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Financial Innovation, Financial Inclusion, Financial Liquidity and Financial Performance of Commercial Banks: Conceptual: Theoretical and Empirical Literature Review

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Abstract: **An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption. Financial innovation involves design, development and implementation of innovative financial instruments and processes and formulation of creative solutions to problems in finance. Financial innovation has played a big role in the provision of financial services in the world. It has enabled faster and efficient provision of financial services. This is in line with the Kenya vision 2030 which aims at creating a vibrant and globally competitive financial sector that will create jobs and promote high levels of savings which help in financing the country's overall investment requirements. This paper presents the background knowledge about financial innovation and financial performance of commercial banks. The objectives of the study is: to review the conceptual, theoretical and empirical literature with respect to financial innovation and financial performance of commercial banks; to identify conceptual, theoretical and empirical gaps with respect to financial innovation and financial performance of commercial banks; to come up with a conceptual framework with respect to financial innovation and financial performance of commercial banks.**

Keywords: **Financial Innovation, Financial Performance, Commercial Banks, Internet Banking, Mobile Banking, Agency Banking and ATM Banking.**

1. BACKGROUND OF THE CONCEPT

1.1 Evolution of the Concept:

An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is "objectively" new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation [63].

The Kenya 2030 vision aims at creating a financial sector that is vibrant and globally competitive and that will create jobs and promote high levels of savings which will finance the country's overall investment requirements [25]. The banking sector in Kenya has continued to play an instrumental role in achieving this vision. Financial innovation has also played a key role in achieving vision 2030 and has influenced delivery of financial services across the World [8].

1.1.1 Financial Innovation:

Financial innovation is the act of creating and popularizing new financial instruments as well as new financial technologies, institutions and markets [74]. According to Lawrence [41], it involves design, development and implementation of innovative financial instruments and processes and formulation of creative solutions to problems in finance. Growth in financial innovation leads to reduction in bankruptcy costs, tax advantages, reduction in moral hazard, reduction in regulatory costs, transparency and customization [24]. According to the Bank Supervision Annual Report

[12] and Financial Access Household Survey [13], the most frequently used financial innovations in Kenya are: bank branch 41%; automated teller machines 38%; bank agent 14%; mobile banking 7% and internet banking 0.3%. This study will concentrate on the four channels i.e. internet banking, mobile banking, agency banking and ATM banking.

1.1.2 Financial Performance:

Financial performance is a measure of how well a firm can use assets from its primary mode of business and generate revenues [40]. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation [71]. Financial performance measures how well a firm is generating value for the owners [4]. It can be measured using various financial measures such as Return on Investments (ROI), Return on Sales (ROS), Return on Equity (ROE) and Return on Assets (ROA).

1.1.3 Relationship between Financial Innovation and Financial Performance:

Many studies have been carried out on the relationship between financial innovation and financial performance. These include: [7], [57], [43], [22], [1], [3], [6], [5]. These studies have given varied results on the relationship between financial innovation and financial performance with some giving positive results, others giving negative results and others giving mixed results.

1.1.4 Commercial Banks in Kenya:

According to Bank Supervision Annual Report [12], as at 31st December 2016, the Kenyan banking sector comprised of the Central Bank of Kenya as the regulatory authority, 43 banking institutions (42 commercial banks and 1 mortgage finance company), 8 representative offices of foreign banks, 13 Microfinance Banks (MFBs), 3 Credit Reference Bureaus (CRBs), 17 Money Remittance Providers (MRPs) and 77 Foreign Exchange (forex) Bureaus. Out of the 43 banking institutions, 40 were privately owned. Of the 40 privately owned banks, 25 were locally owned while 15 were foreign-owned. The 25 locally owned institutions comprised of 24 commercial banks and 1 mortgage financial institution. Of the 15 foreign-owned institutions, all commercial banks, 11 were local subsidiaries of foreign banks while 4 were branches of foreign banks. All licensed microfinance banks, credit reference bureaus, forex bureaus and money remittance providers were privately owned [12].

1.2 Key Drivers to the Evolution of the Concept:

1.2.1 Profit Maximization:

The purpose of profit maximization of financial institutions is the key reason of financial innovation. Financial innovation is attributed to attempts by profit maximizing firms to reduce the impact of various types of constraints that reduce profitability. There are some restrictions in the process of pursuing profit maximization that reduce the efficiency of financial institution and so financial institutions strive to cast them off [72].

1.2.2 Financial Costs

Financial innovation is an institutional response to financial costs created by changes in technology, market needs and political forces. Financial institutions deal with the status such as the reduction of profit and the failure of management induced by government regulations in order to reduce the potential loss to the minimum [30].

1.2.3 Market Efficiency:

Financial innovations are motivated by forces designed to increase market efficiency and improve social welfare [47]. Merton [47] argued that the market is not perfect hence financial institutions must innovate to improve market efficiency. Financial economists generally view the flow of funds to take advantage of investment opportunities and financial innovations as positive forces that make markets more efficient, facilitate risk sharing and increase growth [61].

1.2.4 Competition:

According to Wernerfelt [75], firms can achieve competitive advantage by being innovative and giving superior value to their customers. According to Barney [9], this can only be achieved when firms gather resources and use them optimally to their advantage. An organization is made up of a collection of many resources which enable it to have unique capabilities hence competitive advantage [16].

