher has actually looked at again the study will involve multiple banks and also include customers in the population size.

1.3 Objectives of the Study

The main objective of the study seeks to examine the impacts of electronic banking on the growth of banks in the Ghana banking industry.

The study specifically seeks to:

i. To examine the effects of ATM usage on bank growth.

ii. To examine the effects of internet banking usage on the growth of banks.

iii. To examine the effects of mobile banking usage on the growth of banks.

iv. To examine the effects of POS usage on bank growth.

1.4 Research Questions

The study's purpose informed the formulation of the following research questions, which were designed to lead the investigation

i. What are the effects of ATM usage on bank growth?

ii. What are the effects on the usage of internet banking on bank growth?

iii. What are the effects on the usage of mobile banking services on bank growth?

iv. What are the effects on the usage of POS on bank growth?

1.5 Significance of the Study

The study's conclusions fill a vacuum in the literature about electronic banking and its impact on the expansion of banks in Ghana while also offering a starting point for future research by academics and business executives. The study's findings also contribute to the corpus of knowledge on the issue of electronic banking by helping players in the Ghanaian banking sector develop strategies for promoting it. Therefore, it acts as a resource for future research projects that aim to continue the analysis of

Ghana's banking sector's use of electronic transactions. The findings of this study will assist officials in the banking industry in developing an overarching national policy framework for Ghana's implementation of electronic banking to support both social and economic growth.

1.6 Scope of the Study

The study looks primarily at the Ghanaian banking sector to see how electronic banking has affected bank expansion and growth. To make the study's conclusions more broadly applicable, it focuses on all commercial banks in Ghana and their customers. The study will exclude savings and loans as well as micro-finance companies. The study will be conducted in the Tema metropolis and its enclave. The results of this study can be applied to all commercial banks in Ghana, both indigenous and foreign-owned, because of their information.

1.7 Summary of Methodology

This research makes use of a quantitative research strategy to establish the impact of electronic banking on bank growth. The study employs primary data obtained from the administering of structured questionnaires to customers, staff, and management of all commercial banks. The questionnaire is designed to be straightforward and enables self-administration. The data is entered into Microsoft Excel 2019, SPSS version 26 and Amos 23 serve as the analytical tool for data evaluation.

1.8 Limitations of the Study

One of the limitations the researcher anticipants is the unavailability of data and cooperation of customers, as the majority of Ghanaians do not use internet and electronic banking extensively. To control this, the researcher has designed the questionnaire in a manner that is easy to comprehend and engaging.

1.9 Organization of the Study

The study is divided into five chapters. Background data, a problem description, study objectives, research questions, the study's scope, restrictions, and a brief methodology are all covered in chapter one. Chapter 2 deals with the literature review, which is separated into the conceptual, theoretical, and empirical review and concludes with the conceptual framework. Chapter three focuses on the research method, detailing the research strategy, sampling technique, questionnaire design and pilot, estimation technique, and diagnostic tests such as the normality test and validity test. The outcomes of the data analysis are presented in chapter four, together with a discussion of the results and a comparison of the findings to previous research. Chapter five ends the study with a summary, conclusion, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter appraises previous research by accredited scholars and researchers. The chapter is divided into four main sections; 2.1 describes the conceptual review of the banking industry of Ghana and electronic banking and other related subjects. Section 2.2 details the theories proposed around electronic banking adoption, Section 2.3 details the empirical review of previously published research works and Section 2.4 entails the conceptual framework for the study. The chapter ends with a chapter summary.

2.1 Conceptual Literature Review

A conceptual review of the key concepts employed in this work is presented in this section. This section defined the variables in the study, which included Bank Growth, Automated Teller Machine, Internet Banking, Mobile Banking and Point Of Sale transactions.

2.1.1 Bank Growth

The term bank growth describes the gradual growth and expansion of a bank's activities, assets, clientele, market share, and financial performance (Nazaritehrani & Mashali, 2020b). It includes both quantitative and qualitative aspects of a bank's development and can be assessed using a variety of metrics and indicators (Pakurár *et al.*, 2019). Numerous internal and external factors, such as macroeconomic conditions, the regulatory environment, market rivalry, financial innovations, and management strategies, have an impact on bank growth (Huy *et al.*, 2021). Striking a balance between seizing development possibilities and controlling associated risks is crucial for banks. While excessive or badly managed expansion can result in financial instability and operational difficulties, sustainable and well-controlled growth is a key

factor in the long-term profitability and stability of banks (Sang Tang My, 2022). Market conditions, the regulatory environment, technology improvements, and managerial strategies are just a few of the variables that influence bank growth (Rajapathirana & Hui, 2018). Banks frequently have the chance to increase their lending activities, draw in deposits, and make more money in an environment where the economy is doing well and there is low unemployment and stable inflation (Nyangarika & Bundala, 2020). Additionally, a climate favourable to bank growth is fostered by a supportive regulatory structure that promotes competition, innovation, and responsible risk management (Fan, 2018). For regulators, policymakers, investors, and stakeholders to evaluate a bank's performance, assess its prospects, and make informed decisions, it is essential to measure and track bank growth (Ofori-Sasu *et al*., 2019). A thorough understanding of bank growth is essential for efficient risk management, capital planning, and strategic decision-making. It also guarantees the bank's capacity to promote economic growth, meet the demands of its clients, and contribute to the health of the overall economy (Borremans *et al*., 2018).

2.1.1.1 Indicators of Bank Growth

Key criteria used to monitor and evaluate the growth and development of a bank's operations, financial performance, market share, and customer base are known as indicators of bank growth (Istan & Fahlevi, 2020). These metrics shed light on a bank's condition, development, and future prospects. A major component of evaluating bank growth is the use of financial indicators. Return on equity (ROE) and return on assets (ROA), two indicator of profitability, show how profitable a bank's operations are (Pointer & Khoi, 2019). Banks can increase their capital reserves, invest in business expansion, and weather possible financial shocks thanks to higher profitability. Indicators of asset quality, evaluate the condition of a loan portfolio of a bank and its capacity to successfully manage credit risk (Bholat *et al*., 2018).

Indicators of liquidity and funding, such as the loan-to-deposit ratio and liquidity coverage ratio (LCR), assess a bank's capacity to meet short-term obligations and maintain lending activity (AbdulRahman *et al.*, 2018). Common equity Tier 1 (CET1) capital ratios and other capital adequacy metrics make ensuring that banks have enough capital to cover any losses and support their goals for expansion (Sands *et al.*, 2018). Market indicators are equally important for assessing bank growth. They evaluate a bank's customer base, market penetration, and market share (Nazaritehrani & Mashali, 2020b). Customers and customer retention rates measure a bank's capacity to draw in and hold onto a faithful client base, while market share indicators show how competitive a bank is in its industry (Özkan *et al.*, 2020). Indicators of branch growth and geographic reach offer information about a bank's physical presence and capacity to service clients in various areas, which helps the market grow (Bernini & Brighi, 2018).

In recent years, technological development and digitalization have emerged as major forces behind bank growth. Banks that make technological investments and use digital channels can increase operational effectiveness, provide cutting-edge goods and services, and promote consumer satisfaction (Chen & Sivakumar, 2021). Digital banking indicators show a bank's dedication to technology advancement and readiness to change to meet changing client demands (Nguyen *et al.*, 2020). These indications include utilising online banking platforms, mobile banking apps, and partnerships with fintech companies. For banks to thrive, human resource growth is also crucial. A bank's capacity to innovate, deliver top-notch customer service, and promote organizational success are all influenced by its workforce's skills and motivation (dela Cruz & Cabaluna, 2022). Investing in its human capital and maintaining a positive work environment are priorities for the bank, as evidenced by

metrics like employee growth, productivity, skill development, and satisfaction (Nawaz, 2019). Although bank development is an ideal objective, it must be properly managed to reduce associated risks. Increased operational complexity, problems with cash, and asset quality decline can all be results of excessive or poorly managed growth. Banks must therefore uphold strict regulatory requirements, maintain effective risk management procedures, and strike a balance between expansion goals and the demands of long-term sustainability and financial stability.

2.1.2 Electronic Banking

The automated delivery of established and modern banking services and products to clients directly through electronic, interactive channels is e-banking (Chaimaa *et al*., 2021). Electronic banking enable clients of financial establishments, including people and businesses, to use a public or private network, such as the internet, to access accounts, conduct business, or obtain information about financial products and services (Sardana & Singhania, 2018; Wewege *et al*., 2020). Beyond merely online banking, electronic banking has a wider range of applications. Online banking, commonly known as Internet banking, is the most popular type of electronic banking available today. There are many different ways to interpret the word electronic banking. The distribution of information or services by a bank to its clients over a computer, television, telephone, or mobile device is its most basic form (Dasgupta *et al*., 2011; Nasri, 2011). An electronic link established between a bank and a client for the purposes of organising, coordinating, and the management of monetary transactions is an example of electronic banking (Kaur *et al*., 2021; Mbama & Ezepue, 2018).

Timothy, (2012) defines electronic banking as the use of a remote delivery technique, such as the Internet, to provide services including creating a bank account, transferring money between accounts, and receiving and paying bills online (Claude, 2022). There are essentially two methods for doing this. In addition to its regular distribution methods, a bank with physical offices can build a website and offer these services to its clients. The second phase involves creating a virtual bank, with the PC server placed in a place that acts as the actual physical location of the bank. In exchange for a fee for administration, the banks offer their clients the choice to deposit and take money out through ATMs (Automated Teller Machines) or supplemental remote delivery methods used by other foundations (Kwarteng, 2016).

2.1.2.1 Forms of Electronic Banking

2.1.2.1.1 Automated Teller Machine (ATM)

Customers of financial institutions are able to make financial transactions in public without the need for a human clerk or bank teller thanks to an automated teller machine (ATM) (Mkpojiogu & Asuquo, 2018). ATMs can now be found outside of banks or inside of them, as well as in malls, airports, grocery stores, petrol stations, restaurants, nightclubs, hotels, churches, mosques, bus stops, train stations, and other places where large crowds may assemble (Aliyu *et al*., 2014). ATMs were initially intended to be cash dispensers. However, due to the quick development of technology, certain account balance checks and bill payments are now possible using ATMs (Thank God *et al*., 2019). This computerised banking equipment gives banks a competitive edge and boosts efficiency during business hours by mixing automation and human tellers (Domeher *et al*., 2014). Additionally, because clients are not required to wait at the bank, customer service delivery is expedited. As a result, this time could be utilised for other productive activities (Kwarteng, 2016). ATMs are a

practical technique to boost profitability because they operate more efficiently per unit of time than human tellers (6,400 transactions monthly on average versus 4,300 for human tellers) (Kwarteng, 2016).

