

CATHOLIC UNIVERSITY COLLEGE OF GHANA

THE EFFECT OF BANK INNOVATION ON FINANCIAL  
PERFORMANCE. A STUDY OF UNIVERSAL BANKS IN GHANA

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2020

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PERFORMANCE. A STUDY OF UNIVERSAL BANKS IN GHANA

BY

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Dissertation submitted to the Faculty of Economics and Business  
Administration, Catholic University College of Ghana, partial fulfilment of the  
requirements for the award of Master of Business Administration degree in  
Finance

JULY 2020

## **DECLARATION**

### **Candidate's Declaration**

I hereby declare that this dissertation is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:..... Date:.....

Name: Eric Kyere-Diabour

### **Supervisor's Declaration**

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the Catholic University College of Ghana.

Supervisor's Signature:..... Date:.....

Name: Dr. Yaw Bediako

## **ABSTRACT**

The purpose of the study was to examine the effect of financial innovation on the performance of banks in Ghana. An explanatory research design was adopted for the study. Primary and secondary data were used for the analysis. The primary data was collected using questionnaire administered to employees of banks in Sunyani whereas the secondary data was collected from the Bank of Ghana. The study concluded that the factors that influence the adoption of financial innovation among universal banks in Ghana included the perceived usefulness and how economical an innovation is. It is also concluded that the association between performance of universal banks and the value of ATM transaction is negative and weak one but there is a negative but strong association of between bank performance and the total value of mobile money transactions. Ezwich and bank performance also have a negative but moderate correlation. The study further concluded that the total value of Ezwich transactions has a negative and insignificant effect on the performance of banks in Ghana while the total value of ATM transactions has a positive and significant effect on the performance of banks in Ghana. But mobile money transactions have a negative and significant effect on the performance of universal banks in Ghana. It is recommended that universal banks in Ghana promote the use of Automated Teller Machines among their clients in Ghana. It is also recommended that universal banks need to install more Automated Teller Machines at various vantage points. Other researchers can investigate the effect of electronic banking on economic growth in Ghana as well as the effect of mobile money interoperability on bank performance in Ghana.

## **KEYWORDS**

Finance

Innovation

Performance

Banking

## **ACKNOWLEDGEMENT**

I would like to express my sincere gratitude to my supervisor for his professional guidance, advice, encouragement and the goodwill with which he guided this work. I am really very grateful.

I am also grateful to my family and friends for their support throughout my life.

## **DEDICATION**

To my family.

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## **LIST OF ACRONYMS**

ROE	Return on Equity
ROA	Return on Assets
ATM	Automated Teller Machines
POS	Point of Sales
MM	Mobile Money

# **CHAPTER ONE**

## **INTRODUCTION**

The introduction of technology has revolutionized the operations of most businesses around the world. Technology has driven a lot of competition into the affairs of business organizations and those that fail to keep up with its demands tends to go out of business. Banks which are key to the financial sector development of most economies are currently heavily reliant on financial innovation to remain relevant (Puatwoe & Piabuo, 2017). Innovation in the banking sector include e-banking products, such as Internet banking, mobile banking and various Automated Teller Machine (ATM) products. These innovative products drive bank performance by enabling customers enjoy banking services in the developed world. The issues of how financial innovation affects the performance of banks in Ghana is therefore the main focus of this study. This study is important because it will present solutions to the issue of whether banks and financial institutions should adopt financial innovation or otherwise. This chapter presents an introduction to the study. It discusses the background to the study, the statement of the problem, the purpose of the study, the objectives of the study, the research questions, the significance of the study, the scope and delimitation of the study as well as the organization of the study.

### **Background to the Study**

The financial sector is crucial to the economies of various countries, and banks remain a core of the sector, especially in developing economies (Matthew & Laryea, 2012). Financial intermediation involves the transfer of funds from surplus units to deficit units. Financial intermediation is the major role of financial institutions. Financial institutions in Ghana include universal banks,

savings and loans companies, rural banks, insurance companies and pension trustees. According to Rose (1999) a bank is any financial institutions which offer a broad range of financial services, including the provision of credit, deposits, payment systems and employs an extensive variety of financial intermediation functions in any business economy. A bank is an organization that has been given banking powers by the state (Sinkey 1992). The Banks and Specialised Deposit-Taking Institutions Act, 2016 (Act 930) sees a banks as a financial institutions licensed to conduct business activities such as acceptance of deposits and other repayable funds from the public; lending; financial leasing; investment in financial securities: money transmission services; issuing and administering means of payment including credit cards, travelers cheques and bankers' drafts; guarantees and commitments; trading for own account or for account of customers in, money market instruments, foreign exchange, or transferable securities; participation in securities issues and provision of services related to those issues; advice to undertakings on capital structure, acquisition and merger of undertaking; portfolio management and advice; the keeping and administration of securities; credit reference services; safe custody of valuables; electronic banking; and any other services as the Bank of Ghana may determine.

The banking system in Ghana is based on the concept of universal banking where banks can offer all banking services. Universal banks are banks which operate the entire range of financial services ranging through the normal banking service of accepting deposits and making loans, insurance, security services, underwriting and owning shares in client companies. The regulatory and legal framework within which banks, non-bank financial institutions as well



as forex bureau operate in Ghana are Bank of Ghana (Amendment) Act, 2016 (Act 918) Banks and Specialised Deposit-Taking Institutions Act, 2016 (Act 930); Non-Bank Financial Institutions Act, 2008 (Act 774); Companies Act, 1963 (Act 179); as well as Bank of Ghana Notices /Directives / Circulars / Regulations.

Banking and finance are a very competitive industry. Competition is at the core of the success or failure of the Ghanaian banking industry. The degree of competition in the financial sector matters for the efficiency of production of financial services, the quality of financial products and the degree of innovation in the sector (Claessens, 2009). Therefore, the banking sector can impose severe costs on an economy, if there is anticompetitive behaviour, leading to inefficiency or market failure among banks (Mirzaeia & Moore, 2014).

The introduction and availability of technology has made bank competition even more intense in recent years. This is because technology is the back bone of financial innovation among banks (Fasnacht, 2009). History shows that financial innovation has been a critical and persistent part of the economic landscape over the past few centuries (Lerner, Tufano, 2011). Solans (2003) defined financial innovation as both the technological advances which facilitate access to information, trading and means of payment, and the emergence of new financial instruments and services, new forms of organization and more developed and complete financial markets. Financial innovation can also refer to the creation of new instruments and can be defined as the act of creating and popularizing new financial instruments, technologies, institutions, and markets (Lerner, Tufano, 2011).

According to Ongena, Degryse, and Tumer-Alkan (2009) bank technology and bank's internal organization may determine the profitability of individual banks and the stability of the entire financial system. Thus, financial innovation helps correct some kind of market inefficiency or imperfection.

### **Statement of the Problem**

Over the past decade, there has been a significant increase in the number of alternative channels available for the delivery of financial services (Domeher, Frimpong and Appiah, 2014). Technological advancements in the areas of telecommunications and information communication technology over the past few decades has transformed business operation systems in both developed and the developing world especially in financial services delivery. The advent of Information and Communications Technology has led to the proliferation of electronic-based banking products as an alternative channel for routing banking services to customers (Narteh, 2012). Traditional delivery methods have given way to new delivery technologies which include e-banking products such as Internet banking, mobile banking and various Automated Teller Machine (ATM) products (Domeher, Frimpong and Appiah, 2014).

From a historical perspective, Laeven, Levine and Michalopoulos (2013) pointed out that financial innovation has been a driving force behind financial deepening and economic development over the past centuries. In turn, Štreimikienė (2014) contends more specifically that “leapfrog” (financial) innovation is a driving force for broad economic growth. Available literature confirmed that financial innovation drives economic growth (Lumpkin, 2010; Sekhar, 2013). Despite mixed evidence on causality, there is also broad

consensus that well-functioning banking systems promote economic growth (Demetriades & Andrianova, 2005).

Due to the emergence of increased competition in the banking environment; banks now face the need to increasingly adapt to changes when the need arises. Most often, the level of performance of these banking firms is based on the existing level of technologies they possess. Thus, not being able to be nimble and adaptive leads most organizations to failure.

Thus, financial innovation raises the efficiency of financial intermediation through an increased variety of financial products and services, resulting in improved matching of the needs of individual savers with those of firms raising funds for expanding future production. By this way, it systematically contributes to capital accumulation hence leading to economic growth (Chou, 2007). Financial innovation in the banking sector has been researched by scholars because it is deemed to be crucial to the development of Ghana as a whole. Studies conducted by authors such as Domeher, Frimpong and Appiah (2014) focused on the critical factors influencing customer adoption of electronic banking innovation in Ghana's banking industry. Ansong, Marfo-Yiadom & Ekow-Asmah (2011) studied the effects of financial innovations on financial savings in Ghana for the period 1963 to 2006. Idun, and Aboagye (2013) looked at the relationship between bank competition, financial innovations and economic growth in Ghana. Sarpong (2015) assessed the relationship between innovation, performance and competitive advantage among Ghanaian banks. It is therefore obvious from these studies that there is little empirical work conducted on how banking innovation affects the performance of universal banks in Ghana. The present study is therefore

conducted to examine the effect of financial innovation on the performance of universal banks in Ghana

### **Purpose of the Study**

The purpose of the study is to examine the effect of financial innovation on the performance of universal banks in Ghana.

### **Research Objectives**

The general objective of the study is to examine the effect of financial innovation on the performance of universal banks in Ghana. The specific objectives of the study are:

1. To find out the factors that influence the adoption of financial innovation among universal banks in Ghana.
2. To examine the relationship between financial innovation and Return on Assets of universal banks in Ghana
3. To explore the effect of financial innovation on Return on Equity of universal banks in Ghana

### **Research Questions**

The research question which the study seeks to answer is what is the effect of financial innovation on the performance of universal banks in Ghana? The specific research questions are:

1. What factors influence the adoption of financial innovation among universal banks in Ghana?
2. What is the relationship between financial innovation and Return on Assets of universal banks in Ghana?
3. What is the effect of financial innovation on Return on Equity of universal banks in Ghana?

### **Significance of the Study**

It is hoped that the findings and recommendations of this study will help the government, accountants, bankers and students appreciate the importance of financial innovation to the development of banks. Also, the findings would serve as the basis for further studies on the subject for enhancing the development of the existing knowledge. It would serve as background information for policy makers as to what pertains on the field in order to help them in making policies.

### **Delimitation**

This study is strictly to universal banks in Ghana. It is a quantitative based study using a dynamic regression model, using Pearson product moment correlation. The study is limited to universal banks.