2.1.2.1.2 Mobile Banking

Mobile banking, or doing financial transactions via a mobile phone, is a relatively recent addition to Ghana's electronic banking options (Owusu *et al*., 2021; Owusu-Kwateng *et al*., 2018). Any changes to a customer's account, such as debits and credits, as well as any modifications to the account, are automatically sent to them when they utilise mobile banking (Agarwal & Chua, 2020). Mobile phones with dependable text message services are the only necessary equipment for mobile banking. This category also includes SMS banking, which employs a quick method for updating clients via text message on their accounts (Hamid *et al*., 2022). Text message transmission that is linked to an automatic bank scheme and does so with great security now allows bank customers to conduct retail banking operations (Chaimaa *et al*., 2021; Singh & Srivastava, 2020). Nearly all operations offered on the automated teller machines, with the exception of cash withdrawal and deposit, can be completed using the mobile banking service (Khiaonarong & Humphrey, 2019). The use of mobile banking has significant advantages for both users and banks since it provides customers with increased convenience, access, and time savings (Alalwan *et al*., 2017). Lower delivery costs for mobile banking services also benefit the bank.

2.1.2.1.3 Internet Banking

According to Shantha, (2019), Customers who use internet banking have access to their bank accounts through a website and can perform specific transactions on their accounts after passing stringent security checks. By its very nature, internet banking gives users added flexibility, expediency, and practically absolute control over their

accounts (Njoroge & Mugambi, 2018). The most economical technological solution of boosting productivity and has all the productivity effects linked to telebanking and PC banking as a replacement delivery method for retail banking (Wiafe, 2017). Additionally, because time and distance are no longer obstacles to financial transactions thanks to internet banking, the bank is able to consistently serve consumers who are unimaginable far away (Kombe & Wafula, 2015).

2.1.2.1.4 Point-Of-Sales (POS) terminals

POS terminal has become one of the most current channels of providing banking services. This is an electronic device used at retail locations such as shops, restaurants, and hotels to accept credit and debit cards. It allows individuals to do online transactions with the use of their credit or debit cards, twenty-four hours a day (Kajuju 2016). A POS terminal typically uses a phone line or another kind of communication, such as wireless connections, to connect to the bank's main server and transfer funds from a customer's account to the merchant's account (Hosseini and Mohammadi 2012). POS terminals are readily available and greatly simplify banking transactions; as a result, they can boost the expansion of the bank.

2.1.3 Ghana's Banking Industry Overview

The advent of technologically inventive goods and services has caused a large amount of change in Ghana's banking sector throughout the years (Haddad & Hornuf, 2019). Banks have incorporated these cutting-edge goods and services into their business practices to give clients simple accessibility. In the 1990s, the majority of banks in Ghana adopted electronic and communication technology like telephones, personal computers, and facsimiles, ushering in a technological revolution in the country's banking sector (Gaglio *et al*., 2022). The primary goal was to expedite and improve

customer service delivery. The development of computer technology gave banks the chance to network their branch offices (Kitsios *et al.*, 2021). Barclays Bank and Standard Chartered Bank were the forerunners of this important electronic invention (Aboagye *et al.*, 2016). The banking environment in Ghana underwent a complete transition as a result of the leadership by these banks. Customers as a whole benefited from this change. Customers had the option to conduct business with other branches of the same bank rather than just their own (Aboagye *et al.*, 2016). The Trust Bank Limited built the first Automated Teller Machine (ATM) in 1995 (Górny *et al.*, 2022). Most large banks started establishing own ATM networks as well in order to obtain a competitive edge in the sector, which sparked severe competition (Paramasivan *et al.*, 2023).

ATMs are currently the most popular electronic distribution method for consumers because they are currently operated by all banks. Customers now consider ATMs while choosing a bank (Nambiar & Bolar, 2023). Every country needs a robust banking sector since it can significantly promote economic progress through providing reliable financial services. (Chen and Sivakumar, 2021). In a similar vein, EBS is a key player in the banking sector and is essential for economic growth in emerging countries (Aduaka & Awolusi, 2020). As the banking sector becomes more international, banks must strike a balance between outreach and sustainability due to the competitive environment they must operate in. This new environment may have been sparked by electronic banking services (EBS), which may also hold the key to banks' survival in the near future (Mahmoud, 2019). According to research, electronic banking services (EBS) represent the future of banking since they provide consumers significant advantages in terms of transaction simplicity and cost, whether via online banking, mobile banking, ATMs, or other technological methods (Mahmoud, 2019).

Due to technical improvement, Ghanaian banking is currently in a boom period and continues to draw attention from around the world, as evidenced by the inflow of foreign banks into the nation (Agyapong, 2021). Ghana's financial sector appears to be seeing an upsurge of Nigerian-owned banks. To stay competitive in the banking industry, all of these institutions define and redefine their service delivery positions with the goal of expanding their market share. This is because providing great service and products has become crucial to banks' expansion and survival in the cutthroat-banking sector of today.

2.1.3.1 Ghana's Adoption of Electronic Banking

Due to competitiveness, IT adoption and investments have become a crucial part of attaining organizational goals in Ghana's banking sector (Chan *et al*., 2018). Therefore, for many years, technologies of electrical and communication have been heavily utilized in banking to advance the goals of banks (Antwi *et al*., 2015). Office automation tools were primarily the first technological and communications technology that banks used. However, as competition increased and the PC became more widespread due to the entry of new partners in the banking sector, Ghanaian banks started using them for back-office tasks and eventually for customer service by tellers. The country's banking landscape has transformed in light of the application and adoption of new IT investments made possible by computer technology breakthroughs (Gomber *et al*., 2018). The ATM has arguably been the most ground-breaking electronic invention in this nation. Ghanaian banks having ATMs have networked them, increasing their usefulness to clients (Kessey & Abassah-Wesley, 2020). Internet banking, telephone banking, and electronic cash transmission are some additional technological innovations in the banking industry. As soon as the telephone and facsimile were invented in Ghana, electronic services were first used

for banking (Affum, 2020; Mattern & McKay, 2018). Initially, banks used the phone and fax to communicate with both their customers and workers both internally and internationally (Buttle & Maklan, 2019).

Banks employed this automation tool to streamline the procedure(s) involved in providing customer service with the introduction of the personal computer (PC) in the 1980s. However, there was still the issue of consumers' need for spatial convenience, which made it necessary for banks to network their branches so that every customer could access their accounts, regardless of where the initial account was created (Farah, 2017). The Automated Teller

Machine (ATM) marked the next stage in the development of e-banking in Ghana. Customers can use this device to access their accounts and withdraw money outside of regular banking hours (Kessey & Abassah-Wesley, 2020). Customers may further benefit from the services offered by the ATM, if their banks had them, because the various banks' branches were connected. Due to the numerous benefits offered by the ATM, many customers now consider this crucial technology when deciding which banks to use (Shabbir, 2020). The Trust Bank

(TTB) introduced the ATM in Ghana for the first time in 1995, however today practically all

Ghanaian banks offer ATM services to their customers (Abor *et al*., 2019; Obuobi *et al*., 2020). Online banking (which enables consumers to access their accounts and make online purchases) is being implemented by several banks to complement the advantage of longer banking hours that the ATM gives (Madhavan, 2018).

2.1.3.2 Benefits of Electronic Banking

The Internet as a new alternative channel for the delivery of financial services has changed from a way to acquire a competitive edge to one that is now necessary with

the advent of globalisation and more fierce competition (Zyberi & Polo, 2021). By using this feature, people and businesses may access their accounts and complete transactions more easily by visiting the bank websites at any time. They also save a significant amount of time and money by using electronic banking (Balogun *et al.*, 2013). According to Chhaidar *et al.*, (2022), electronic services help banks cut expenses, boost profits, activate their management, become more efficient, and become more competitive. This illustrates the causal connection between the growing clientele's desire to cut costs and time, and the use of electronic banking services (Patel & Patel, 2018). There are several advantages to using electronic banking, some of which are: there are no barriers, it is convenient, services are reasonably priced, and it has changed old banking processes (Lin *et al.*, 2020). The banking sector performs better thanks to faster information delivery from customers and service providers thanks to the only option to stay linked to clients at anytime and anywhere: internet applications (Lin *et al.*, 2020). Because it reduces waiting, enables novel products or services patronage at low costs for transactions, and promotes queue management—one of the key aspects of the standard of e-banking services—customers prefer electronic banking (Odhiambo & Ngaba, 2019b).

2.1.3.3 Challenges of Electronic Banking

E-banking offers different stakeholders both benefits and difficulties. According to Miryala (2015), Due to the lack of face-to-face connection permitted by the majority of electronic banking services, e-banking negatively affects the relationship between bank customers and bank employees. A few of these businesses do, however, provide a phone number or text messaging service for clients to provide feedback. Some e-banking products, according to Miryala (2015), require users to go through challenging transactions or procedures. Customers are therefore reluctant to buy items that seem challenging. The use of the internet is necessary for many e-banking

services and products, which introduces perceived and actual security risks that could lead to unauthorised entry to a client's account. According to Hassani *et al*., (2018), security is still a huge challenge for banks deploying e-banking because, the bank may be threatened from both within and outside. According to Hassani *et al*., (2018), security issues include breaches allowing unauthorised access to the bank's system and attacks using brute force, hijacking, sniffing, or spoofing to access consumer data and accounts. Breaches also occur on the customer's end when security information, like an account number and passwords, is traded or handled carelessly. Hassani *et al*., (2018) further asserts that the deployment of e-banking comes with risks for banks as well, such as operational, legal, and regulatory risk.

Managing technology presents a big challenge for banks implementing e-banking. For effective e-banking adoption, it is essential to construct or purchase the appropriate technology, deploy it efficiently, and then utilize it to the best extent possible. Maintaining the highest standards of service and competence for e-products while remaining cost-effective, and producing a positive shareholder profit is a challenge for banks (Kassaye, 2018). According to Zaidi & Khan, (2021), another issue facing banks is the exploitation of e-banking systems for nefarious activities like money laundering. The regular services are available, including working ATMs, preventing network issues and system failure, and providing easily navigable webpages are additional challenges that banks using e-banking must overcome (Zaidi & Khan, 2021).

2.2 Theoretical Literature Review

The section identified and described Technology Acceptance Model (TAM) and Theory of Planned Behaviour (TPB) as the background theory for the study. The

Technology Acceptance Model and the Diffusion and Adoption models are used to analyze how E-banking products and services affect bank expansion in Ghana.

Though many research on user acceptance of technology have been conducted, very few of them have specifically addressed e-banking. (Anouze & Alamro, 2019). Kaur & Malik, (2019) examined people's opinions on "the adoption of Internet banking for corporate reasons, and one of the relevant theories is the technology acceptance model (TAM) developed by Davis, (1989). It will be helpful to look at the idea of planned behavior in order to comprehend why customers are not embracing e-banking, postulated by Ajzen, (1985) and the innovative diffusion theory, developed by Rogers, (2004) studied social and perceived behaviour control factors that influence the adoption of e-banking".

Samar *et al*., (2017) states there are several stages that businesses go through while implementing e-banking or internet banking, each having a different role. When businesses implement new technology, there are several levels present, which "represent these varied stages. "There are several stages that businesses go through while implementing e-banking or internet banking, each having a different role. When businesses implement new technology, there are several levels present, which "represent these varied stages" (Wang *et al*., 2017). These phases will likewise apply to a bank that is utilizing or adapting to e-banking, whether the organization is mature or still very new. A company goes through five main stages:

1. Knowledge of the innovation, where the company is only aware of its existence;

2. Interest, where the company is curious and starts to consider whether or not the innovation would be advantageous to them;

3. evaluation, in which the business uses the data gathered to assess the innovation conceptually;

4. "Testing", where the company actually puts the innovation through its paces to see if reality matches up with expectations;

5. Adoption, where the company fully adopts the invention because they appreciate it.

Banks go through numerous stages of development while introducing e-banking, from a marketing approach to a strategic one. Which strategy the bank should choose will depend on how far it is willing to go with e-banking (Daka & Phiri, 2019).

A number of elements have been recognized as crucial for the uptake of electronic banking. Nasim (2009) implies that the bank should be able to draw customers' attention to these items.

2.2.1 Technology Acceptance Model

To predict how firms will react to and make use of new information technology, the Technology

Acceptance Model (TAM) was created (software and information systems) Davis, (1989). According to the paradigm, a person's attitude toward using a system and how valuable they think it to be might explain their behaviour. In turn, perceptions of the system's effectiveness and usability might be used to describe attitudes toward using it. According to Davis, (1989), perceived usefulness is exactly how much people believe using a particular system will improve their capacity to carry out their jobs, whereas perceived ease of use is the extent to which people believe using a certain system will be simple (Davis, 1989). TAM aids comprehending the broad factors influencing computer acceptance that aid in explaining user behaviour. Perceived utility (PU) and perceived ease of use (PEOU) are the two dimensions of TAM (PU). These two factors determine how users feel about using a given technology.

Perceived Usefulness (PU), the second dimension, describes the likelihood that a computerized system (for instance, an e-banking system) will lead to a change in the

user's behaviour. The first factor, Perceived Ease of Use (PEU), measures how user-friendly the computerised system is perceived to be by the user (Liu & Chou, 2020). It is hypothesized that a user's mind-set affects behavior and decision to employ a particular technology (Darmansyah *et al.*, 2020). Therefore, the theory aids in understanding, forecasting, and providing explanations for why people may or may not accept new platforms for information and communication technology, such as e-banking. This theory aids in, for instance, explaining the difficulties associated with fewer people using e-channels. In essence, it offers e-banking product creators a suggestion as to a product's level of acceptance and how simple it is for users to use.

The two factors that influence behavioral intention. The primary topics of study for TAM are learning how to utilise a system and then actually using it. These two factors are perceived utility and perceived simplicity of usage (Wu & Chen, 2017). It is assumed that perceived usefulness directly influences on how simple it is to use. TAM2 and TAM3 were created as a result of attempts to expand TAM. This was done by incorporating components from existing pertinent models, adding new or replacement belief components, and looking at the moderators and antecedents of perceived utility and perceived usability (Hansen *et al.*, 2018). However, the majority of studies using TAM to analyse the adoption of Internet banking either used it in its original form (Ahmad, 2018; Albort-Morant *et al.*, 2022; Marakarkandy *et al.*, 2017; Samar *et al.*, 2017) or extended form by adding on certain constructs (Chauhan *et al.*, 2019; Hossain *et al.*, 2020). The Theory of Planned Behaviour and TAM can occasionally be combined to create a theoretical foundation. (Aziz *et al.*, 2017; Chan *et al.*, 2020). However, TAM has drawn criticism for use of participants' self-disclosed data, and it erroneously assumes self-disclosed reportage corresponds to actual application. Tao *et al.*, (2022) criticized the approach for providing scant

guidelines for design and implementation might be employed to predict how people will use technology.
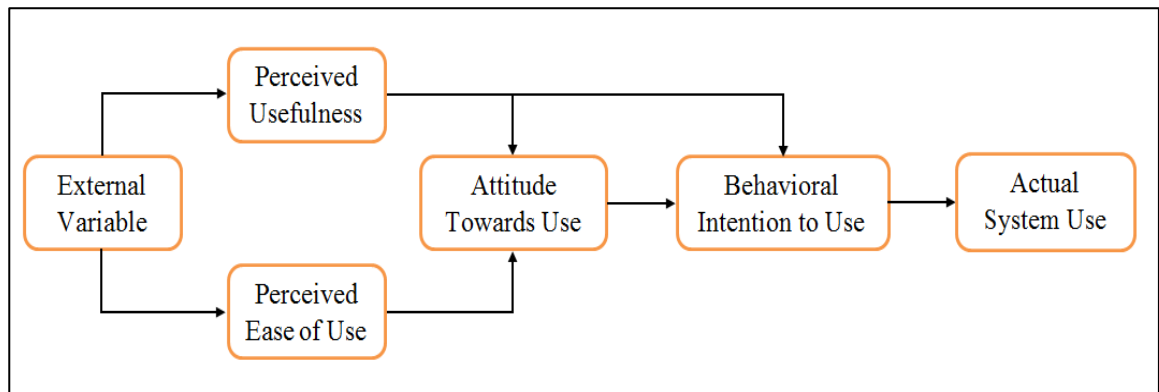
Figure 2.1: Technology Acceptance Model

2.2.2 Theory of Planned Behaviour (TPB)

TPB initially established on the basis of the reasoned action theory (TRA), which can importantly describe almost every human character in a wide range of application scenarios. A person's behavioural intention, which is determined by their attitude toward behaviour and subjective norm, determines how they really carry out a certain task, according to TRA (Aslam *et al*., 2017). In this regard, behavioural purpose has been defined as a measurement of how strongly a person is inclined to try while engaging in certain behaviours (Aslam *et al*., 2017). When dealing with behaviour, the basic TRA model has limits when a person lacks or exerts insufficient volitional control (Jokonya, 2017). Through the inclusion of perceived behaviour control, which has the capacity to affect behavioural intention, these constraints were addressed in TPB. The TPB suggests that behavioural attitude, subjective norm, and perceived behavioural control are three independent intention-determinants (Ajzen, 1991). Icek Ajzen & Fishbein, (1975) claim that an individual's level of favourable or negative evaluation of a particular behaviour is referred to as their attitude. In other words, beliefs about the subject of an attitude form an individual's attitudes.

Ajzen, (1991) defines subjective norm as the assumed pressure in society to engage or avoid a behaviour. It also has a connection to normative ideas about what other people expect of us when we perform or do not execute certain behaviours.

2.3 Empirical Literature Review

It has not yet been determined how much this new distribution route will improve Bangladeshi banks' performance. In light of this, Islam *et al.*, (2019) investigate whether banks that have implemented internet banking perform differently from organizations that have not. Return on Asset (ROA) and Return on Equity (ROE) are used to gauge performance. All 30 of Bangladesh's listed banks' annual reports are where secondary data is acquired. The results demonstrate that internet banking-equipped institutions have higher ROA and ROE than those without. However, the results are unremarkable. Furthermore, it has been scientifically demonstrated that the introduction of internet banking has resulted in a decline in ROA and ROE. These outcomes may be explained by the initial budg*et* allocated for infrastructure improvement and the inability to persuade clients to broadly use online banking.

Data envelopment analysis is used by Owusu-Kwateng *et al.*, (2018), to investigate how online banking affects bank performance. 20 banks in Ghana were picked for the research in total from the Bank of Ghana website. As at 2016, the financial statements of the different banks where the financial data regarding the banks' operations can be found. To estimate 49 models, principal component analysis, cluster analysis, and the data envelopment analysis-bootstrap technique are utilised. The study's conclusions show that Ghana's banks have performed better as a result of incorporating online banking with traditional banking practices. Because of the poor usage of banking consumers that use internet services, it has been known that while the independent application of electronic banking as a means to improve performance did not yield

higher returns, its integration with potential traditional ways is regularly seen among the best performers in the banking business.

In their study, Odhiambo and Ngaba (2019b) look at the availability of e-banking services and the financial health of Kenyan commercial banks. Accessing how ATM, agency, and mobile banking usage influence the financial performance of Kenyan commercial banks is one of the study's specific goals. The adoption of technology, the agency theory, and the diffusion innovation theory all offer support to the study. The research design is descriptive. A total of 43 commercial banks headquarters in Kenya in Nairobi forms the study's population. The 124 operations and e-banking managers at the bank's corporate headquarters acts as the research unit of analysis. The study used a methodology akin to a census. To analyse the data, descriptive and inferential statistics are applied. The survey shows that Kenyan commercial banks have adequately accepted e-banking services such mobile banking, agency banking, internet banking, and ATM usage, and this has had a substantial impact on the financial performance of the financial institutions.

The study by Perera & Basnayake, (2020) investigates how E-banking affects bank financial performance. This research uses an explanatory research approach. The researchers choose as independent factors the number of ATMs, the size of the bank, the accessibility of mobile banking, net fee & commission income, and electronic card banking. The dependent variable is financial performance. Bank websites and annual reports are used to collect data. Ten commercial banks from 2010 to 2019 are used in the study. E-views is used to analyse the data. According to the analysis, there is a considerable impact of electronic banking, net fee commission income, and electronic card banking on bank financial performance. The influence of mobile

banking accessibility, the number of ATMs, and bank size on bank performance, however, is minimal.

In their study, Mbama & Ezepue (2018) investigate customers' perceptions of electronic banking (EB), customer experience, satisfaction, loyalty, and financial performance (FP) in UK banks. They utilize a survey to gauge UK bank customers' sentiments regarding these subjects, employing methods such as multivariate factor analysis, structural equation modeling, analysis of variance testing, and examining banks' financial data to derive FP ratios. The primary factors influencing digital banking from the perspective of customer experience include service quality, functional quality, perceived value (PV), employee-customer engagement, perceived usability, and risk. The relationship between customer experience, satisfaction, loyalty, and financial performance is of paramount importance in this context.

In the study of Dondo *et al.*, (2020) the effects of e-banking on commercial bank competition in Zimbabwe. (2010–2016). To address the study's aims and hypothesis, they use a cross-sectional survey approach and a descriptive research design. To get primary quantitative data, the researchers use interviews and structured questionnaires. In order to conduct this study, a sample of 100 e-banking consumers and 40 employees from commercial banks filled out a questionnaire with closed Likert-type scale questions. Respondents are chosen for both surveys and interviews using judgmental sampling. The findings show that e-banking affects the competitiveness of commercial banks. The study finds that the quality of electronic banking service delivery draws and keeps consumers, giving the bank a competitive edge in the market and industry. The results of the study also indicate that e-banking has advantages for both customers and banks. E-banking has advantages for banks,

such as boosting their competitiveness, expanding their clientele, enhancing their profitability, and simplifying the marketing of their products. Customers who use e-banking gain from its convenience, dependability, simplicity of use, effectiveness, responsiveness, security, and decreased transaction costs.