### **Limitations of the Study**

The study used dynamic regression model to determine the effect of technological innovation on the performance of universal banks in Ghana. Ordinary least square regression would therefore not be able to tell if technological innovation granger causes performance in universal banks or performance in universal banks granger cause the adoption of technological innovations. Furthermore, Pearson Product Moment Correlation was used to determine the relationship between technological innovations and performance. Pearson Product Moment Correlation is unable to model the long run and short run relationship between the variables under study.

## **Definitions of Terms**

### **Universal Bank**

A universal bank is a financial institution that offers broad variety of financial services to customers which includes; provision of credit in the form of loan and other facilities, savings and payment services as well as undertakes various financial activities in any business economy.

### **Financial Performance**

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. For the purpose of this study performance would be measured using Return on Equity (ROE) and Returns on Assets (ROA).

### **Innovation**

Innovation is the process of translating an idea or invention into a good or service that creates value or for which customers will pay for in accessing.

### **Automated Teller Machine**

(ATM), also known as a Cash Point, Cash Machine is a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller.

### **Credit Card**

Credit Card is any card that may be used repeatedly to borrow money or buy products and services on credit.

### **Mobile Banking**

Mobile banking is performing banking transactions through a mobile device such as a mobile phone.

## **Internet Banking**

Internet banking is a system which allows individuals to perform banking activities via the internet.

## **Electronic Funds Transfer**

Electronic Funds Transfer is a system of transferring money from one bank account directly to another without any paper money changing hands.

## **Organization of the Study**

The study is organized into five main chapters. Chapter one deals with the general introduction of the study, covering the background to the problem, statement of the problem, purpose of the study, research question, and significance of the study, as well as limitations of the study. Chapter two of the study addresses the review of related literature. It covers the theoretical or conceptual framework of the study and empirical review under which studies related to the study are reviewed. Chapter three focuses on the methodology which includes: research design; population; sample size and sampling procedure; research instrument and data collection procedure. Chapter four of the study presents the results/findings and discussion of the study. Chapter five covers the summary of the study, conclusions based on the findings and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **Introduction**

This chapter presents the review of literature related to the present study. It looks at and discusses scholarly articles in relation to issues of banking and technological innovation. It also looks at empirical work conducted on the topic in Ghana as well as globally. A conceptual framework for the study was also presented in this chapter

#### **Theoretical and Conceptual Framework**

##### **Theoretical Framework**

A theory is a reasoned statement or group of statements, which are supported by evidence meant to explain some phenomena. A theory is a systematic explanation of the relationship among phenomena. Theories provide a generalized explanation to an occurrence. Therefore, a researcher should be conversant with those theories applicable to his area of research (Kombo and Tromp, 2009). The theories reviewed inform the source of the variables of the study and the interactions between the dependent and independent variables.

##### **Schumpeter theory of innovation**

The innovative theory is one of the most famous theories of entrepreneurship used all around the world. Schumpeter (1928) argued that entrepreneurs who could be independent engineers or R&D engineers in large corporations created the opportunity for new profits with their innovations. Schumpeter maintains that capitalist development rests on entrepreneurial innovation-led real sectors' changes. However, he also stated that the financing of productive activities is at the core of the process of development. These



innovation outcomes can have substantial and various consequences at the individual, firm, industry, region, or even the country level (Block, Fisch & Praag, 2017). Financial institutions and markets (rules, regulation, banks, financial intermediaries) and their evolution in time should then be studied as crucial concerns in the analysis of economic evolution.

### **Theory of technology acceptance model**

The theory of Technology Acceptance Model by Davies (1989) provides the basis to understand how users of a certain technology accept and make use of that particular technology (Masocha & Dzomonda, 2018). The technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology (Taylor& Todd, 1995). That is, it is a theory that explains how several factors can affect users' final decision to adopt and use a certain technology. In the theory, two important factors were identified to influence the adoption and use of technology. These are perceived usefulness and perceived ease of use (Davies,1989). According to Davies (1989), perceived usefulness means the extent to which an individual believes that a given technology will improve his or her job performance while ease of use means the degree to which one believes that adopting a certain technology will result in less effort applied to execute a certain activity.

Davis, Bagozzi, and Warshaw (1989) are of the view that users' attitudes towards and acceptance of a new information system have a critical impact on successful information system adoption. If users are not willing to accept the information system, it will not bring full benefits to the organization. The more accepting of a new information system the users are, the more willing they are

to make changes in their practices and use their time and effort to actually start using the new information system (Succi & Walter, 1999).

### **Resources based theory**

The resource-based view is concerned with the influence of firm's capabilities and resources in explaining why firms differ and how they sustain and achieve competitive advantage (Barney, 1991). Prahalad and Hamel (1990) stated that, firms align their resources, skills and expertise into core competence to gain a competitive edge against their competitors. Thus, a central premise of resource-based view (RBV) is that firms compete on the basis of their resources and capabilities (Peteraf & Bergen, 2003). RBV focused more on internal strategies to demonstrate how firms attempt to outdo each other in a competitive environment. The premise of RBV is that the heterogeneity and imperfect mobility of resources amongst firms explain why some firms can provide superior customer value and/or achieve relative lower costs, leading to dominant market share and superior financial performance.

### **Conceptual Framework**

#### **Meaning of banking**

Banking has simply been discussed to mean what a bank does. According to Rose (1999) a bank is any financial institutions which offer a broad range of financial services, including the provision of credit, deposits, payment systems and employs an extensive variety of financial intermediation functions in any business economy. A bank is an organization that has been given banking powers by the state (Sinkey 1992). Banks are the financial intermediaries providing the platform to connect the capital demanders and suppliers. They deal with money and credit. It is an institution which handles

other people's money for their advantages and its own profit. Crowther defines a bank as, "one that collects money from those who have it to spare or who are saving it out of their income and lends the money so collected to those who require it. A bank is an establishment which makes to individuals such advances of money as may be required and to which individuals entrust money when not required by them for use.

Banking means accepting for the purpose of lending or investment, of deposits of money from the public, repayable on demand or otherwise and withdrawal by cheques, draft, order or otherwise

Banks are key players in the financial sector because of their unique role as financial intermediary. As intermediaries, they (banks) facilitate capital that enhances productivity thereby promoting economic growth. However, banks' ability to play the positive role in economic growth and development depends on the health, soundness and stability of the financial system (Kenn-Ndubuisi and Akani, 2015). The Banking Act, 2004 Act 673 sees a banks as a financial institutions licensed to conduct business activities such as acceptance of deposits and other repayable funds from the public; lending; financial leasing; investment in financial securities; money transmission services; issuing and administering means of payment including credit cards, travelers cheques and bankers' drafts; guarantees and commitments; trading for own account or for account of customers in, money market instruments, foreign exchange, or transferable securities; participation in securities issues and provision of services related to those issues; advice to undertakings on capital structure, acquisition and merger of undertaking; portfolio management and advice; the keeping and administration of securities; credit reference services; safe custody

of valuables; electronic banking; and any other services as the Bank of Ghana may determine.

### **Banking innovation**

Innovation has been a core topic for scholars, because of its important contribution to economic growth and to the stability of financial systems (Lerner and Tufano, 2011). Innovation is widely considered to be a primary source of economic growth and policies to encourage firm level innovation are topical on the agenda in most countries (Gyeke-Dako et al., 2016). Innovation is now recognized as an indispensable element for companies not only at the micro level for realizing sustainable competitive advantage (Maier, Brad, Nicoară, & Maier, 2014) but also at the macro level for enhancing social welfare, economic growth and an increased life standards (Sağ, Sezen, & Güzel, 2016).

According to Thompson (1965) early and straightforward definition simply states that innovation is the generation, acceptance and implementation of new ideas, processes products or services. A similar definition of innovation was proposed by West and Anderson (1996) and quoted by Wong et al. (2008) sees innovation as the effective application of processes and products new to the organization and designed to benefit it and its stakeholders. Innovation is the application of new solutions that meet new and existing requirement, in articulated or existing market needs.

The features of innovation in the banking sector are quite different from the characteristics usually encountered in other sectors. First, and in contrast to innovation in the manufacturing sector, a unique definition of financial innovation can be hardly found. For Frame and White (2004), financial

innovation is defined as product and organizational innovation, which allows cost or risk reduction for the single bank and or an improvement of the services for the financial system as a whole. Gubler (2010) defined financial innovation as a process of change, a change in the type and variety of available financial products to be sure, but also a change in financial intermediaries and markets themselves. Thus, financial innovation is something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies financial system participants' demands (Frame & White, 2004). Importantly, Tufano (2003) emphasized that financial innovation includes the process of both invention (the ongoing research and development function) and diffusion (or adoption) of new products, services, or ideas.

Financial innovation refers to the emergence of new financial instruments and the development of new financial services and financial products. The term 'financial innovation' means the inclusion of new financial instruments in financial institutions and markets through new technologies. It includes process, product and institutional innovation. It can also be grouped as new products (e.g., adjustable rate mortgages; exchange-traded index funds); new services (e.g., on-line securities trading; Internet banking); new "production" processes (e.g., electronic record-keeping for securities; credit scoring); or new organizational forms (e.g., a new type of electronic exchange for trading securities; Internet-only banks) (Frame and White, 2004).

According to Abor (2005) process innovation refers to new ways of operating business and implementing information technology, such as the Automated Teller Machine (ATM), mobile banking, online banking, etc. Product innovation includes new financial products such as securitized assets,

derivatives, weather derivatives, foreign currency mortgages, hedge funds, exchange-traded funds, private equity and retail structured products, etc. An institutional innovation is the process of introducing new types of financial firms such as discount broking firms, internet banking, specialist credit card firms, etc. All these types of innovation improve payment systems used in the borrowing and lending of funds, which ultimately opens up a quick way of dealing with customers. In addition, they include innovations in technology, equity generation, and risk transfer, which increase the available credit for borrowers and provide financial institutions with a new and low-cost way to raise capital.

Financial system innovations can affect the financial sector as a whole, relate to changes in business structures, to the establishment of new types of intermediaries or to changes in the legal and supervisory framework. Process Innovations cover the introduction of new business processes leading to increased efficiency, market expansion etc. Product innovations are introduced to respond better to changes in market demand or to improve the efficiency.

### **Bank performance**

Performance refers to the extent to which organization's goals and objectives are achieved efficiently and effectively (Wanjau, 2007). Performance can take many forms depending on who and what the measurement is intended for. According to Mishkin and Eakins (2012), to understand how well a bank is doing, we need to start by looking at a bank's income statement, the description of the sources of income and expenses that affect the bank's profitability. Although net income gives us an idea of how well a bank is doing, it suffers from one major drawback: It does not adjust for the bank's size, thus making it

hard to compare how well one bank is doing relative to another. A basic measure of bank profitability that corrects for the size of the bank is the return on assets (ROA) which divides the net income of the bank by the amount of its assets. ROA is a useful measure of how well a bank manager is doing on the job because it indicates how well a bank's assets are being used to generate profits.