2.4 Conceptual Framework and Hypothesis Formulation

The study establishes the relationship between the studied variables and develops a conceptual framework to assess the findings. Figure 2.5 illustrates how the dependent variables bank growth is affected by the independent variables electronic banking. It also demonstrates the connection between the technology acceptance model and electronic banking seeking to explain the factors that impact the use of electronic banking among customers of banks

Independent Variable   Dependent variable
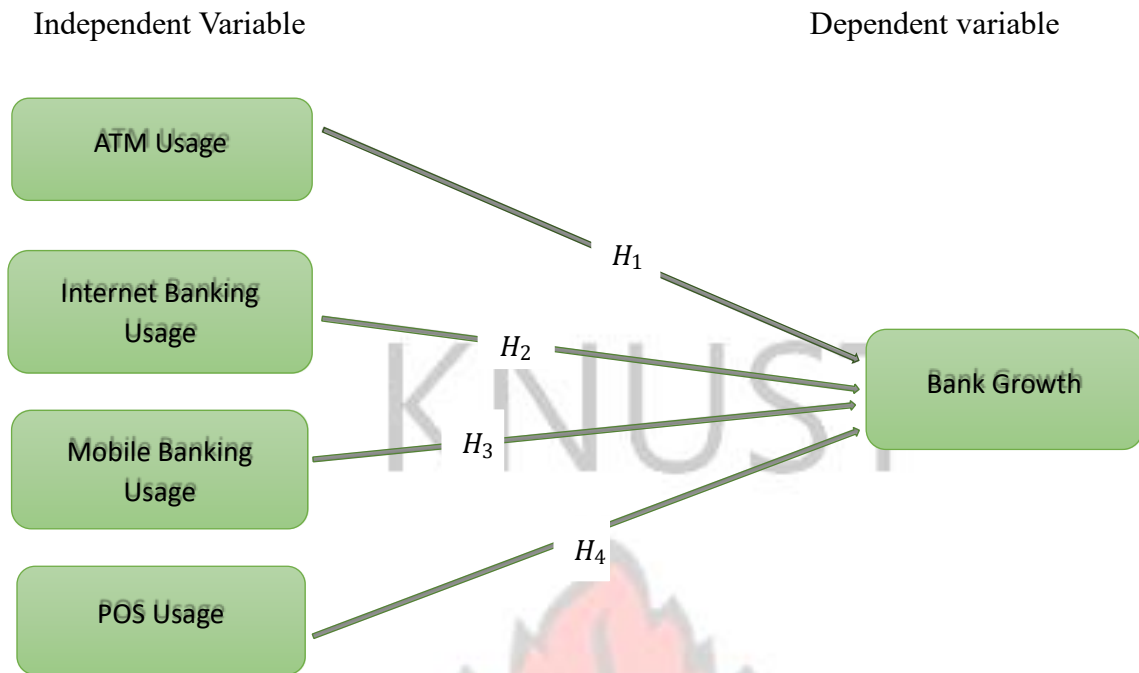
Figure 2. 2 Conceptual Framework

Source: Modified from Nazaritehrani and Mashali (2020)

2.4.1 Development of Hypothesis

2.4.1.1 ATM Usage and Bank Growth

Asif Khan (2011) discuss that ATMs (Automated Teller Machines) provide customers with convenient access to their funds and banking services 24/7. The availability of ATMs enhances customer satisfaction by allowing them to withdraw cash, check account balances, and perform various transactions without having to visit a physical branch. This convenience can lead to increased customer loyalty and retention, contributing to the bank's growth. ATMs can increase the bank's market share, according to DeYoung and Nolle (1996). Akram & Allam (2010) explain that higher ATM usage indicates a higher volume of transactions. As customers use ATMs for withdrawals, deposits, transfers, and other banking activities, the bank experiences increased transaction activity. This can lead to greater revenue for the bank, particularly from fees charged for certain transactions conducted at ATMs owned by other banks. According to Bahrami et al. (2014) factors such as out-of-branch service

accessibility and others can influence bank growth. In addition, ATMs are available

everywhere (Sharma, Sharma & Khan,

2019; Singanamalla et al., 2019); therefore, ATM development can strengthen
accessibility.

This study hypothesizes:

H_1: *ATM usage has a positive impact on Bank Growth*

2.4.1.2 Internet Banking Usage and Bank Growth

Internet banking also referred to as online banking or digital banking provides

customers with the convenience of accessing their accounts, conducting transactions,

and managing their finances through online platforms. According to Malhotra &

Singh (2009), Banks that offer robust and user-friendly internet banking services can

attract tech-savvy customers and retain existing ones. Adewoye, (2013) stressed that

as the number of customers using internet banking increases, the bank's customer

base grows, contributing to its overall growth. Internet banking allows banks to reach

a wider geographical area without the need for physical branches. This is particularly

valuable for banks that want to expand their footprint without the high costs

associated with opening and operating new brick-and-mortar branches (Gomez 2011).

By offering online services, banks can tap into new markets and demographics,

driving growth beyond their traditional boundaries. This study hypothesizes that:

H_2: *Internet banking usage has a positive impact on Bank Growth*

2.4.1.3 Mobile Banking and Bank Growth

Using a mobile phone for transactions has improved service quality, according to

Schierholz and Laukkanen (2007). Mobile banking, according to Bahrami et al.

(2014), can significantly boost a bank's share of its market. Rauf & Qiang (2014)

stressed that mobile banking allows banks to reach customers beyond traditional

geographical limitations. It enables access to banking services for individuals who may not have easy access to physical branches (Siddik, Sun, Kabira, Shanmugan & Yanjuan, 2016). By catering to a broader customer base, banks can achieve higher customer acquisition rates and stimulate growth. Mobile banking provides unparalleled convenience, enabling customers to manage their accounts, make transactions, and access various financial services on the go (Martins, Oliveira & Popovič, 2014). This convenience enhances customer satisfaction and loyalty, leading to better customer retention rates. Customers who are loyal and satisfied are more likely to use more bank services and recommend the bank to others, contributing to growth. This study hypothesizes that:

H_3: Mobile Banking Usage has a positive impact on Bank Growth

2.4.1.4 POS usage and Bank Growth

POS terminals are one of the current and rising channel of providing new banking services, The device allows payments to be made with credit or debit cards in retail establishments, such as hotels, shopping malls, shops, and restaurants. Credit and debit cards can be used to conduct banking transactions 24 hours a day (Kajuju 2016). Increased POS usage leads to higher transaction volumes, which in turn generates more fee income for banks (Drigă and Isac, 2014). Banks earn a certain percentage of each transaction made through their payment processing services. As POS usage grows, the number of transactions processed by the bank also increases, contributing to their revenue stream. This study hypothesizes that:

H_4: POS usage has a positive impact or effect on Bank Growth

2.5 Summary of Chapter

This chapter discusses the ideas of electronic banking and bank expansion. Further discussion of the factors that influence bank expansion and the measures of bank

growth is included, as well as the rationale for Ghanaian banks' use of electronic banking. The chapter also summarises earlier research with supporting empirical data and explores ideas pertinent to the study. The chapter concludes with a conceptual review that provides a visual representation of how the research variables relate to one another.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The purpose of this chapter is to discuss the variables' methodologies used in assessing the impact of electronic banking on bank growth. Research design, study area population, sampling design, data collection instrument, data collection procedure, data presentation, and data analysis are all discussed in this chapter.

3.1 Research Design

The research design is the overarching plan for data gathering and analysis. (Asenahabi, 2019). Explaining the methods utilised for data collection and analysis, the time frame and location, and the sources of the data are all part of the research design (Sileyew, 2019). It demonstrates the thought processes, assumptions, approaches, and justifications researchers use when selecting a certain study methodology. In addition, Castleberry & Nolen, (2018) describe the research design as a thorough overview of the systematic and scientific techniques used in performing a study. The three forms of study design utilised in business research are exploratory, descriptive, and causal research (Ragab & Arisha, 2018).

Electronic banking and bank growth were analysed using an explanatory design. Zikmund, Babin, Carr, & Griffin (2012) explain how one variable influences another through causal research (explanatory research). Explanatory design examines the patterns of relationships between variables in a situation or a problem. Quantitative research, on the other hand, is similar to the explanatory design, focusing on acquiring numerical data and generalizing it across groups of people or explaining a particular phenomenon (Asenahabi, 2019). Qualitative research aims to examine cause-and-effect relationships between variables and assess the relationship between variables (Sileyew, 2019). Under defined conditions and settings, it illustrates how

manipulated variables influence other variables (Castleberry & Nolen, 2018). The goal of quantitative research is to use numbers, logic, and an objective stance to obtain and analyze data, as well as to use detailed, convergent reasoning rather than divergent reasoning (Asenahabi, 2019). Using a quantitative approach has the major advantage of allowing replication of the same phenomenon, which, in turn, is highly reliable. In this regard, the explanatory design and the quantitative approach are employed in this study. Statistical analysis is often used in quantitative research to connect what is known to what may be learned through study. To analyse quantitative data, descriptive or inferential statistics must be used to describe the relationships between variables. As a result, descriptive statistics can enable the estimation of parameters and conclusions about populations (Trochim 2000). Hence, the research approach used in this study is quantitative

3.2 Population of the study

This is regarded as the full range of components from which sampling can be made (LerigoSampson et al., 2022). Given that this population is typically undeveloped, it frequently contains components, units, or persons whose inclusion would be inconsistent with the objectives, context, or assumptions of the study (Asiamah et al., 2022). The two refined research populations derived from the general population are the target and accessible populations. All people or groups of individuals with whom researchers are interested in extrapolating the findings are referred to as the target population (Asiamah et al., 2022). The accessible population is a more affluent version of the target audience, excluded from the theoretical population (Wang and Cheng, 2020). The general population in this study consists of the managers, deputies and customers all commercial banks at Tema Metro. The total number of commercial banks at Tema Metro is sixty-five (65). Table 3.1 show the names and number of branches of commercial banks in Tema Metro.

Table 3. 1 Names and number of branches of commercial banks in Tema Metro.

Name of the Commercial Bank	Number of Branches
Ghana Commercial Bank	8
Guaranty Trust Bank	3
Sahel Sahara Bank	1
Bank Of Africa	3
Consolidated Bank Of Ghana	5
Standard Chartered Bank	1
Stanbic Bank Ghana	2
Societe Generale Ghana	4
Access Bank	6
Agricultural Development Bank	4
Cal Bank	1
Ecobank	7
Energy Bank	1
Fidelity Bank	2
First Atlantic Bank	2
Republic Bank	2
First National Bank	1
National Investment Bank	4
Prudential Bank Limited	2
United Bank Of Africa	2
Universal Merchant Bank	2
Zenith Bank	1
Barclays Bank	1
Total	65

Source: field survey (2022)

3.3 Sample Size and Sampling Technique

A sample is a portion of the population made up of individuals chosen at random (Klar & Leeper, 2019). From a total of 16,200 consumers, 250 are selected as a sample to complete the surveys at the case banks' designated branches. Yamane

developed a formula in 1967 to determine the sample size from a statistical population: thus,

$$n = \frac{N}{1 + N(e^2)}$$

Where,

n= sample size

N= "the total number of patrons who utilise one or more electronic products or services at the four chosen branches"

e = "the acceptable sampling error. The acceptable sampling error in this study was 5% (error margin 0.05)". The predicted sample is then calculated using the formula below:

$$n = \frac{16200}{1 + 16200\,(0.05\ \times 0.05)}$$

$n = 390.2 \approx 390$ Therefore n = 390.

According to the argument, the needs for sample size vary depending on the complexity of the model, with complicated models necessitating a larger sample size (Hair et al., 2021) (thus, models have several relationships between variables or independent variables or parameters that need to be estimated). ATM Usage, Internet Banking Usage, Mobile Banking Usage and POS usage are the dependent variables in the study's model, which has one independent variable Bank Growth. The study will use multiple regression analysis to assess this model. According to Hair et al. (2021), a sample size of one hundred to one hundred and Fifty is usually sufficient to identify a significant variation that is characterized by the use of multiple regression analysis. For the application of multiple regression analysis, a ratio of fifteen to twenty examples for each indicator is often sufficient (Hair et al., 2021). According to this advice, a sample size of at least 100 is required for this analysis given the number of

indicators employed in the study. A sample size of at least 150 or more is typically appropriate for the use of inferential statistics and can enable generalization, presuming the population is defined by the sample (Hair et al., 2021). After considering difficulties with non-response and flawed responses, 250 respondents will be engaged in this study.

The study will employ a non-probability technique. The study will apply three non-probability sampling technique thus; stratified sampling, convenience sampling, and purposive sampling. Phase one of the research begins with the researcher dividing the population into homogeneous subpopulations known as sections depending on particular personalities (i.e. group). Each person in the population under study should belong to one specific group. Then, each group will be sampled using the convenience sampling technique, enabling the researcher to derive statistical measures for each subpopulation. Using this method, the researcher only interviewed participants who are accessible and available. Using the purposive sampling strategy method, the researcher collected data from people who are knowledgeable about the topic and have the necessary traits to contribute useful information. As a result, this method was used to select managers, deputies and customers of the mentioned bank within Tema Metro. Researchers typically use these sampling techniques when a population has varied characteristics and they want to make sure that each trait is accurately represented in the sample. This aids in the study's validity and generalizability while preventing biases in the research process like under coverage bias.

3.4 Data and Data Collection

The study used primary data. Primary source of data is, by definition, first-hand information acquired directly from the field. The study's first-hand information was collected through questionnaires. The primary data was collected through self-administered questionnaires to Two Hundred and Fifty (250) respondents within Tema Metro. The questionnaires allow respondents to complete them privately hence, responses are likely be more representative of real issue under investigation.

3.4.1 Variables Description and Measurement (data and variables)

All variables used in this study are bank growth as dependent variables and four other explanatory variables thus (ATM Usage, Internet Banking Usage, Mobile Banking Usage and POS usage). The study chooses these variables because they are in line with the objectives of the study. Table 3.2, below examines the variables

Table 3. 2 Variables Description and Measurement

Variables	Symbol	Description	Measurement
Bank Growth	BG	Dependent	Minimum total score for each respondent is 10 (score of 1 time 10 questions – no growth) and maximum score is 70 (score of 7 times 10 questions–growth)
ATM Usage	ATM	Independent	The usage of the e-system by the respondent Minimum score is 6 (score of 1 time 6 questions–non-usage) and maximum is 42 (score of 7 times 6 questions– usage)
Internet Banking Usage	IBU	Independent	The usage of internet banking by the respondent. Minimum score is 6 (non-usage) and maximum is 42 (usage).
Mobile Banking Usage	MBU	Independent	The usage of mobile banking by the respondent. Minimum score is 6 (non-usage) and maximum is 42 (usage).
POS usage	POS	Independent	The usage of POS systems by the respondent. Minimum score is 6 (non-usage) and maximum is 42 (usage).

3.4.2 Data Collection Instruments

Based on the specific objectives of the study, questionnaires were used to collect the primary data. The questions were close-ended. The questionnaire was designed in

Three (3) sections. Section A solicited for information on preliminary issues of the respondents; section B contained questions on Electronic Banking Systems and section C which contains questions on Bank Growth. Participants responded to all items on a 7-point Likert scale (1= 'strong disagreement (SD)' to 7= 'strong agreement (SA)'. A general preamble on the constructs guided the respondents on the meaning of the question and the appropriate responses needed from them.

3.5 Validity and Reliability of Variables

The questionnaire will undergo testing to ensure both its content validity and reliability. These two measures are essential to guarantee the accuracy and effectiveness of the instrument for research purposes. Content validity assesses how accurately a method measures its intended target (Sekaran & Bougie, 2011) and is established through expert panels and field tests. On the other hand, reliability indicates the extent to which an experiment, test, or measurement consistently yields the same result when repeated. Additionally, internal consistency can be assessed using Cronbach's Alpha and composite reliability (Hair, Hult, Ringle & Sarstedt, 2017). Cronbach's Alpha provides an estimate of reliability based on the intercorrelations of indicators. However, in Structural Equation Modeling (SEM) and Multiple Regression, composite reliability is preferred (Henseler, Ringle & Sinkovics, 2009). While both Cronbach's Alpha and composite reliability measure internal consistency, the latter takes into account that indicators may have different loadings. Henseler et al. (2009) argue that Cronbach's Alpha can underestimate the internal consistency reliability of latent variables in regression models, making composite reliability a more suitable measure. According to Henseler et al., a value of

0.7 or higher is considered satisfactory, while a value below 0.6 indicates a lack of reliability.

3.6 Ethical Consideration

The empirical research in this study focuses on the interactions between independent (ATM Usage, Internet Banking Usage, Mobile Banking Usage and POS usage) and dependent variables (Bank Growth). Hair et al. (2011) recommended Structural Equation Modelling (SEM) as the most appropriate analytical strategy for this type of analysis because it allows for the simultaneous execution of multiple processes while preserving the analysis' resiliency and making sure the thoroughness and authenticity of the findings acquired. It's also a flexible and powerful tool that integrates multiple regression and factor analysis elements. As analytical tools, the IBM Statistical Package for Social Science (SPSS) version 26 and IBM's Analysis of Moments of Structures (AMOS) version 23 software programs were used. The data was coded, screened, and cleaned using SPSS, as well as a multivariate analysis of variance (MANOVA). The data was then sent to Amos 23 for the second step of the study, which comprised structural equation modelling (SEM).

3. 7 Chapter Summary

The methods the researcher uses to get the information required to address the research questions are covered in length in this chapter. There includes thorough discussion of the demographic and sample size, as well as the research methodology and sampling strategy. The chapter also describes how the research instrument was created, how data were collected, and how they were analysed. This information is necessary for the analysis and interpretation of the data that were gathered.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the results and discussions of the study. This section is structured as follows; Section 4.1 presents the rate of response. Section 4.2 presents the socio-demographic characteristics of respondents. Section 4.3 and 4.4 presents the descriptive statistics and measurement model, where the common method bias test, sampling adequacy, reliability, validity, discriminant validity and Heterotrait-Monotrait ratio of e-banking channel and bank growth were examine, Section 4.5 examines the relationship between e-banking channel and bank growth by way of a path diagram. Section 4.6 presents hypothesis testing. Finally, Section

4.7 presents discussions and findings of the study.

4.1 Socio-demographic characteristics

The respondent's background information is covered in the first portion of the analysis. Sex, age, marital status, educational level, occupational status and number of years using e-banking systems are among the factors considered. The specifics of the data presented are listed below as shown in Table 4.2.

Table 4. 1 Demographic Characteristics of Respondents Demographic

Characteristics	Frequency	Percent	Cumulative Percent
Sex			
Female	86	41.5	41.5
Male	121	58.5	100.0
Age			
25-34 yrs	29	14.0	14.0
35-44 yrs	56	27.1	41.1
45 -54 yrs	95	45.9	87.0
Above 54 yrs	27	13.0	100.0
Marital Status			

Dating	27	13.0	13.0
Divorce	6	2.9	15.9
Married	107	51.7	67.6
Single	67	32.4	100.0
Educational level			
Degree	185	89.4	89.4
Diploma	22	10.6	100.0
Occupational Status			
Employed	109	52.7	52.7
Retired	15	7.2	59.9
Self-Employed	55	26.6	86.5
Student	7	3.4	89.9
Unemployed	21	10.1	100.0
Yrs of using E-banking System			
11-13 yrs	77	37.2	37.2
4-6 yrs	62	30.0	67.1
7-10 yrs	68	32.9	100.0

Source field data (2023)

The respondents' descriptive data is shown in Table 4.1. Males make up the majority of the study sample. That is, males account for 58.5% of the population, while females account for

41.5%. 45.9% of respondents were between the ages of 45 to 54 years which from the majority. 27.1% were between the ages of 35 – 44 years followed by those between the ages of 25-34 years, which accounted for 14% and lastly those above 54 years were 13%. The finding of the study indicates that most respondents were married representing 51.7%. 32.4% were single whiles 13% were dating or in a relationship. However, 2.9% of the respondents indicated that they were divorced. Concerning the educational level of respondents, the study found that 89.4% of respondents had obtained a degree while the rest had obtained Diploma certificate. This suggests that all of the responders have had some level of education. Examining the occupational status of the respondents, 52.7% indicated that they were employed. However, the study failed to inquirer the sector they work for thus either public or

private sector. 26.6% indicated that they were self-employed whiles 3.4% indicate that they were students. Finally, 10.1% indicated that they are retired from active service. The study assessed respondents' experience level in the usage of e-banking systems. Results showed 37.2% had used e-banking system between 11-13 years, 32.9% had used it between 7-10 years and finally, 30% had used it between 4-6 years.

4.2 Response Rate

The response rate in a research study refers to the proportion of individuals who participate in the study out of the total number of individuals who were invited or eligible to participate. A critical factor can significantly impact the validity, reliability, and generalizability of research findings. Generally, a 50% to 70% response rate is satisfactory, above 80% response rate is acceptable. The study's sample size was established at 250 individuals comprising of the managers, deputies and customers all commercial banks at Tema Metro. However, 207 individuals made themselves available and accessible to respond and part take in the survey given a total rate of response of 83% of which is higher than 50%. Making the response rate acceptable. Table 4.1 shows the response rate of the study.

Table 4. 2: Response Rate

Distributed	Collected	Percentage of Usable
Response	207	82.8
Non-Response	43	17.2
Total	250	100.0

Source: Field Data, 2022

4.3 Descriptive statistics

This section commences by providing an overview of the report, summarizing the analysis conducted to meet the study's objectives. It also represents a summary of the electronic banking variables examined. The analysis primarily employed numerical

descriptive statistics, including mean and standard deviation rather than graphical measures.

Table 4. 1 Descriptive Statistics

Variables	Code	N	Minimum	Maximum	Mean	Std. Deviation
Automated Teller Machines	ATM	207	1.00	7.00	4.3253	1.76496
Internet Banking Usage	IBU	207	1.00	7.00	4.0274	1.42260
Point-of-Sale System Usage	POS	207	1.00	6.50	3.0870	1.31447
Mobile Banking Usage	MBU	207	1.17	7.00	4.5459	1.53489
Bank Growth	BG	207	1.00	7.00	4.2198	1.57669

Source field data (2023)

4.4 Assessment of Measurement Model

Examination of the quality of the measurement model and calculation of the structural model parameters is done using the Partial Least Squares approach. Assessment of common method bias test, kmo and bartlett's test, reliability and validity of the measurement model are initially done before examining the links within the structural model. Thus, this section reports the results of each of the analyses used in assessing the validity and reliability of the measurement model.