Other common performance measures include return on capital employed, and return on equity Amankwatia, (2017). According to (Copeland et al, 1995), economic value added can be as an alternative to purely accounting-based methods to determine shareholder value by evaluating the profitability of a firm after the total cost of capital, both debt and equity are taken into account. According to Bourne and Franco (2003), a good performance measure must have the fundamental characteristics of been a broad-based measure, structured understanding of strategy, provide feedback and take action on results.

The key performance indicators chosen to measure the performance of firms depend on the interest and justification of the analyst.

### **Pictorial View of the Relationship between Innovation and Performance**

The conceptual framework for the present study is adopted from Ngumi (2013) and shows the relationship of bank innovations on financial performance of Commercial Banks

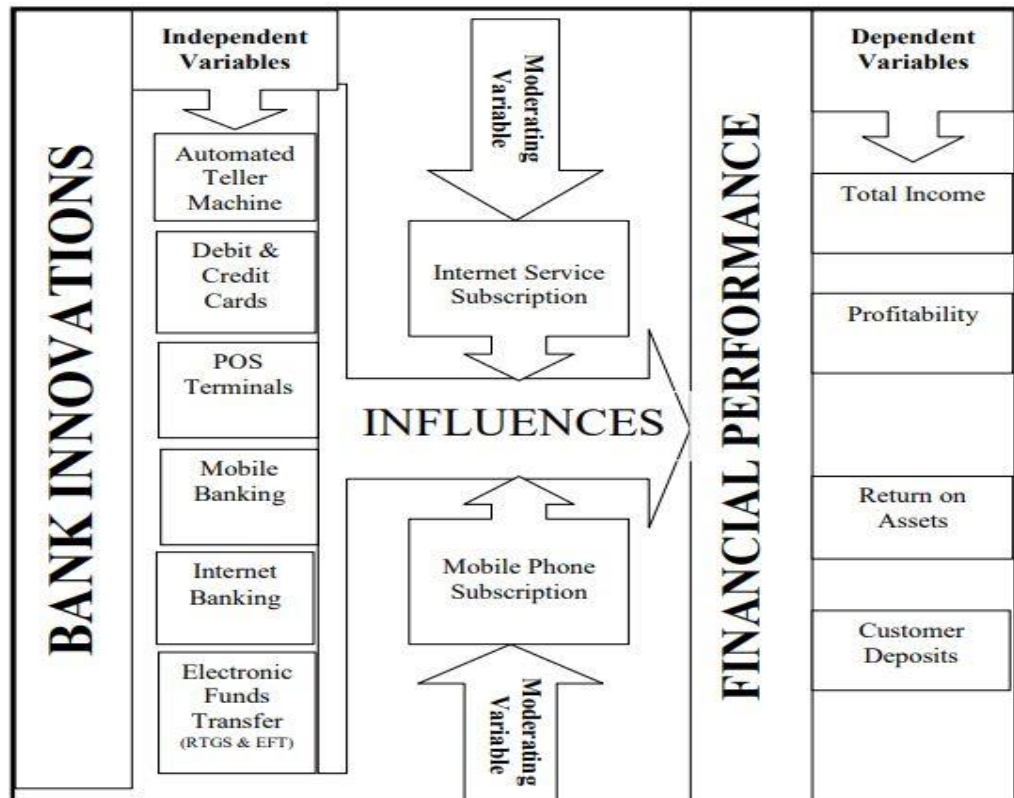


Figure 1: Conceptual framework

Source: Author's construct (2020)

Figure 1 conceptualizes that bank innovations (Automatic Teller Machines, Debit and Credit cards, Point of Sale (POS) terminals, mobile banking, internet banking and electronic funds transfer) influence on financial performance of banks ascertained through the total income, profitability, return on assets and customer deposits.

## Empirical Review

### Factors that influence the adoption of financial innovation among universal banks

According to Rogers (2004) several attributes of an innovation are key influences on adoption behaviour. Attributes such as relative advantage, complexity, compatibility, trialability, and observability are critical in determining adoption and diffusion of innovation (Rogers, 2004). According to



Domeher et al., (2014), the ease with which customers can use the innovation, the compatibility of the innovation with customers' needs, the perceived usefulness thereof, the amount of information provided on the innovation and the level of customers education all have a significant positive impact on the adoption of e-banking. Mutengezanwa and Ngoma (2013) also argue that age, occupation, income, gender and educational level had positive relationships with adoption of internet banking innovations in the Nigerian banking industry. Van der Boor, Oliveira and Veloso (2014) posited that the main factors causing these innovations to occur in developing countries are the high levels of need and the existence of flexible platforms in combination with increased access to information and communication technology.

### **The effect of financial innovation on bank performance**

It has been argued that the literature focusing on the impact of innovation on bank performance reached inconclusive results. On one hand, some studies pointed to a positive effect of innovation on performance. De Young et al. (2007) found that internet adoption improved community bank profitability, largely through increased revenues from deposit service charges. Lerner and Tufano (2011) suggested that financial innovations like venture capital, equity funds, mutual and exchange traded funds and securitization lead the way to financial deepening and growth. Cherotich et al. (2015) found out that there is a strong relationship between financial innovations and financial performance in Kenya commercial banks suggesting that the innovation is also effective for undeveloped countries too.

### **The relationship between financial innovation and bank performance**

Muiruri and Ngari (2014) indicated any of the financial innovation had a positive correlation with the performance of the banks and the financial innovations had positive correlations among themselves. This indicates that banks increased the use of the innovations simultaneously. Njoki and Oloko (2005) found a positive and significant relationship between return on assets and cost incurred on ATM adoption among commercial banks in Kenya.

Mwangi (2013) employed correlation analysis and the results revealed that there was a positive and significant relationship between adoption of ATM and commercial banks performance in Kenya. The findings indicated that there was a positive and significant relationship between use of credit and debit cards and commercial banks performance. The study observed a positive significant relationship between mobile banking and commercial banks performance in Kenya. Fourthly, the study found a positive and significant relationship between internet banking and commercial banks performance in Kenya. Finally, there was a positive relationship between agency banking and commercial banks performance. Gitau (2011) concluded that there is a positive relationship between financial innovation and financial performance of commercial banks in Kenya.

### **Empirical Work on Financial Innovation in Ghana**

Domeher, Frimpong and Appiah (2014) investigated the factors influencing the adoption of financial innovation in Ghana's banking industry. Surveys were conducted involving 405 clients of the six major banks in the country. Using logistical regression, the results amongst other things show that innovation attributes such as lack of complexity, compatibility and perceived

usefulness provided by financial innovation, increase the likelihood of e-banking adoption. In light of these findings, the study recommends that banks should focus on designing both useful and easy-to-use e-banking products that will attract potential and existing customers.

Ansong, Marfo-Yiadom & Ekow-Asmah (2011) had the general objective to establish the effects of financial innovations on financial savings in Ghana for the period 1963 to 2006. Both the perceptual index and M2/M1 that were used as proxies for financial innovation exhibited a positive long-run relationship but a negative short-run relationship. The crux of the study was that financial innovations led to a reduction in financial savings in the short run for one main reason—the prevailing innovative products in Ghana encouraged withdrawals rather than savings. Financial institutions, especially banks, are therefore encouraged to develop savings-related innovative instruments.

Idun, and Aboagye (2013) employed the finance-growth nexus by looking at the relationship between bank competition, financial innovations and economic growth in Ghana. The paper also aimed at finding the causality among bank competition, financial innovations and economic growth in Ghana. The study was carried out using quarterly data from 1990 to 2009. The relationship between bank competition, financial innovations and economic growth was established through the framework of the endogenous growth model. In addition, the ARDL cointegration procedures was employed to enable the researcher establish both short-run and long-run relationship between bank competition, financial innovations and economic growth. The results showed that, in the long run, bank competition is positively related to economic growth whilst financial innovation is negatively related to economic growth. In the

short run, bank competition is negatively related to economic growth. In the same token, financial innovation is positively related to economic growth in the short run. In terms of causality, the results showed that, there is unidirectional Granger causality from bank competition to economic growth. However, there is bidirectional Granger causality between financial innovation and economic growth. The study therefore, recommends for more regulations toward a more competitive banking system with more innovative products tailored toward mobilization of savings and investment to growth induced sectors of the economy.

Sarpong (2015) assessed the relationship between innovation, performance and competitive advantage among Ghanaian banks. The study employed subjective method of customer perception to measure innovation, performance and competitive advantage with questions based on theory. The customers involved are mainly retail customers who visit their respective banks. The study was carried out in Accra and encompasses banks listed on the Ghana Stock Exchange. A Structural Equation Model (SEM) with respect to Confirmatory Factor Analysis (CFA) was used as an analytical tool. Findings show that; there exists a positive relationship between innovation, performance and competitive advantage. However, the relationship between performance and innovation is not that significant. This might be because there are other factors that enhance performance apart from innovation.

Peter-Brown and Macnamara (2017) evaluated the effect of innovation in relation to management efficiency, liquidity management, interest rate and gross domestic product on number of account holders and profitability. The study employed an explanatory research design and used a multiple regression

model with the aid of Statistical Package of Social Sciences (SPSS) to estimate the association of financial innovation to both customer volumes and profitability of banks relative to interest rate, gross domestic product, liquidity management and management efficiency. Data on financial innovation was mainly on expenditure on financial innovation of some selected banks with a market share of 39%. The regression model revealed that financial innovations additional to adopted internal and external factors (i.e. management efficiency, liquidity management, interest rate and gross domestic product) account for 50.4% and 81.0% variations in customer volumes and profitability of banks respectively. The model again estimated positive regression coefficients for financial innovation on both customer volumes and profitability. Consistently, the Pearson's correlation analysis revealed a positive and strong relationship between financial innovation and customer volumes as well as profitability of banks. The study concludes that financial innovation unequivocally has a positive and a statistically significant influence on bank performance and therefore recommends that banks accelerate their innovation drive to meet the needs of consumers as well as match up with trend of global competition. Again, the study recommended that banks extensively draw out innovative strategies to meet the changing needs of financial consumers at lower service cost and higher levels of efficiency.

Agbai, Haizel, Seidu, Adija and Twum (2015) assessed the impact of financial innovations on the profitability of banks in Ghana. A case study was carried out on Fidelity Bank Ghana Limited, to ascertain how the bank embarks on financial innovation and its impact on the profitability. Data for the research was gathered from the Income Statements of the bank within the period of study.

Some information was also collated from the bank's Statement of Financial Position, and other financial reports. The study was conducted for a period of five years, thus between the year 2009 and 2013. The measure of profitability used for this study was the bank's Return on Equity (ROE) for the period of study. Financial innovation was also assessed using the bank's number of branches and number of automated teller machines (ATMs) over the period. Variables such as inflation and exchange rate of the domestic currency against US Dollar over the period were used as control variables for the study. Data was analysed using a linear regression model on Microsoft Excel. The research points out some of the drivers and theories of financial innovation. Results from the findings showed that, both the number of branches and the number of ATMs have a positive relationship with the bank's ROE, thus measure of profitability. Thus, an increase in the level of financial innovations, ultimately leads to an increase in the profitability of a bank.

Mensah, Omenonye, Brafu-Insaaidu and Yan (2019) examined the impact of financial innovations on the financial performance of selected banks in Ghana in terms of their income or revenue generation, efficiency, liquidity, profitability and general patronage of banking services in Ghana. This work was a survey of bank executives from universal banks in Accra and Kumasi. Questionnaires were administered to find out the opinions of bank executives on the impact of financial innovations on financial performance. From the study, it was discovered that financial innovations improve significantly the efficiency, liquidity and profitability of the banks. In addition, it recommended that corporate banks must make it a policy as part of their strategic management process to establish an efficient and effective marketing department to oversee

the publicity of all financial innovative products. It is also recommended that the pricing of innovative products should be reasonable in order not to further scare prospective customers or users.

### **Empirical Evidence from Other Countries**

Ejike (2019) identified the effect of bank innovations on the financial performance of commercial banks in terms of their income or revenue generation, liquidity, efficiency, profitability and the general patronage of banking services in Nigeria. The work is a survey of bank executives from fifteen (15) commercial banks in Nigeria. Questionnaires were administered to find out the opinions of bank executives on the effect of bank innovations on financial performance. It was discovered that most of the innovations have positive effect on the income generating potentials of the banks, they also improves efficiency, liquidity and profitability of the banks. It was recommended that corporate banks must make it a policy to establish an efficient and effective marketing department to oversee the publicity of all bank innovative products. Government through the Central Bank of Nigeria (CBN) must continue researching into innovations in the financial sector.

Ngumi (2013) studied innovations in the area of automated teller machines, debit and credit cards, internet banking, mobile banking, electronic funds transfer and point of sale terminals. These innovations were studied in relation to their effect on commercial banks' financial performance indicators namely: total income, profit before tax, return on assets and deposits. The main objective of the study was to establish the effect of bank innovations on financial performance of commercial banks in Kenya. The specific objectives were: to establish the effect of bank innovations on income, return on total assets,

profitability and customer deposits of commercial bank in Kenya. A descriptive survey design was used while a questionnaire was used to gather primary data. Secondary data was also used to validate the communicative and pragmatic validity of primary data. The target study units for this research were 20 conveniently selected commercial banks. They comprised of 10 listed banks, 2 government owned and 8 private owned commercial banks. The study sample in terms of the respondents covered the senior management only and a sample of 325 was administered with the questionnaire and a 62% response rate was achieved. Statistical analysis was done with the aid of Statistical Package of Social Sciences (SPSS) software. The findings revealed that bank innovations had statistically significant influence on income, return on assets, profitability and customer deposits of commercial banks in Kenya and tests for significance also showed that the influence was statistically significant. The findings also revealed that mobile phones had a higher moderating effect than internet services on the bank innovations when influencing financial performance of commercial banks in Kenya. Based on the findings of the study, it can be concluded that bank innovations influence financial performance of commercial banks in Kenya positively. It was therefore recommended to the management of commercial banks and the Government continue to explore and implement sustainable business linkages and collaborations with mobile phone service providers as well as the internet service providers as a way of accelerating the penetration of innovations and eventually creating desired impacts in the economy. Banks should leverage on mobiles phones in order to grow their business and customer base. This study did not include all bank innovations and a further study is recommended to include innovations like agency banking,



securitization and credit guarantees and their influence on the financial performance of commercial banks.

Gündoğdu and Taşkin (2017) examined the relationship between profitability of Turkish banking system and online banking, telephone banking and credit cards. In their study, total net profit for the period in Turkish banking system considered as an independent variable by trimesters, and online banking, telephone banking and credit cards, tested to see whether they influence this profitability, considered as dependent variables. Given data achieved from official sources between 2006Q1 and 2015Q2, simple regression analysis is used in this study. The results of the regressions show that only credit card usage has a significant positive impact on ROA, ROE and NIM. The positive impact on ROA and ROE imply that credit card usage increases the profitability and thus the performance of banking system, but the positive impact on NIM shows that banks charge their customers more for their credit card usage.

Harold and Jeff (1995) revealed that as a result of the transformations, processes including credit lines, accounts opening and mandate as well as processing of operation have changed within the banking industry with most of them being carried out for example through telephone calls and the internet. Virtual documents on clienteles are circulated over the internet on secure repositories which mandates customers to securely validate their information including account numbers and receipt of credit information. Currently, electronic data interchangeable and credit cards have created the ease to which customers can assess their funds, capital or trade over secure lines without any constrictions.

Gakure & Ngumi (2013) carried out study on whether bank innovation influence net gains of commercial banks in Kenya. They concluded that development of technology in banks had a significant influence on bank profitability. To this extent therefore bank innovation in this study is crucial in explaining the financial performance of universal banks in Ghana. In Ghana for example, the banks revenue and ability to cut cost have improved due to technology such as mobile banking, ATMs and internet banking among others.

### **Institutional Framework**

The banking industry in Ghana comprises the Bank of Ghana, Universal banks (excluding ARB Apex bank which is a mini-central bank for rural banks), rural and community banks, NBFIs, and MFIs. Commercial banking in Ghana is based on the concept of universal banking where banks can offer all banking services. Since the late 1980s Ghanaian banks have increased in stature and number, and for much of the last decade they have enjoyed strong growth rates and large profit margins. The tripling of minimum capital requirements by the central bank should help increase credit flow by encouraging small local banks to consolidate, resulting in bigger banks with the capital and capacity needed to clean up loan books, and steer more credit to the private sector. This will also enable institutions to finance larger and more capital-intensive projects. Currently, there are 23 universal banks in the country. They are Access Bank (Ghana) Plc, Agricultural Development Bank Limited, Bank of Africa Ghana Limited, Absa Bank, CAL Bank Limited, Consolidated Bank Ghana Limited, Ecobank Ghana Limited, FBN Bank (Ghana) Limited, Fidelity Bank Limited, First Atlantic Bank Limited, GCB Bank Limited, Guaranty Trust Bank (Ghana) Limited, National Investment Bank Limited, Omni-BSIC Bank Ghana Limited,

Prudential Bank Limited, Republic Bank (Ghana) Limited, Societe General (Ghana) Limited, Stanbic Bank Ghana Limited, Standard Chartered Bank (Ghana) Limited, United Bank for Africa (Ghana) Limited, Universal Merchant Bank Limited, Zenith Bank (Ghana) Limited, and First National Bank (Ghana) Limited. The current number is largely due to the increase in the minimum capital requirement which led to Mergers and acquisitions of some banks such as GCB taking over UT Bank and Capital Bank, the consolidation of Beige Bank, Sovereign Bank, Unibank, Royal Bank and Construction Bank in to the Consolidated bank Ghana. Also Heritage Bank and Premium Bank were later added to Consolidated Bank Ghana.

### **Chapter Summary**

This chapter discussed literature in relations to the present study. The chapter looks at the issue of financial innovation from the three theories namely Schumpeter theory of innovation, theory of technology acceptance model and resource-based theory. The review reveals that the ease with which customers can use the innovation, the compatibility of the innovation with customer's needs, the perceived usefulness thereof, the amount of information provided on the innovation and the level of customers education all have a significant positive impact on the adoption of e-banking. Most of the articles from the literature review found a positive correlation with the performance of the banks and the financial innovations.

## **CHAPTER THREE**

### **RESEARCH METHODS**

#### **Introduction**

The study is conducted to provide an empirical investigation into the effect of financial innovation on the performance of universal banks in Ghana. This chapter discusses the methods that were used to collect data for the study. It describes the Research Design, Sampling Procedure and Data Collection Procedures. It also looks at the Data Processing and Analysis procedures.

#### **Research Design**

To analyze the effect of financial innovation on the performance of universal banks in Ghana, an explanatory research design was used. An explanatory research is helpful in testing the relationship between variables. It is also known as explanatory research. Explanatory research goes beyond exploratory and descriptive research and the emphasis is basically on studying a situation or a problem in order to explain the relationships between variables. In an explanatory study, the researcher seeks to examine the relationship that exists between variables in a particular research context. The present study seeks to find the effect financial innovation on the performance of universal banks in Ghana. As such the explanatory research design is the most appropriate research design to be employed in achieving these objectives.

The research approach employed for the study is the quantitative research approach. This approach uses greater quantitative sophistication at the exploratory level of research. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon.

As regards the present research, the quantitative approach helped apply inferential statistical methods such as correlations and regression to examine the effect of financial innovation on the performance of universal banks in Ghana.

### **Study Area**

The research was carried out in Ghana. Therefore, Ghana constitutes the study area for the research. Ghana sits on the Atlantic Ocean and borders Togo, Cote d'Ivoire, and Burkina Faso. Ghana's economy accelerated by 8%<sup>1</sup> in 2017, driven by the mining and oil sectors, making it the second-fastest growing African economy, trailing only Ethiopia. The full-year real GDP growth projection was revised from 6.8% to 5.6% due to the larger base for 2017 because of the rebasing exercise conducted in October 2018. Ghana's fiscal performance has shown a broad turnaround in the past 24 months. The fiscal deficit narrowed to 5.9% of GDP in 2017 from 9.3% in 2016 mostly represented by expenditure measures as revenues remained weak. The inflation rate has stabilized to levels within the central bank's target range of 6-10%. On the external sector, the current account registered a smaller deficit of 1.4% of GDP in September 2018 compared with 2% a year ago; and Gross International Reserves of \$6.8 billion (3.9 months of imports).

### **Population**

For the purposes of this study, the population consist of all universal banks in Ghana. These are financial institutions that offers broad variety of financial services to customers. Data from the Bank of Ghana indicates that there are 23 of such companies licensed to operate in the country as at 31<sup>st</sup> December, 2019.

## **Sampling Procedure**

A sample was used to obtain answers from respondents on the determinants of financial innovation in Ghana which was the first question the research intended to address. The sample size for the research consists of 100 employees of all universal banks in Ghana that have branches in Sunyani. The banks are GCB Bank, National Investment Bank, Fidelity Bank, Stanbic Bank, Ecobank, Absa Bank, Zenith Bank, Consolidated Bank Ghana, ABD Bank, Societe Generale Bank, UMB Bank and Sahel Sahara Bank Limited. Sampling is the process of using a smaller number of items or parts of a larger population to make conclusions about the entire population. Sampling involves any procedure that uses a small number of items, or that uses part of the population to make a conclusion regarding the whole population. Samples are employed for pragmatic reasons, so that accurate and reliable results can be found and to avoid destruction of all test units.