4.4.1 Common Method Bias Test

It is important to consider the potential for common method bias or variance when analysing self-reported data, as it can be influenced by factors such as social desirability (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To address this concern, this study followed the suggestions of Podsakoff and Organ (1986) by conducting statistical analyses to assess common method bias. The Harmon one-factor test was utilized to examine whether measures were affected by common method bias, as it can lead to inflated or deflated intercorrelations among the measures based on various factors. In this test, a factor analysis was conducted on all

relevant variables without rotation, aiming to observe the emergence of multiple factors. If a single factor does not dominate and account for most of the variance, it can be concluded that common method variance is not significant.

Regarding the results of the common method bias test, one factor emerged. When this factor explains over 50% of the variance, it indicates the presence of a problem. However, in this study, the factor explained only 35.916% of the variance. Although there is evidence of some common method variance, it falls below the required criterion of 50%.

Table 4. 2 Common method bias test

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.702	37.358	37.358	12.212	35.916	35.916

Extraction Method: Principal Axis Factoring.

4.4.2 Sampling Adequacy

The study employed the Bartlett sphericity test and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) to evaluate the representativeness of the sample. The KMO score obtained from the sample is .905, indicating a high level of adequacy for conducting factor analysis. This result can be deemed as highly satisfactory. Furthermore, the statistical significance of the Bartlett's test indicates that the dataset is appropriate for conducting a factor analysis assessment ($\chi^2 = 6121.386$, df.: 561, p < 0.05) as evidence of appropriate sampling, are illustrated in Table 4.4. These results demonstrate the significance of the study's sample size.

Table 4. 3 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.905
Bartlett's Test of Sphericity	Approx. Chi-Square	6121.386
	Df	561

Sig.		0.000

Source field data (2023)

4.4.3 Validity

Convergent validity is established when one test exhibits a level of convergence with other tests that evaluate the same or similar constructs. Convergent validity indicators can be established through both theoretical and empirical sources. Conducting multiple assessments targeting the same constructs can serve as a means to evaluate the validity of diverse measurement techniques employed to assess a specific characteristic. An instance of convergence can be observed in a linkage of moderate strength, which is characterized by a degree of connectivity that is neither exceedingly robust nor feeble. The measures of convergent validity that are commonly employed include both average variance extracted (AVE) and factor loading (FL). Researchers typically recommend factor loadings and AVE that exceed 0.5. All factor loadings in the table 4.5 exceeded the threshold of 0.5.Again in Table 4.6 shows that all of the AVEs are more than 0.5, indicating that all of the constructs in the measurement model have appropriate convergent validity (Hair et al., 2011).

4.4.4 Reliability

One may assess the reliability of constructs through either of two primary approaches. The evaluation of a measuring instrument's internal consistency is commonly conducted with two statistical indices, namely Cronbach's alpha (CA) and composite reliability (CR). CA assesses the reliability of apparent indicator constructs by examining their correlations, whereas construct reliability CR evaluates the extent to which one set of items can predict the latent variable of another set. A construct is deemed reliable if it attains a CR or CA score of 0.70 or higher. According to the findings presented in Table 4.6, all the computed CR and CA values were above the

score of 70. The results indicate that the model exhibits undimensionality and demonstrates consistent replication of outcomes.

Table 4. 4 Factor loadings

	Items	1	2	3	4	5
Automated Teller Machines	ATM1	.827				
	ATM2	.851				
	ATM3	.802				
	ATM4	.799				
	ATM5	.764				
	ATM6	.798				
Internet Banking Usage	IBU1		.722			
	IBU2		.677			
	IBU3		.640			
	IBU4		.812			
	IBU5		.799			
	IBU6		.791			
Point-of-Sale System Usage	POS1			.810		
	POS2			.851		
	POS3			.828		
	POS4			.838		
	POS5			.649		
	POS6			.828		
Mobile Banking Usage	MBU2				.893	
	MBU3				.862	
	MBU4				.891	
	MBU5				.878	
	MBU6				.790	
Banking Growth	BG1					.834
	BG2					.770
Factors		1	2	3	4	5
	BG3					.735
	BG4					.609
	BG5					.618
	BG6					.610
	BG7					.752
	BG8					.767
	BG9					.764
	BG10					.748

Extraction Method: Principal Component Analysis.

Table 4. 5 Reliability and validity results

Variables	Code	CR	CA	AVE
Automated Teller Machines	ATM	0.918	0.937	0.652
Internet Banking Usage	IBU	0.880	0.805	0.552
Point-of-Sale System Usage	POS	0.916	0.830	0.646
Mobile Banking Usage	MBU	0.936	0.857	0.745
Bank Growth	BG	0.916	0.937	0.525

Source field data (2023)

4.4.5 Discriminant Validity

To measure the discriminant validity of construction in the study, the Heterotrait-Monotrait

(HTMT) approach, employing cross loading, the Fornell and Larcker criterion were

used. However, the most commonly used measurement in practice is the Fornell and

Larcker (1981) which compares the AVE value of each construct to its squared

correlation with all other constructs in the structural model. The square root of a

construct's AVE should be bigger than the correlations between the constructs,

according to the Fornell-Larcker criterion. The square roots of the AVEs in the

diagonals are larger than the correlations between the constructs displayed beneath

the values in the diagonals, according to Table 4.7. As a result, the findings complied

with Fornell and Larkers' (1981) guideline and demonstrated discriminant validity.

Table 4. 6 Discriminant Validity

Variables	1	2	3	4	5
BG	0.724				
ATM	.693	0.807			
IBU	.706	.708	0.743		
POS	.461	.340	.438	0.804	
MBU	.175	.114	.087	.068	0.863

4.4.6 Heterotrait-Monotrait Ratio (HTMT Criterion)

The HTMT is the second method for determining discriminant validity. It is the average of the correlation of the indicators in a construct, according to Henseler, Ringle, and Sarstedt (2015). In the existing research, the proposed threshold for demonstrating discriminant validity using the HTMT technique has been a source of debate. To obtain discriminant validity, some studies advocate a correlation between constructs of less than 0.85 (Clark & Watson, 1995), while others recommend a correlation of 0.90 (Gold, Malhotra & Segars, 2011). Table 4.8 shows that the results are below both recommended limits, indicating that discriminant validity was satisfactorily accomplished in the study.

Table 4. 7 Heterotrait-Monotrait Ratio (HTMT Criterion)

Variables	1	2	3	4	5
BG ATM	0.735				
IBU	0.866	0.810			
POS	0.535	0.383	0.540		
MBU	0.200	0.134	0.108	0.0792	

4.5 Path Diagram

Figure 4.1 represents the path diagram that was used as a guide in examining the hypotheses of the study in Amos 23. The path diagram is based on the conceptual framework of the study and depicts the relationships between the variables of interest in the study. The direct relationships hypothesized between the e-banking systems (ATM Usage, Internet Banking Usage, Mobile Banking Usage, and POS Usage) and bank growth.
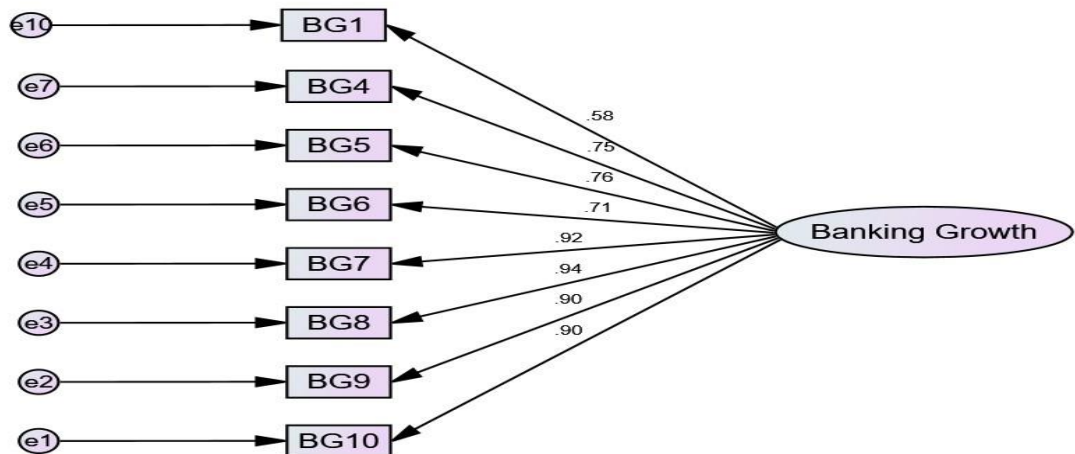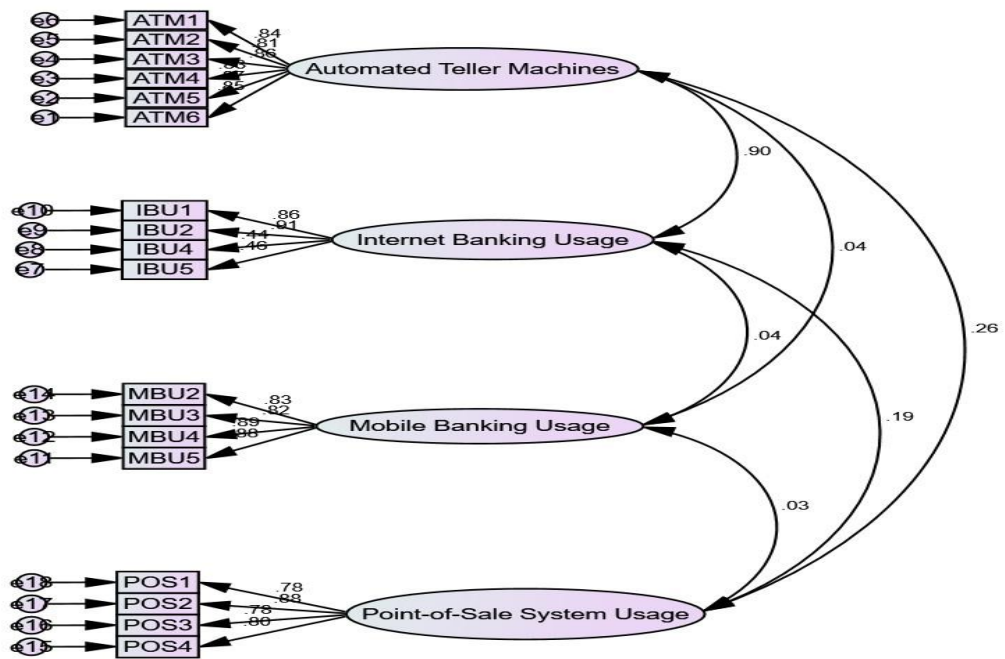
Figure 4. 1 Path Diagram

4.6 Testing of Results

The questionnaire will undergo testing to ensure both its content validity and reliability. These two measures are essential to guarantee the accuracy and effectiveness of the instrument for research purposes. Content validity assesses how

accurately a method measures its intended target (Sekaran & Bougie, 2011) and is established through expert panels and field tests. On the other hand, reliability indicates the extent to which an experiment, test, or measurement consistently yields the same result when repeated. In addition, internal consistency can be evaluated using two methods: Cronbach's Alpha and composite reliability, as discussed by Hair, Hult, Ringle, and Sarstedt in 2017. Cronbach's Alpha estimates reliability by analyzing the correlations between indicators. However, in the context of Structural Equation Modeling

(SEM) and Multiple Regression, composite reliability is preferred, as advocated by Henseler, Ringle, and Sinkovics in 2009. Both Cronbach's Alpha and composite reliability gauge internal consistency, but the latter accounts for potential variations in indicator loadings. Henseler et al. (2009) argue that Cronbach's Alpha may underestimate internal consistency reliability in regression models, making composite reliability a more suitable measure. According to their recommendation, a value of 0.7 or higher is considered satisfactory, while a value below 0.6 indicates insufficient reliability.