The sampling technique employed is a Quota sampling technique. The purpose of quota sampling is to ensure that the various sub-groups or categories in a population are represented in pertinent sample characteristics to the exact extent that the investigators desire.

## **Data Collection Instruments**

Both primary and secondary data were used for the study. A questionnaire was employed for primary data collection. The questionnaire was adapted from Domeher et al., (2014) and tested for validity and reliability. The reliability of the questionnaire was measured using the Cronbach's Alpha and a score of 0.8 was obtained. It was divided into two parts. Part one collected data on the demographic characteristics of the respondents whereas part two asked

questions that were in relation to the objectives of the study. It is also worth noting that part one of the questionnaire was structured as a checklist whereas part two of the questionnaire was structured using the likert type rating scale from 1 to 5. The questionnaire was given to the respondents to complete.

### **Data Collection Procedures**

Data was collected over a period of one week by the researcher. To facilitate a high response rate from the respondents, the researcher obtained a letter from the Catholic University College of Ghana, Fiapre which was used to introduce the researcher to the respondents. The researcher used data from primary data sources.

Secondary data (desk) which is collected by others was also used in the study. This data includes academic and non-academic sources. ‘Secondary data collection’ method, sources like books, articles appearing in journals and other publications, research papers submitted to the Universities and sources available in electronic media of the internet was used to collect the necessary information on the subject under study to arrive at a comprehensive report. For the purpose of the present study the secondary data was collected from the Bank of Ghana on the variables used for the study. The monthly data was collected over a period from 2015 to 2019. Both monetary times series data and payment systems data was collected and used for the analysis.

### **Data Processing and Analysis**

Data collected was processed and collated for easy comprehension. The raw data was thoroughly edited and cleaned to remove inconsistencies and errors. After editing to remove mistakes such as typographical errors, and consistency of entries, the data was coded to facilitate enumeration and addition.

The data obtained from the questionnaire was coded based on the likert scale that was used to answer the questions where Strongly Disagree (SD) = 1; Disagree (D) = 2; Neutral (N) = 3; Agree (A) = 4; Strongly Agree (SA) = 5. The coding enabled the researcher to group responses into limited number of categories for easy analysis. Data was analysed with the aid Microsoft Excel, SPSS and E Views. Data was presented in tables and charts using descriptive and inferential statistical tools.

### **Model Specification**

The model specification for this analysis is adapted from Gündoğdu and Taşkin (2017) indicated as

$$ROA = \alpha_t + \beta_1 \log(ATM_t) + \beta_2 \text{ezwich} + \beta_3 \text{Mobile Money} + \varepsilon_t$$

Where

ROA = Return on Assets

$\alpha_t$  = the constant term

$\beta_1$  = the coefficient of log transaction value of ATM

$\beta_2$  = the coefficient of the total transaction value of the ezwich platform

$\beta_3$  = the coefficient of the total transaction value of Mobile Money accounts

$\varepsilon_t$  = the residual or error term

$$ROE = \alpha_t + \beta_1 \log(ATM_t) + \beta_2 \text{ezwich} + \beta_3 \text{Mobile Money} + \varepsilon_t$$

Where

ROE = Return on Equity

$\alpha_t$  = the constant term

$\beta_1$  = the coefficient of log transaction value of ATM

$\beta_2$  = the coefficient of the total transaction value of the ezwich platform

$\beta_3$  = the coefficient of the total transaction value of Mobile Money accounts



$\varepsilon_i$  = the residual or error term

### **Ethical Consideration**

In conducting the research, the researcher did not influence the results obtain from the study. That is the results were presented as obtained from the data used for the study. In addition to the above, the researcher ensured confidentiality by asking respondents not to provide their names on the questionnaire that was administered when primary data was collected on employees of banks in Sunyani.

### **Chapter Summary**

This chapter presents the methods that were used to collect data as for analysis. It is indicated from the chapter that the study seeks to explore the relationship between variables hence a causal research design was used to perform a regression analysis to identify the effect of financial innovation on the performance of universal banks in Ghana.

## **CHAPTER FOUR**

### **RESULTS AND DISCUSSION**

#### **Introduction**

The purpose of the study is to examine the effect of innovation on financial performance of universal banks in Ghana. This chapter presents the results after primary and secondary data was analysed. The discussions of results then followed in relation to how the present study supports or counters earlier empirical work conducted in the field.

#### **Results Pertaining to Data Collected from Primary Source**

The results presented below pertains to data collected through the use of the questionnaire. It is meant to answer research question 1 which is the factors that determine the adoption of innovation among universal banks in Ghana.

#### **Demographic Characteristics of Respondents**

The demographic characteristics of respondents which include the gender of respondents, the age of respondents, the academic qualification of respondents and the years of working experience of respondents are presented below in Table 1, Table 2, Table 3 and Table 4.

**Table 1: Gender of Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	80	80.0	80.0	80.0
Female	20	20.0	20.0	100.0
Total	100	100.0	100.0	

Source: Field data (2020)

From Table 1, 80 individuals representing 80 per cent of the respondents are male whereas 20 individuals representing 20 per cent of the respondents are female. This implies that male respondents dominate the study.

**Table 2: Age of Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
20-29	25	25.0	25.0	25.0
30-39	50	50.0	50.0	75.0
40-49	25	25.0	25.0	100.0
Total	100	100.0	100.0	

Source: Field data (2020)

From Table 2, 25 individuals representing 25 per cent of the respondents are between the ages of 20-29. 50 individuals representing 50% of the respondents are within the 30-39 age groups whereas 25 individuals representing 25 per cent of the respondent are within the age groups of 40-49. This implies that respondents within age group of 30 to 39 dominate the study.

**Table 3: Years of Experience of Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 1	15	15.0	15.0	15.0
1-10	45	45.0	45.0	60.0
11-20	40	40.0	40.0	100.0
Total	100	100.0	100.0	

Source: Field data (2020)

From Table 3, 15 respondents have less than one year of working experience. 45 respondents representing 45 per cent of the respondents have 1 to 10 years of working experience and 40 individuals representing 40 per cent

of the respondents have between 11 to 20 years of working experience. This implies that respondents with 1 to 10 years of work experience dominate the study.

**Table 4: Academic Qualification of Respondents**

	Frequency	Percent	Valid Percent	Cumulative Percent
HND	5	5.0	5.0	5.0
DEGREE	55	55.0	55.0	60.0
POST GRAD	40	40.0	40.0	100.0
Total	100	100.0	100.0	

Source: Field data (2020)

From Table 4, 5 individuals representing 5 per cent of the respondents have an HND. 55 individuals representing 55 per cent of the respondents have a bachelor's degree and 40 individuals representing 40 per cent of the respondents have a post graduate degree. This implies that respondents with a bachelor's degree dominate the study.

#### **Analysis Pertaining to Research Question One**

The analysis presented below is in relation to the research question one which seeks to find out the factors that determine the adoption of innovation among universal banks in Ghana.

**Table 5: Descriptive Statistics of Factors that Determine Adoption of Innovation**

Statement	Mean	Std. Dev
Perceived usefulness (relative advantage)	4.4000	0.92113
In my opinion, the use of innovative banking products (Internet banking/mobile banking ATM, etc.) services are economical	3.8000	1.33333
In my view the use of innovative banking products increases one's ability to control his/her financial matters better.	3.4000	1.36330
I believe using innovative banking services helps to accomplish banking activities more quickly.	4.6000	0.92113
In my opinion, using innovative banking products are useful for banking activities	4.4500	1.02863
Using innovative banking services enhances the productivity of banking activities	4.3000	0.95874
Innovative banking products provides freedom of time and place constraints	4.4000	1.02494

Source: Field data (2020)

From Table 5 the mean score for the statement the perceived usefulness or relative advantage influences the adoption of a financial innovation is 4.4000. This mean score has a standard deviation of 0.92113. This implies that majority of the respondents strongly agree that perceived usefulness is a factor that influences the adoption of a technology.

From Table 5, the mean score for the statement that the use of innovative banking products (Internet banking/mobile banking ATM, etc.) services are economical is 3.8000. This mean score has a standard deviation of 1.33333. This implies that majority of the respondents agree that financial innovation is economical and this influences their adoption of it.

From Table 5 the mean score for the statement that the use of innovative banking products increases one's ability to control his/her financial matters better is 3.4000. This mean score has a standard deviation of 1.36330. This implies that majority of the respondents from the study agree that the use of innovative banking products increases one's ability to control his/her financial matters better.

From Table 5 the mean score for the statement using innovative banking products are useful for banking activities is 4.6000. The standard deviation associated with this mean score is 0.92113. This implies that majority of the respondents strongly agree that statement using innovative banking products are useful for banking activities.

From Table 5 the mean score for the statement using innovative banking services helps to accomplish banking activities more quickly is 4.4500. The standard deviation associated with this mean score is 1.02863. This implies that majority of the respondents strongly agree that using innovative banking services helps to accomplish banking activities more quickly.

From Table 5 the mean score for the statement using innovative banking services enhances the productivity of banking activities is 4.3000. The standard deviation associated with this mean score is .95874. This implies that majority of the respondents strongly agree that using innovative banking services enhances the productivity of banking activities.

From Table 5 the mean score for the statement Innovative banking products provides freedom of time and place constraints is 4.4000. The standard deviation associated with this mean score is 1.02494. This implies that majority

of the respondents strongly agree that Innovative banking products provides freedom of time and place constraints.

### **Results Pertaining to Data Collected for Secondary Sources**

The analysis presented below is from data collected from secondary sources. It helps in answering research questions two and three which are meant to examine the relationship between banking innovation and performance of universal banks as well as the effect of banking innovation on the performance of universal banks in Ghana.

### **Descriptive Statistics of Variables Used for the Study**

The section below presents the descriptive statistics on the variables used to measure performance and bank innovation. The performance measures are return on assets and return on equity. These figures were obtained as monetary time series data from Bank of Ghana. The variables used to measure innovation were also obtained from the payment systems department of the bank of Ghana. These variables include the total transaction value of ATM, total transaction of Ezwich, and the total transaction value of Mobile Money. These variables were used to run analysis mainly to answer research question 2 and research question 3.

**Table 6: Descriptive Statistics on the Dependent Variables used for the Study**

	(ROE AFTER TAX)	(ROA BEFORE TAX)
Mean	18.69500	3.896000
Median	19.50000	4.130000
Maximum	32.21000	6.920000
Minimum	0.000000	0.000000
Std. Dev.	7.734409	1.606052
Skewness	-1.140584	-1.100039
Kurtosis	4.126866	4.157921
Jarque-Bera	16.18390	15.45282
Probability	0.000306	0.000441
Sum	1121.700	233.7600
Sum Sq. Dev.	3529.443	152.1848
Observations	60	60

Source: Field data (2020)

From Table 6, the mean score out of 60 observations for the variable Return on Assets is 3.896. This mean score has a degree of variability measured using standard deviation to be 1.606052. The table also shows that data on the return on assets is not normally distributed. This can be seen from the probability value 0.000441 of the Jarque-Bera Statistics of 15.45282. This implies that the data on return on assets satisfies the conditions on stylized facts of using returns for data analysis. The results from table 6 imply that banks in Ghana are profitable when using returns on assets before tax.



From Table 6, the mean score out of 60 observations for the variable Return on Equity is 18.69500. This mean score has a degree of variability measured using standard deviation to be 7.734409. The table also shows that data on the return on equity is not normally distributed. This can be seen from the probability value 0.000306 of the Jarque-Bera Statistics of 16.18390. This implies that the data on return on equity satisfies the conditions on stylized facts of using returns for data analysis the results from table 6 imply that banks in Ghana are profitable when using returns on equity after tax.

**Table 7: Descriptive Statistics on Independent Variables**

	EZWICH	MOBILE MONEY (GHM)	ATM
Mean	3.46E+08	13372.63	36880080
Median	3.11E+08	12859.53	38124599
Maximum	1.06E+09	32822.42	74525026
Minimum	48781630	1805.900	0.000000
Std. Dev.	2.55E+08	8521.186	16419563
Skewness	0.987279	0.314245	-0.492075
Kurtosis	3.686472	1.975874	4.031832
Jarque-Bera	10.92530	3.609584	5.083071
Probability	0.004242	0.164509	0.078745
Sum	2.08E+10	802357.6	2.21E+09
Sum Sq. Dev.	3.83E+18	4.28E+09	1.59E+16
Observations	60	60	60

Source: Field data (2020)

From Table 7, the mean score out of 60 observations for the variable Total value of mobile money transactions for the month measured in million

Ghana cedi is 13372.63. This mean score has a degree of variability measured using standard deviation to be 8521.186. The table also shows that data on the Total value of mobile money transactions for the month measured in million Ghana cedi is normally distributed. This can be seen from the probability value 0.164509 of the Jarque-Bera Statistics of 3.609584. The data being normally distributed satisfies the necessary condition required for performing inferential statistical analysis. The results from table 7 imply that banks in Ghana are using mobile money as a financial innovation.

From Table 7, the mean score out of 60 observations for the variable Total value of Ezwich transactions for the month is 3.46E+08. This mean score has a degree of variability measured using standard deviation to be 2.55E+08. The table also shows that data on the Total value of Ezwich transactions for the month is normally distributed. This can be seen from the probability value 0.004242 of the Jarque-Bera Statistics of 10.92530. The data being normally distributed satisfies the necessary condition required for performing inferential statistical analysis.

From Table 7, the mean score out of 60 observations for the variable Total value of ATM transactions for the month is 36880080. This mean score has a degree of variability measured using standard deviation to be 16419563. The table also shows that data on the Total value of ATM transactions for the month is normally distributed. This can be seen from the probability value 0.078745 of the Jarque-Bera Statistics of 5.083071. The data being normally distributed satisfies the necessary condition required for performing inferential statistical analysis.

**Table 8: Correlations between Performance and Banking Innovation**

		<b>ROA</b>	<b>ATM</b>	<b>ROE</b>	<b>MM</b>	<b>EZWICH</b>
<b>ROA</b>	Pearson Correlation	1	-.454**	.976**	-.717**	-.686**
	Sig. (2-tailed)		.001	.000	.000	.000
<b>ATM</b>	Pearson Correlation	-.454**	1	-.352**	-.344**	.028
	Sig. (2-tailed)	.001		.009	.007	.834
<b>ROE</b>	Pearson Correlation	.976**	-.352**	1	-.671**	-.608**
	Sig. (2-tailed)	.000	.009		.000	.000
<b>MM</b>	Pearson Correlation	-.717**	-.344**	-.671**	1	.816**
	Sig. (2-tailed)	.000	.007	.000		.000
<b>EZWICH</b>	Pearson Correlation	-.686**	.028	-.608**	.816**	1
	Sig. (2-tailed)	.000	.834	.000	.000	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: Field data (2020)

From the correlation table, it can be seen that the association between Return on Assets and the value of ATM transaction is a negative and weak one. This is because of the Pearson product moment correlation recorded of -.454. However, there is a negative but strong association of -.717 between Return on Assets and the total value of Mobile Money transactions. Ezwich and Return on assets also have a negative but moderate correlation of -.686. This means that in terms of direction when Return on Assets of universal banks are increasing the value of ATM transactions, Mobile Money transactions and Ezwich transactions decrease and vice versa. The interpretation on the strength of association between the variables was based on the criteria proposed by Cohen

(1988) which indicates that 0.10 to 0.29 is very weak, 0.30 to 0.49 weak, 0.50 to 0.69 is moderate and 0.70 to 0.99 is large.

There is also a negative and weak correlation of  $-.352$  between the total value of ATM transactions and the return on equity of banks in Ghana. A similar result of  $-.344$  which indicates a negative and weak correlation was recorded for the association between the total value of ATM transactions and the total value of Mobile Money transactions in Ghana. The value of ATM transactions and Ezwich transactions however recorded a positive and weak association of  $.028$ . The Sig value of  $.834$  of this correlation however makes it insignificant. This means that in terms of direction when Return on Equity of universal banks are increasing the value of ATM transactions, Mobile Money transactions and Ezwich transactions decrease and vice versa. The interpretation on the strength of association between the variables was based on the criteria proposed by Cohen (1988).

The results from the Pearson Product Moment Correlations also indicate that there is a moderate negative and significant association of  $-.671$  between return on equity and the total value of mobile money transactions in Ghana. This implies that when return on equity is increasing the total transaction value of ATM decrease. The results again indicate that there is a moderate negative and significant association of  $-.608$  between return on equity and the total value of Ezwich transactions in Ghana. This implies that when Return on Equity is increasing, the total value of Ezwich transactions decreases.

Finally, a strong positive and significant association was recorded from the Pearson Product Moment Correlation between the value of Mobile Money transactions and that of Ezwich transactions. This implies that when the value

of Mobile Money transactions is increasing, the transaction value of Ezwich transactions also increase.

### **Regression Diagnostics**

Before the regression analysis is performed, a regression diagnostic is performed to ensure the data satisfies the important assumptions that are necessary for the data analysis technique that is employed. These diagnostics include tests for stationarity and the test for serial correlations. The test for stationarity was done using the Augmented Dickey Fuller test whereas serial correlation was tested using a correlation matrix. The augmented dickey fuller test and the serial correlation tests are provided below.

### **Test for Stationarity on Variables Used for the Study**

**Table 9: ADF Test for Total Ezwich Transaction Value**

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.012632	0.2808
Test critical values:	1% level	-3.546099	
	5% level	-2.911730	
	10% level	-2.593551	

\*MacKinnon (1996) one-sided p-values.

Source: Field data (2020)

From the ADF test, the statistics of the test critical values are more negative at 1%, 5% and 10% levels than the Augmented Dickey-Fuller test statistics of -2.012632. This means that total Ezwich transaction value is stationary at levels and integrated of order one.

**Table 10: ADF TEST for Total Transaction Value Atm**

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.328302	0.1667
Test critical values:	1% level	-3.546099
	5% level	-2.911730
	10% level	-2.593551

\*MacKinnon (1996) one-sided p-values.

Source: Field data (2020)

From the ADF test, the statistics of the test critical values are more negative at 1%, 5% and 10% levels than the Augmented Dickey-Fuller test statistics of -2.328302. This means that total ATM transaction value is stationary at levels and integrated of order one

**Table 11: ADF Test for Total Value of Mobile Money Transactions**

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	2.580131	1.0000
Test critical values:	1% level	-3.548208
	5% level	-2.912631
	10% level	-2.594027

\*MacKinnon (1996) one-sided p-values.

Source: Field data (2020)

From the ADF test, the statistics of the test critical values are more negative at 1%, 5% and 10% levels than the Augmented Dickey-Fuller test statistics of 2.580131. This means that total Mobile Money transaction value is stationary at levels and integrated of order one.

**Table 12: ADF Test: Return on Equity Roe after Tax**

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.723492	0.4144
Test critical values:	1% level	-3.546099
	5% level	-2.911730
	10% level	-2.593551

\*MacKinnon (1996) one-sided p-values.

Source: Field data (2020)

From the ADF test, the statistics of the test critical values are more negative at 1%, 5% and 10% levels than the Augmented Dickey-Fuller test statistics of -1.70.192. This means that Return on Equity is stationary at levels and integrated of order one.

**Table 13: ADF TEST: Return on Assets ROA Before Tax**

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.478293	0.5376
Test critical values:	1% level	-3.546099
	5% level	-2.911730
	10% level	-2.593551

\*MacKinnon (1996) one-sided p-values.

Source: Field data (2020)

From the ADF test, the statistics of the test critical values are more negative at 1%, 5% and 10% levels than the Augmented Dickey-Fuller test statistics of -1.478293. This means that Return on Assets is stationary at levels and integrated of order one.

**Table 14: Correlation Matrix of Independent Variables for the Study**

	<b>EZWICH</b>	<b>ATM</b>	<b>MOBILE MONEY</b>
<b>EZWICH</b>	1	0.501538	0.70763
<b>ATM</b>	0.501538	1	0.083405
<b>MOBILE MONEY</b>	0.7076343	0.083405	1

Source: Field data (2020)

The correlation matrix is presented to inform which variables to omit from the model. It can be seen that the correlation between Ezwich and ATM is 0.501538. The correlation between Ezwich and Mobile Money is 0.70763. The correlation between ATM and Mobile Money is also 0.083405. Since none of the correlations is above 0.8 per the standard or benchmark provided by Adam and Owusu (2018), all the independents variables were included in the study.

#### **Regression Output on the Effect of Financial Innovation on the Performance of Universal Banks in Ghana**

Table 15 and Table 16 presents the regression outputs on the effect on financial innovation on the performance of universal banks in Ghana. Table 15 first presents the effect of financial innovation namely the value of Ewich Transaction, the value of ATM transactions and the value of Mobile Money Transactions on performance measured using Return on Assets of universal banks in Ghana. Table 16 also presents the effect of financial innovation namely the value of Ewich Transaction, the value of ATM transactions and the value of Mobile Money Transactions on performance measured using Return on Equity of universal banks in Ghana.