Table 4. 8 Linear Regression Results: Predictors of the Bank Growth

Regression Model		T	VIF
Constant	-0.006*(.279)	-0.0199	
ATM	0.266***(.053)	5.0102	2.019
IBU	0.525***(.069)	7.6532	2.197
POS	0.175***(.056)	3.1404	1.241
MB	0.092**(.043)	2.1367	1.014
Model statistics			
F	92.743		
R square	0.647		
	0.640		

Adjusted R square

n = 207, Unstandardized coefficients are reported. Standard errors are presented in parentheses Significance at *p < .1, **p < .05, *** p < .001

4.7 Discussion of Results

Linear regression was employed to assess the hypotheses. Table 4.10 presents the outcomes of the regression analysis. The bank's growth is the dependent variable, while ATM Usage, Internet Banking Usage, Mobile Banking Usage, and POS Usage serve as predictors. Table 4.9's regression model demonstrates that the introduction of innovative banking services channels has a substantial and favorable impact on enhancing the bank's growth. It shows that the regression model explains 65% of the variation in the bank's growth, a highly significant finding (p < .001). The model emphasizes the importance of ATM usage (unstandardized B = .27, p < .001), internet banking usage (B = .53, p < .001), POS banking (B = .18, p < .001), and mobile banking usage (B = .09, p < .05) in positively influencing bank growth, thereby providing support for Hypotheses 1

4.7.1 Relationship between Automated Teller Machines (ATMs) and Bank Growth

The initial factor investigated in this study focused on the usage of Automated Teller Machines (ATMs). Sasidharan and Mathews (2008) conducted an analysis of the advantages associated with ATMs, which encompass a broad spectrum of banking functions such as withdrawals, bill payments, deposits, access to statements, and round-the-clock banking services. ATMs are acknowledged for their convenience, innovative features, security, and their capacity to serve as an appealing value-added service to attract new clients. Additionally, according to González et al. (2008), the utilization of Automated Teller Machines (ATMs) has several favorable effects on a

bank's growth and overall operations. The results of the linear regression analysis presented in Table 4.10 show a significant positive relationship between Automated Teller Machines (ATMs) usage and bank growth (b = .266, p < 0.001). This is consistent with the hypothesis proposed in the current study, which implies that Automated Teller Machines

(ATMs) usage is a strong determinant that enables the banks to reach a higher level of growth.

The positive association that the current study observed between Automated Teller Machines (ATMs) usage and bank growth is consistent with the study of Allam (2010), who indicated that ATMs provide customers with 24/7 access to their accounts, allowing them to perform a variety of banking transactions such as cash withdrawals, deposits, balance inquiries, and fund transfers outside of regular banking hours. This convenience can attract and retain customers, enhancing the bank's customer base and overall growth. Also the study of Sharma, Sharma & Khan, (2019) they stressed that ATM usage can significantly reduce the operational costs associated with traditional brick-and-mortar branches. Banks can serve a larger number of customers with fewer staff members, lower rent and utility expenses, and reduced overhead. This cost efficiency can contribute to improved profitability and resource allocation for other growth initiatives. Again the study of Singanamalla et al., (2019) indicated that ATM usage offers customers convenient which intern increase or enhance customer loyalty based on that customers are more likely to stick with a bank that provides easy access to their accounts. High customer retention rates can result in stable and sustainable growth.

4.7.2 Relationship between Internet Banking Usage and Bank Growth

The second factor tested in this study was internet banking usage. Various studies have identified internet banking usage as one of the most another important factors

that affect the bank growth (Mahmoodi and Naderi 2016; Shen and Cheung 2018; Martins et al. 2014;

Argamo 2015). The positive effects of internet banking usage on bank growth are significant and multifaceted. The results of the linear regression analysis presented in Table 4.10 show a significant positive relationship between internet banking usage and bank growth (b = 0.525, p < 0.001). This is consistent with the hypothesis proposed in the study, which implies that internet banking usage (IBU) has a strong impact on bank growth. The findings is consistent with of Mahmoodi and Naderi (2016) of which they indicated that internet banking provides customers with convenient access to a wide range of banking services, such as account management, fund transfers, bill payments, and more, without the need to visit physical branches. This convenience attracts new customers and retains existing ones, contributing to a larger and more loyal customer base. Also with the study of Shen and Cheung (2018) they stressed that with internet banking, geographical barriers become less relevant. Banks attract customers from different regions and even internationally. This expanded reach allows the bank to tap into new markets and diversify its customer portfolio, fostering growth. The study of Argamo (2015) also added that internet banking generates a wealth of data regarding customer preferences, behavior, and transaction patterns. Banks can leverage this data to make informed decisions about product offerings, marketing strategies, and customer service improvements, leading to more effective growth strategies, again the digital landscape is constantly evolving, and banks that embrace internet banking are better positioned to adopt emerging technologies and trends. This adaptability ensures the bank remains competitive and can quickly respond to changing customer expectations.

4.7.3 Relationship between POS usage and Bank Growth

For the variable of POS usage, the findings showed a positive relationship between POS usage and bank growth. This result indicates that the level of POS usage has a positive impact on bank growth. These results is in line with the objective propose of the current study, which shows a positive and significant direction ($b = 0.175$, $p < 0.001$). This could be attributed to the fact that POS systems enable businesses to process a higher volume of transactions, particularly debit and credit card payments. As POS usage grows, the overall number of transactions processed through the bank's payment processing services increases. This surge in transaction volume directly translates to higher revenue for the bank through transaction fees and related charges. The study of Kajuju (2016) indicated that banks that offer superior POS services can differentiate themselves in the market. This competitive advantage can lead to increased market share as businesses and consumers prefer to work with a bank that provides reliable and convenient payment solutions. Hosseini and Mohammadi (2012) also stated that with the increasing shift towards digital payments, compliance with regulatory standards and technology requirements becomes crucial. Banks that excel in implementing compliant POS systems position themselves as reliable partners for businesses, fostering trust and credibility. In conclusion, Bahrami et al. (2014) emphasized that POS terminals are easily accessible and play a significant role in streamlining banking transactions, thereby contributing to the enhancement of a bank's growth. This finding aligns with the research conducted by Bahrami et al. (2014), as well as studies by Hosseini and Mohammadi (2012) and Kajuju (2016). All of these studies have consistently shown a significant and positive relationship between POS usage and bank growth.

4.7.4 Relationship between Mobile Banking Usage and Bank Growth

In the final analysis, the study investigated the variable of mobile banking usage (MBU), and the results revealed a positive correlation between mobile banking usage and bank growth. This outcome suggests that higher levels of mobile banking usage have a favorable influence on a bank's growth. These results is in line with the objective propose of the current study, which shows a positive and significant direction (b = 0.092, p < 0.05). This could be attributed to the fact that mobile banking allows customers to access their accounts, make transactions, pay bills, transfer funds, and manage their finances on the go, anytime and anywhere. This high level of convenience enhances customer satisfaction and encourages engagement with the bank's services, leading to increased loyalty and growth. Furthermore Bahrami et al. (2014) stated that mobile banking apps often provide tools for financial management, budgeting, and investment tracking. These interactive features keep customers engaged with their finances and encourage them to use the app regularly, fostering a deeper connection with the bank. In addition, Rauf & Qiang (2014) stated that just like internet banking, mobile banking reduces the need for customers to visit physical branches. This leads to cost savings in terms of operational expenses, staffing, and infrastructure. The saved resources can be reinvested in growth initiatives. Martins, Oliveira & Popovič, (2014), also pointed out that mobile banking generates valuable data about user behavior, spending patterns, and preferences. Banks can analyze this data to gain insights into customer needs and tailor their services accordingly. This data-driven approach supports more effective decision-making and growth strategies.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the findings of the study, highlighting the conclusions and detailing possible recommendations to the study. Following the completion of the investigation, results were derived and suggestions were formulated. The study represents a summary of it results, which examines the impacts of electronic banking channels on bank growth in Ghana. The study summary provides an overview of the research, which includes the study's methodology, its findings and a discussion of the results.

5. 1 Summary of Findings

The primary goal was to examine the impact of e-banking channels or system on bank growth; evidence from Ghana. Specifically, it provides an empirical evaluation of four variables of ebanking channels; namely, automated teller machines (ATMs), internet banking, POS terminals and mobile banking. A basic descriptive survey was utilized as the research strategy. Two Hundred and Seven (207) individuals consisting of the managers, deputies and customers all commercial banks at Tema Metro were involved in the research. The study utilized nonprobability sampling methods. Data analysis was conducted using SPSS version 26 and Amos 23, which involved examining descriptive statistics and regression analysis results. The following are the findings of the study:

1. The results of the linear regression analysis showed a significant positive relationship between Automated Teller Machines (ATMs) usage and bank growth (b = .266, p <

0.001). This is consistent with the hypothesis proposed in the current study, which implies that Automated Teller Machines (ATMs) usage is a strong determinant that enables the banks to reach a higher level of growth.

2. The findings showed a significant positive relationship between internet banking usage and bank growth (b = 0.525, p < 0.001). This implies that the use of internet banking provides customers with convenient access to a wide range of banking services, such as account management, fund transfers, bill payments, and more, without the need to visit physical branches. This convenience attracts new customers and retains existing ones, contributing to a larger and more loyal customer base.

3. This result indicates that the level of POS usage has a positive impact on bank growth. These results is in line with the objective propose of the current study, which shows a positive and significant direction (b = 0.175, p < 0.001). This could be attributed to the fact that POS systems enable businesses to process a higher volume of transactions, particularly debit and credit card payments. As POS usage grows, the overall number of transactions processed through the bank's payment processing services increases. This surge in transaction volume directly translates to higher revenue for the bank through transaction fees and related charges.

4. Finally the findings also showed a positive significant impact between mobile banking usage and bank growth (b = 0.092, p < 0.05). This could be attributed to the fact that mobile banking allows customers to access their accounts, make transactions, pay bills, transfer funds, and manage their finances on the go, anytime and anywhere. This high level of convenience enhances customer satisfaction and encourages engagement with the bank's services, leading to increased loyalty and growth.

5.2 Conclusion

The widespread adoption of E-banking systems has redefined customer experience by providing unparalleled convenience and accessibility. Customers can now conduct financial transactions, access account information, and manage their finances anytime, anywhere. This heightened convenience has translated into increased customer engagement, satisfaction, and ultimately, loyalty. For banks, the integration of E-banking systems has brought about operational efficiencies, reducing the need for physical infrastructure and personnel for routine transactions. This streamlined approach has not only lowered operational costs but has also freed up resources that can be redirected towards strategic initiatives and innovation.