**Table 15: The effect of Innovation on Return on Assets (ROA Before Tax)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.731461	0.462889	10.22158	0.0000
EZWICH TRANSACTION VALUE	-1.66E-09	9.62E-10	-1.722496	0.0905
ATM TRANSACTION VALUE	2.72E-08	9.18E-09	2.961614	0.0045
VALUE OF MOBILE MONEY	-9.46E-05	3.06E-05	-3.091478	0.0031
R-squared	0.704871	Mean dependent var		3.896000
Adjusted R-squared	0.689061	S.D. dependent var		1.606052
S.E. of regression	0.895566	Akaike info criterion		2.681619
Sum squared resid	44.91416	Schwarz criterion		2.821242
Log likelihood	-76.44857	Hannan-Quinn criter.		2.736233
F-statistic	44.58252	Durbin-Watson stat		0.530516
Prob(F-statistic)	0.000000			

Source: Field data (2020)

From the regression output, the  $r$  square value which measures the goodness of fit of the model is 0.704871. This implies that the independent variables which are the total value of Ezwich transactions, the total value of ATM transactions and the total value of mobile money transaction are able to explain 70.4871% of the variation in the dependent variable which is return on asset before taxation. The residual is explained by other variables. The  $f$  statistics from the model is also 44.58252 and has a probability value of 0.000000 which implies that the independent variables can jointly explain the variation in the dependent variable and hence the model can be used.

From the model, if all other factors are equated to zero, or held constant, the return on assets before taxes of banks would be 4.731461. This constant has a  $t$  statistic of 10.22158 and a probability value of 0.0000. Thus, it is significant.

The coefficient of the variable the total ZWICH TRANSACTION VALUE is - 1.66E-09. It has a  $t$  statistics of -1.722496 and a probability value of 0.0905. This implies that the total value of Ezwich transactions has a negative and insignificant effect on the performance of banks in Ghana.

The regression output also shows that the total value of ATM transactions has a positive and significant effect on the performance of banks in Ghana. This is because the coefficient of the value ATM transaction value is 2.72E-08. This coefficient has a  $t$  statistics of 2.961614 and a probability value of 0.0045.

However, the output demonstrates that mobile money transactions have a negative and significant effect on the performance of commercial banks in Ghana. This is because the coefficient of the Value of Mobile Money is -9.46E-05. Its  $t$  statistics is -3.091478 and it has a probability value of 0.0031.

**Table 16: The Effect of Innovation on Return on Equity (Roe After Tax)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.67497	2.302076	9.415401	0.0000
EZWICH TRANSACTION VALUE	-6.86E-09	4.78E-09	-1.434732	0.1569
ATM TRANSACTION VALUE	1.48E-07	4.57E-08	3.234923	0.0020
VALUE OF MOBILE MONEY	-0.000453	0.000152	-2.974506	0.0043
R-squared	0.685253	Mean dependent var		18.69500
Adjusted R-squared	0.668391	S.D. dependent var		7.734409
S.E. of regression	4.453895	Akaike info criterion		5.889776
Sum squared resid	1110.882	Schwarz criterion		6.029399
Log likelihood	-172.6933	Hannan-Quinn criter.		5.944390
F-statistic	40.64020	Durbin-Watson stat		0.651154
Prob(F-statistic)	0.000000			

Source: Field data (2020)

From the regression output, the  $r$  square value which measures the goodness of fit of the model is 0.685253. This implies that the independent variables which are the total value of Ezwich transactions, the total value of ATM transactions and the total value of mobile money transaction are able to explain 68.5253% of the variation in the dependent variable which is return on equity after taxation. The residual is explained by other variables. The  $f$  statistics from the model is also 40.64020 and has a probability value of 0.000000 which implies that the independent variables can jointly explain the variation in the dependent variable and hence the model can be used.

From the model, if all other factors are equated to zero, or held constant, the return on equity after taxes of banks would be 21.67497. This constant has a  $t$  statistic of 9.415401 and a probability value of 0.0000. Thus, it is significant.

The coefficient of the variable the total ZWICH TRANSACTION VALUE is -6.86E-09. It has a  $t$  statistics of -1.434732 and a probability value of 0.1569. This implies that the total value of Ezwich transactions has a negative and insignificant effect on the performance of banks in Ghana.

The regression output also shows that the total value of ATM transactions has a positive and significant effect on the performance of banks in Ghana. This is because the coefficient of the value ATM transaction value is 1.48E-07. This coefficient has a  $t$  statistics of 3.234923 and a probability value of 0.0020.

However, the output demonstrates that mobile money transactions have a negative and significant effect on the performance of commercial banks in Ghana. This is because the coefficient of the Value of Mobile Money is -0.000453. Its  $t$  statistics is -2.974506 and it has a probability value of 0.0043.

## **Discussion of Results**

### **Factors that influence the adoption of financial innovation among universal banks in Ghana**

The findings of the study indicate that the factors that influence the adoption of financial innovation among universal banks in Ghana include the perceived usefulness and how economical an innovation is. Thus, banking innovation increases one's ability to control his/her financial matters better and helps to accomplish banking activities more quickly while enhancing the productivity of banking activities. Therefore, using innovative banking products are useful for banking activities and innovative banking products provides freedom of time and place constraints. All these factors influence the adoption of financial innovation among universal banks in Ghana. It can be seen that these findings support the earlier work of Domeher et al., (2014) who posits that the ease with which customers can use the innovation, the compatibility of the innovation with customers' needs, the perceived usefulness thereof, the amount of information provided on the innovation and the level of customers education all have a significant positive impact on the adoption of e-banking. It also supports Rogers (2004) who argues that relative advantage, complexity, compatibility, trialability, and observability are critical in determining adoption and diffusion of innovation.

### **The relationship between financial innovation and return on assets of banks in Ghana**

From findings of the association between Return on Assets and the value of ATM transaction is a negative and weak one. However, there is a negative but strong association of between Return on Assets and the total value of Mobile

Money transactions. Ezwich and Return on assets also have a negative but moderate correlation. This implies that there is an inverse relationship between Return on Assets and the value of ATM transactions, Mobile Money transactions and Ezwich transactions. That is when Return on Assets are increasing, the value of ATM transactions, Mobile Money transactions and Ezwich transactions fall and when the Returns on Assets are decreasing, the value of ATM transactions, Mobile Money transactions and Ezwich transactions increases.

The results from the Pearson Product Moment Correlations also indicate that there is a moderate negative and significant association between return on equity and the total value of mobile money transactions in Ghana. The results again indicate that there is a moderate negative and significant association between return on equity and the total value of Ezwich transactions in Ghana.

The findings support Sarpong (2015) to the extent to which he show that; there exists a positive relationship between innovation, performance and competitive advantage but however, the relationship between performance and innovation is not that significant because there are other factors that enhance performance apart from innovation.

The findings counter earlier findings by Cherotich et al. (2015) who found out that there is a strong positive relationship between financial innovations and financial performance in Kenya commercial banks. It also conflicts with Muiruri and Ngari (2014) who indicates any of the financial innovation had a positive correlation with the performance of the banks and the financial innovations had positive correlations among themselves. The finding also does not support Njoki and Oloko (2005) who found a positive and

significant relationship between return on assets and ATM adoption among commercial banks in Kenya.

Along similar lines the findings are not similar to Mwangi and (2016) who employed correlation analysis and revealed that there was a positive and significant relationship between adoption of ATM and commercial banks performance in Kenya as well as a positive significant relationship between mobile banking and commercial banks performance in Kenya.

It also counters Gitau (2011) who concludes that there is a positive relationship between financial innovation and financial performance of commercial banks in Kenya and is against Peter-Brown and Macnamara (2017) who revealed a positive and strong relationship between financial innovation and customer volumes as well as profitability of banks.

### **The effect of financial innovation on the return on equity of Universal Banks in Ghana**

The findings of the study reveal that the total value of Ezwich transactions has a negative and insignificant effect on the Return on Assets of banks in Ghana. The regression output also shows that the total value of ATM transactions has a positive and significant effect on Return on Assets of banks in Ghana. However, the output demonstrates that mobile money transactions have a negative and significant effect on the Return on Equity of commercial banks in Ghana.

As regards return on equity, the total value of Ezwich transactions has a negative and insignificant effect on the performance of banks in Ghana. The regression output also shows that the total value of ATM transactions has a positive and significant effect on the return on equity of banks in Ghana.

However, the output demonstrates that mobile money transactions have a negative and significant effect on the return on equity of commercial banks in Ghana.

These findings support Agbai, Haizel, Seidu, Adija and Twum (2015) whose results show that, both the number of branches and the number of ATMs have a positive relationship with the bank's ROE, thus measure of profitability. Thus, an increase in the level of financial innovations, in terms of the number of ATMs ultimately leads to an increase in the profitability of a bank. It also partly supports Mensah, Omenonye, Brafu-Insaaidu and Yan (2019) who discovered that financial innovations improve significantly the efficiency, liquidity and profitability of the banks. It also to some extent support Peter-Brown and Macnamara (2017) who estimated positive regression coefficients for financial innovation on both customer volumes and profitability and concludes that financial innovation unequivocally has a positive and a statistically significant influence on bank performance.



## **CHAPTER FIVE**

### **SUMMARY CONCLUSIONS AND RECOMMENDATIONS**

#### **Introduction**

The chapter presents the summary of major findings, the conclusions and the recommendations of the study. It also suggests possible areas for further research.

#### **Summary of Major Findings**

Financial innovation has been a major driving force in deepening financial inclusion and making banking accessible to a wide array of individuals and institutions. It simplifies the banking process and reduces the inconveniences customers have to go through to transact with individuals and other institutions. The ATM has been known as one of the major financial innovations worldwide. After the introduction of the ATM other innovative processes and products came up and this include mobile money and Ezwich in Ghana. How these innovations affect the financial performance of universal banks in Ghana has been the focus of this study. The objectives of the study include finding out the factors that determine the adoption of financial innovation, the relationship between financial innovation and bank performance and the examining the effect of financial innovation on the performance of banks in Ghana. An explanatory research design was adopted for the study. Primary and secondary data were used for the analysis. The primary data was collected using questionnaire which was administered to address the first research question which was identifying the factors that determine the adoption of financial innovation in Ghana. Secondary data was collected from the bank of Ghana on variables such as the Return on Assets, Return on Equity, the

transaction value of mobile money in Ghana, the transaction value of ATMS and the transaction value of Ezwich. Pearson product moment correlation was engaged to find the relationship between financial innovation and bank performance. Ordinary least square was also used to measure the effect of financial innovation on the performance of universal banks in Ghana. The ordinary least square regression was conducted after the data was tested for stationarity using the Augmented Dickey-Fuller Unit root test and all variables were found to be stationary at levels. A correlation matrix was also used to identify the correlations between the independent variables to avoid the problem of serial or autocorrelation.

The study finds that the factors that influence the adoption of financial innovation among universal banks in Ghana include the perceived usefulness and how economical an innovation is. It also finds that banking innovation increases one's ability to control his/her financial matters better and helps to accomplish banking activities more quickly while enhancing the productivity of banking activities. Therefore, using innovative banking products are useful for banking activities and innovative banking products provides freedom of time and place constraints.

It is found from the study that the association between Return on Assets and the value of ATM transaction is a negative and weak one but there is a negative but strong association of between Return on Assets and the total value of Mobile Money transactions. Ezwich and Return on assets also have a negative but moderate correlation.

Another finding from the study is that there is a moderate negative and significant association between return on equity and the total value of mobile

money transactions in Ghana. A moderate negative and significant association between return on equity and the total value of Ezwich transactions in Ghana was also concluded on.

Furthermore, the study finds that the total value of Ezwich transactions has a negative and insignificant effect on the Return on Assets of banks in Ghana while the total value of ATM transactions has a positive and significant effect on Return on Assets of banks in Ghana but mobile money transactions have a negative and significant effect on the Return on Equity of universal banks in Ghana.

Finally, it is revealed that the total value of Ezwich transactions has a negative and insignificant effect on the Return on Equity of banks in Ghana while the total value of ATM transactions has a positive and significant effect on the return on equity of banks in Ghana but the total value of mobile money transactions have a negative and significant effect on the return on equity of universal banks in Ghana.

## **Conclusions**

The study concludes that that the factors that influence the adoption of financial innovation among universal banks in Ghana include the perceived usefulness and how economical an innovation is. It also concludes that banking innovation increases one's ability to control his/her financial matters better and helps to accomplish banking activities more quickly while enhancing the productivity of banking activities. Therefore, using innovative banking products are useful for banking activities and innovative banking products provides freedom of time and place constraints.

It is also concluded from the findings of the study that the association between Return on Assets and the value of ATM transaction is a negative and weak one but there is a negative but strong association of between Return on Assets and the total value of Mobile Money transactions. Ezwich and Return on assets also have a negative but moderate correlation.

Another conclusion from the study is that there is a moderate negative and significant association between return on equity and the total value of mobile money transactions in Ghana. A moderate negative and significant association between return on equity and the total value of Ezwich transactions in Ghana was also concluded on.

Furthermore, the study concludes that the total value of Ezwich transactions has a negative and insignificant effect on the Return on Assets of banks in Ghana while the total value of ATM transactions has a positive and significant effect on Return on Assets of banks in Ghana but mobile money transactions have a negative and significant effect on the Return on Equity of universal banks in Ghana.

Finally, it is concluded that the total value of Ezwich transactions has a negative and insignificant effect on the Return on Equity of banks in Ghana while the total value of ATM transactions has a positive and significant effect on the return on equity of banks in Ghana but the total value of mobile money transactions have a negative and significant effect on the return on equity of universal banks in Ghana.

### **Recommendations**

Based on the findings of the study it is recommended that universal banks in Ghana promote the use of Automated Teller Machines among their

clients in Ghana. This would help them generate more revenue since the findings of the study reveal that ATM transactions have a positive and significant effect on the performance of universal banks.

It is also recommended that universal banks need to install more Automated Teller Machines at various vantage points so that their clients can always have access to the service whenever they want to.

### **Suggestions for Further Studies**

Based on the findings on the study the following areas are suggested for further research by people in academia and research

1. The effect of electronic banking on economic growth in Ghana
2. The effect of mobile money interoperability on bank performance in Ghana

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**APPENDIX A**  
**CATHOLIC UNIVERSITY COLLEGE OF GHANA, FIAPRE**  
**QUESTIONNAIRE**  
**THE EFFECT OF BANK INNOVATION ON FINANCIAL**  
**PERFORMANCE. A STUDY OF UNIVERSAL BANKS IN GHANA**

Dear Respondent,

I am a Master of Business Administration Student at the Catholic University College of Ghana, Fiapre. As part of my studies, I am required to undertake a study on the effect of bank innovation on financial performance. a study of universal banks in Ghana.

You have been selected as one of the persons to help me complete the study. You are assured of your utmost confidentiality. This questionnaire is designed to collect data to be used purely for an academic purpose. I wish to assure you that all responses to these questions will be strictly confidential. Thank you for your cooperation and time.

**PART ONE: RESPONDENT PROFILE**

1. Please what is your gender? (Tick where appropriate)

☐ Male ☐ Female

2. Please indicate your age below

.....

3. What is your highest academic qualification?

☐ WASSCE ☐ Diploma ☐ HND ☐ Bachelor's degree ☐ Post Graduate Degree ☐ Professional qualification ☐ others, please specify

.....

This section aims at finding out your opinion about innovative banking products (e.g., Internet banking, mobile banking, ATM, etc.). Please read the following statements and tick the number that best describes your understanding of innovative banking product (Internet, mobile banking and ATM), where Strongly Disagree (SD) = 1; Disagree (D) = 2; Neutral (N) = 3; Agree (A) = 4; Strongly Agree (SA) = 5

STATEMENT	1	2	3	4	5
Perceived usefulness (relative advantage)					
In my opinion, the use of innovative banking products (Internet banking/mobile banking ATM, etc.) services are economical					
In my view the use of innovative banking products increases one's ability to control his/her financial matters better.					
I believe using innovative banking services helps to accomplish banking activities more quickly.					
In my opinion, using innovative banking products are useful for banking activities					
Using innovative banking services enhances the productivity of banking activities					
Innovative banking products provides freedom of time and place constraints					

## APPENDIX B

YEAR	ROA	ROE	MM	EZWICH	(ATM)
JAN, 2015	6.92	32.21	1,805.90	62,129,896.39	28,812,476.96
FEB, 2015	6.02	27.51	1,835.67	48,781,629.68	31,175,584.66
MAR, 2015	6.30	29.30	2,302.87	62,894,928.28	36,730,311.04
APR, 2015	5.71	26.72	2,387.56	49,683,036.87	31,646,226.55
MAY, 2015	5.86	28.71	2,588.82	65,052,981.73	39,745,763.56
JUN, 2015	5.62	29.08	2,941.38	70,451,826.77	36,395,840.21
JUL, 2015	5.59	27.34	3,080.50	66,201,170.55	39,760,604.20
AUG, 2015	5.69	28.05	3,377.55	67,962,902.82	43,399,167.12
SEP, 2015	5.41	26.65	3,509.05	57,654,107.93	37,942,131.58
OCT, 2015	5.35	26.46	3,040.07	124,414,344.05	38,516,461.35
NOV, 2015	4.91	24.15	4,036.63	121,114,928.30	37,088,479.54
DEC, 2015	4.64	22.15	4,538.38	126,558,246.65	45,659,686.24
JAN, 2016	5.20	23.78	4,114.81	147,517,891.65	23,979,229.00
FEB, 2016	4.60	20.72	4,488.12	142,356,687.80	29,817,262.00
MAR, 2016	5.02	23.45	5,166.90	138,830,964.30	33,961,310.00
APR, 2016	4.70	21.95	5,271.68	95,740,294.57	30,417,934.00
MAY, 2016	4.60	21.78	5,747.39	174,901,448.10	39,464,471.00
JUN, 2016	4.87	22.86	5,997.06	168,409,307.32	37,097,256.00
JUL, 2016	4.83	23.54	6,282.08	117,267,414.18	38,963,597.00
AUG, 2016	4.56	21.73	7,092.68	169,055,776.69	46,480,746.00
SEP, 2016	4.81	20.78	7,269.59	106,170,626.61	39,378,430.00

OCT, 2016	4.34	20.21	8,371.33	439,275,965.14	40,527,088.00
NOV, 2016	4.14	19.44	8,878.90	302,720,495.15	36,401,395.00
DEC, 2016	3.76	17.61	9,828.35	360,717,807.29	50,384,015.00
JAN, 2017	4.66	24.25	9,554.36	219,052,526.61	45,412,315.00
FEB, 2017	4.02	19.56	9,648.08	147,178,533.33	43,911,671.00
MAR, 2017	4.41	21.23	11,834.06	289,391,896.18	53,313,018.00
APR, 2017	4.03	19.29	11,475.11	178,559,339.70	44,371,399.00
MAY, 2017	3.76	17.87	13,182.43	201,423,689.67	54,025,330.00
JUN, 2017	3.70	17.72	12,536.63	319,495,472.19	48,177,491.00
JUL, 2017	3.70	18.11	12,498.20	234,635,552.24	54,741,434.00
AUG, 2017	3.16	14.94	13,962.62	244,350,664.72	54,417,470.00
SEP, 2017	2.61	11.39	14,442.11	234,418,736.06	49,272,663.00
OCT, 2017	2.99	14.41	14,750.88	421,990,025.13	49,272,663.00
NOV, 2017	3.06	14.59	15,396.69	468,636,407.29	50,986,449.00
DEC, 2017	3.58	18.69	16,563.67	472,359,715.85	55,251,280.00
JAN, 2018	2.28	7.32	17,739.57	522,361,967.76	36,585,779.89
FEB, 2018	3.98	18.96	16,544.29	410,135,370.49	28,725,526.19
MAR, 2018	3.69	17.99	18,068.94	528,794,033.31	37,036,276.19
APR, 2018	3.57	17.27	16,830.88	417,714,021.93	29,256,328.38
MAY, 2018	3.50	17.19	18,172.61	546,938,036.59	38,307,066.47
JUN, 2018	3.51	16.80	17,246.06	592,329,248.92	41,486,227.67
JUL, 2018	3.47	17.15	18,320.15	556,591,524.02	38,983,188.37
AUG, 2018	3.33	16.91	18,864.46	571,403,425.95	40,020,601.15



SEP, 2018	3.28	17.13	18,134.88	484,731,425.92	33,950,169.32
OCT, 2018	3.29	17.57	20,026.02	1,046,023,337.44	73,262,568.76
NOV, 2018	3.14	16.13	20,628.43	1,018,283,241.28	71,319,676.44
DEC, 2018	3.39	18.46	22,630.94	1,064,048,366.40	74,525,026.18
JAN, 2019	4.75	21.83	22,018.27	477,516,996.79	24,879,836.30
FEB, 2019	4.20	20.13	20,918.58	349,705,805.52	24,952,400.12
MAR, 2019	4.40	21.12	23,419.57	387,086,063.98	29,975,618.59
APR, 2019	4.12	18.87	23,648.73	434,951,548.67	26,602,056.62
MAY, 2019	4.36	21.49	25,596.59	496,761,130.78	33,762,937.41
JUN, 2019	4.37	21.15	24,578.91	407,742,325.52	32,274,855.66
JUL, 2019	0.00	0.00	26,440.27	613,114,866.05	-
AUG, 2019	0.00	0.00	26,108.61	493,122,581.13	-
SEP, 2019	0.00	0.00	26,434.63	467,871,179.22	-
OCT, 2019	0.00	0.00	28,351.34	602,752,950.14	-
NOV, 2019	0.00	0.00	29,014.34	813,901,156.77	-
DEC, 2019	0.00	0.00	32,822.42	763,843,209.17	-