Based on the findings of this study, banks and financial organisations can focus on developing innovative ways to present their services in order to remain competitive and grow. This paper contributes to the large, but still growing, literature on banking growth. The obtained results align with the research of González et al. (2008), which suggested that ATM usage enhances service quality, customer convenience, and ultimately contributes to increased bank growth. This finding is also consistent with Thakur's (2014) insights regarding the link between ATM usage, customer loyalty, and bank growth. The positive impact can be attributed to ATMs reducing service costs and enhancing accessibility. Furthermore, the study's second set of findings highlights the significant influence of internet banking usage on a bank's growth. This observation resonates with Gerlach's (2000) findings that internet banking can reduce costs and enhance competitiveness for traditional banks. Notably, your study extends this understanding by assessing this relationship in the context of a traditional developing country, adding substantial value to the existing knowledge

The results also supported the effect of mobile banking and bank growth. The widespread adoption of mobile banking has redefined the customer experience, offering unparalleled convenience and accessibility. Customers now possess the ability to manage their finances, conduct transactions, and access critical information from the palm of their hands. This heightened convenience has not only deepened customer engagement and satisfaction but has also fostered stronger brand loyalty. Again For banks, mobile banking represents a gateway to operational efficiency and enhanced competitiveness. The reduction in foot traffic at physical branches, thanks to the convenience of mobile banking, has streamlined operational costs. This efficiency, in turn, allows banks to allocate resources toward innovative initiatives and strategic expansion, bolstering overall growth. The integration of mobile banking has also unlocked new avenues for revenue generation. Banks can capitalize on this digital platform to offer an array of financial products and services, effectively reaching customers on a more personalized level. This tailored approach, driven by real-time data analytics, enables banks to craft targeted marketing strategies and product offerings, thereby fostering greater customer engagement and cross-selling opportunities

Lastly, the findings from your study contribute valuable insights into the role of POS usage in enhancing a bank's competitive position. The results underscore a noteworthy and significant relationship between POS usage and bank growth, suggesting that utilizing POS services can indeed bolster a bank's standing in relation to its competitors. The exponential growth in POS usage has redefined the way businesses and consumers conduct transactions, fostering a seamless and efficient payment ecosystem. This evolution has not only enhanced the overall transaction experience but has also led to increased transaction volumes, directly contributing to a

surge in revenue for banks. The transaction fees and associated charges generated through

POS usage serve as a direct and reliable revenue stream, bolstering the financial health of banks. Furthermore, POS usage has led to revenue diversification, reducing banks' dependency on traditional banking activities. As more businesses adopt POS systems, banks are better positioned to cultivate strong relationships with merchants, potentially offering additional financial services that span beyond payment processing. This expansion of services contributes not only to revenue growth but also to the establishment of more comprehensive partnerships that drive mutual success.

5.3 Recommendations

In summary, the study offers a valuable recommendation to bank managers aiming for growth. It suggests that focusing on the enhancement of new and innovative customer service channels, such as automated teller machines, internet banking, mobile banking, and POS banking services, is crucial. By keeping these services up-to-date and continually developing them, bank managers can effectively attract and retain customers, ultimately leading to increased levels of growth for their banks. The banks should invest in robust cyber security measures to safeguard customer data and transactions. Implement multi-factor authentication, encryption, and regular security audits. Building trust in the security of your e-banking systems is essential to retaining customers and attracting new ones. The banks should actively promote their ebanking platforms through targeted marketing campaigns. Highlight the benefits of convenience, speed, and accessibility that e-banking offers. Effective marketing can attract new customers and encourage existing ones to explore their digital offerings. The banks should prioritize user experience by designing intuitive and user-friendly interfaces for their e-banking platforms. They should ensure that customers could

easily navigate through services, access information, and conduct transactions. A seamless user experience fosters customer satisfaction and encourages repeat usage.

5.4 Limitations and Suggestions for Further Research

The research has some limitation that need to be addressed. The study employs a cross-sectional design, thereby constraining the capacity to establish causal relationships between ebanking channels and bank growth. Utilising a longitudinal study design would be a more suitable approach for establishing causality and comprehensively capturing fluctuations in the variables over an extended period. The implementation of a Likert scale as a means of data collection may potentially result in biased outcomes, as participants may exhibit a tendency to opt for the neutral option in order to evade the expression of extreme viewpoints. Subsequent research endeavors may consider employing alternative techniques for data gathering, such as conducting interviews and organizing focus groups, in order to obtain more intricate and detailed information.

The study's scope was limited to Ghana specifically Tema Metro, Future study should adopt a cross-country analysis. Comparing the adoption and impact of e-banking on bank growth across different countries and regions. Investigate how cultural, regulatory, and economic factors influence the relationship between e-banking and bank growth.

Thirdly, the study excludes a number of dependent variable, such as financial inclusion, the study on how e-banking contributes to financial inclusion by extending banking services to underserved populations. Analyze the impact on bank growth when previously unbanked or under banked individuals gain access to e-banking services. Again further studies can investigate how e-banking adoption affects the

growth and financial management practices of small and medium-sized enterprises. Explore whether e-banking facilitates easier access to financial services for these businesses and the subsequent impact on their growth trajectory.

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APPENDIX

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND

TECHNOLOGY SCHOOL OF BUSINESS

TOPIC: IMPACT OF ELECTRONIC BANKING CHANNELS ON BANK

GROWTH

IN THE GHANA

Dear Participant,

This research is a Master of Business Administration (Finance Option) thesis being undertaken by Deborah Obeng, a postgraduate student of the School of Business of the Kwame Nkrumah University of Science and Technology, Tema. The research is conducted solely for academic purposes as a requirement in fulfilling of a master's degree. Responses given shall be private and anonymous. You are therefore respectfully urged to be as candid as possible. Also, you are at free will to decline from participating in this survey at any point during the course of participating in this survey.

Thank you in advance for accepting to participate in this survey.

SECTION A: ELECTRONIC BANKING USAGE

Kindly rate your level of agreement to each of these electronic banking usage indicators by a [✓] on a 7- point Likert scale with 1= strongly disagree, and 7=strongly agree.

CODE	ELECTRONIC BANKING USAGE	1	2	3	4	5	6	7
ATM	Automated Teller Machines	1	2	3	4	5	6	7
ATM 1	I enjoy using ATM services for all my banking transactions	1	2	3	4	5	6	7
ATM 2	ATM services are always reliable to me	1	2	3	4	5	6	7
ATM 3	ATM services are readily available for use in my location	1	2	3	4	5	6	7
ATM 4	ATM usage is less costly in terms of monthly and transaction charges.	1	2	3	4	5	6	7
ATM 5	ATM machines are easy and convenient to use	1	2	3	4	5	6	7
ATM 6	ATM enables me have a better control over my finances	1	2	3	4	5	6	7
IBU	Internet Banking Usage	1	2	3	4	5	6	7
IBU1	I enjoy using internet banking services for my transactions at my own convenience and time without going to the bank	1	2	3	4	5	6	7
IBU2	The usage of internet banking is less costly	1	2	3	4	5	6	7
IBU3	I am able to transfer funds from my account to other account through internet banking without going to the bank	1	2	3	4	5	6	7
IBU4	I am able to transfer any amount of money to other people with the use of internet banking	1	2	3	4	5	6	7
IBU5	Internet banking helps me to make online payment.	1	2	3	4	5	6	7
IBU6	I encountered difficulties and issues while using electronic banking services	1	2	3	4	5	6	7
MBU	Mobile Banking Usage	1	2	3	4	5	6	7
MBU1	I enjoy using mobile banking because it is simple to use	1	2	3	4	5	6	7
MBU2	I find mobile banking apps convenient for transferring funds between accounts.	1	2	3	4	5	6	7
MBU3	I am concerned about the security of my personal and financial information when using mobile banking apps	1	2	3	4	5	6	7
MBU4	Mobile banking provide the necessary information for customers through SMS in a high-quality and welldifferentiated way	1	2	3	4	5	6	7
MBU5	Mobile banking apps provide me with sufficient information about my financial status	1	2	3	4	5	6	7
MBU6	I prefer using mobile banking apps over visiting a physical bank branch for basic transactions.	1	2	3	4	5	6	7
POS	Point-of-Sale System Usage	1	2	3	4	5	6	7

POS1	I find the Point-of-Sale system easy to navigate and use	1	2	3	4	5	6	7
POS2	I am able to quickly learn and adapt to new features introduced in the Point-of-Sale system.	1	2	3	4	5	6	7
POS3	The reporting and analytics features of the Point-of-Sale system help me make informed business decisions.	1	2	3	4	5	6	7
POS4	POS usage has reduce the carrying of physical cash for purchases	1	2	3	4	5	6	7
POS5	The security features of the Point-of-Sale system make me feel confident in processing payments.	1	2	3	4	5	6	7
POS6	The Point-of-Sale system efficiently processes transactions and payments	1	2	3	4	5	6	7

SECTION B: BANK GROWTH

Kindly rate your level of agreement to each of these electronic banking usage indicators by a [✓] on a 7- point Likert scale with 1= strongly disagree, and 7=strongly agree.

CODE	BANKING GROWTH (BG)							
	Statements	1	2	3	4	5	6	7
BG1	The services provided by electronic banking channels has increase the customer base of banks	1	2	3	4	5	6	7
BG2	Electronic banking has helped reduce too much paperwork at the banking halls	1	2	3	4	5	6	7
BG3	Banks who have electronic banking have competitive advantage over those that do not have	1	2	3	4	5	6	7
BG4	Electronic banking enables commercial banks to grow their sales base on commissions and fees charged with the use on electronic banking	1	2	3	4	5	6	7
BG5	Electronic banking has increase the deposit rate of banks due to huge sums of money transfers	1	2	3	4	5	6	7
BG6	Electronic banking enables commercial banks to obtain large market share as compared to other financial service providers	1	2	3	4	5	6	7
BG7	The expansion of digital banking services is contributing significantly to the growth of the banking sector.	1	2	3	4	5	6	7
BG8	Regulatory changes and innovations are creating opportunities for the banking industry to grow.	1	2	3	4	5	6	7
BG9	The expansion of digital banking services is contributing significantly to the growth of the banking sector.	1	2	3	4	5	6	7
BG10	Electronic banking has necessitated the rise of fraudulent activities in the banking industry	1	2	3	4	5	6	7

SECTION C: DEMOGRAPHICS

Please tick (√) as appropriate

Gender of respondent:
Male   [ ]
Female   [ ]

Age of respondent:
25-34yrs   [ ]
35-44yrs   [ ]
35-39yrs   [ ]
45-54yrs   [ ]
55+yrs   [ ]

Highest level of education

JHS   [ ]
SHS   [ ]
Diploma   [ ]
Degree   [ ]

Marital Status

Single   [ ]
Dating   [ ]
Married   [ ]
Divorced [ ]

No. of years of using Electronic Banking:
Under 1-3yr   [ ]
4-6yrs   [ ]
7-10yrs   [ ]
11-13yrs   [ ]

Occupation of respondent:
Student   [ ]
Self-employed [ ]
Employed   [ ]
Unemployed   [ ]

THE END, THANK YOU.