1.2.5 Size of the company:

In the 1930s, Schumpeter [69] developed a theory where a company's ability to innovate was mainly connected to its size. This was after analyzing the capitalist model to understand which companies would be in a better position to innovate. Schumpeter argued that entrepreneurs, who could be independent inventors or research and development (R&D) engineers in large corporations, created the opportunity for new profits with their innovations.

1.3 Objectives:

(i) To review conceptual, theoretical and empirical literature with respect to financial innovation and financial performance of commercial banks in Kenya.

(ii) To identify conceptual, theoretical and empirical gaps with respect to financial innovation and financial performance of commercial banks in Kenya.

(iii) To come up with a conceptual framework with respect to financial innovation and financial performance of commercial banks in Kenya.

2. CONCEPTUAL LITERATURE REVIEW

2.1 Introduction:

Conceptual literature is a scheme of concept (variables) which the researcher operationalizes in order to achieve the set objectives. A variable is a measure characteristic that assumes different values among subjects [49]. Independent variables are variables that a researcher manipulates in order to determine its effect of influence on another variable [36]. The dependent variable attempts to indicate the total influence arising from the influence of the independent variable [49]. The conceptual themes reviewed are internet banking, mobile banking, agency banking and ATM banking.

2.2 Internet Banking:

According to Daniel [17], and Sathye [65], internet banking is the usage of internet and telecommunication networks to deliver banking services to customers. It gives customers access to their bank accounts via a website and enables them to enact certain transactions on their accounts [20]. According to Bank Supervision Annual Report [12], commercial banks have continued to embrace the use of the internet as a remote delivery channel for banking services. Increased customer awareness and demand has resulted in internet banking becoming a preferred mode of banking, rather than as an alternative channel [12]. Internet services provided include; opening accounts, transferring funds, online viewing of the accounts, online inquiries and requests, online salary payments and clearing cheques. As at 31st December, 2012, twenty six banks were offering various internet products to their customers in Kenya [11].

2.3 Mobile Banking:

According to Rose [64] mobile banking is a service provided by financial institutions in cooperation with mobile phone operators. In recent times, mobile banking is most often performed via short message service (SMS) or the mobile internet but can also use special programs downloaded to the mobile device [27]. In a study conducted by Nieto and Hernando [54] on the effect of mobile banking and financial performance of Spanish commercial banks, it was concluded that banks that implemented mobile banking were able to attract more customers and this led to increased access to customer deposits leading to improved financial performance.

2.4 Agency Banking:

According to Chaia, Patrick and Lai [14], agency banking has become one of the most promising strategies for offering financial services in emerging markets. Agency banking is used by banks to reduce the cost of delivering financial services, relieve crowds in bank branches and establish presence in new areas [38]. By December 2016, 18 commercial banks had contracted 53,833 agents spread across the country. This was in comparison to December 2015, where the number of agents contracted by commercial banks was 40,592. The change implies a 33 percent (increase by 13,241 agents) growth of number of agents contracted by commercial banks [12].

2.5 ATM Banking:

The first bank to use ATM was Barclays Bank in Enfield Town in north London, United Kingdom, on 27 June 1967 [7]. Rose [64] describes ATMs as a facility that combines a computer terminal, record-keeping system and cash vault in one

unit, permitting customers to enter the bank's bookkeeping system with a plastic card containing a Personal Identification Number (PIN), or by punching a special code number into the computer terminal, linked to the bank's computerized records, twenty-four hours a day [12]. The number of ATMs decreased from 2,718 in December 2015 to 2,656 in December 2016. The increase in 2015 was 105 ATMs or 4.0 percent as compared to a decrease of 62 ATMs or 2.3 percent in 2016. The decrease in the number of ATMs by banks has been driven mainly by adoption of cost effective channels of offering financial services such as the use of mobile banking platforms [12].

3. THEORETICAL LITERATURE REVIEW

3.1 Introduction:

A theory is a reasoned statement or group of statements which are supported by evidence meant to explain phenomena [36]. There are many theories that explain the effect of financial innovation on financial performance. Five of these theories are: Bank-Led Theory; Non-Bank-Led Theory; Bank-Focused Theory; Financial Intermediation Theory and Agency Theory.

3.2 Bank-Led Theory:

This theory states that a financial institution provides financial services using a retail agent [42]. According to Owens [60], retail agents interact with customers and offer services just as a teller at the branch. Lyman, Ivatury and Staschen [42] stipulate that the model provides a distinct alternative to conventional branch-based banking since the customer conducts financial transactions using the retail agents instead of the tellers at the bank branches. This model promises the potential to substantially increase the financial services outreach by utilizing different delivery channels which could be significantly cheaper than the bank based channels [21].

3.3 Non-Bank-Led Theory:

In this theory, Lyman, Ivatury and Staschen [42] stated that customers neither deal with a bank branch, nor maintain a bank account. They deal with nonbank institutions which could be a mobile network operator, prepaid card issuer or retail agents. According to Lyman et al. [42], customers exchange their cash for electronic money which is stored in a virtual electronic money account on the non-bank's server and is not linked to a bank account in the individual's name. This model is riskier since the regulatory environment in which the nonbanks operate might not accord much importance to issues in relation to customer identification [31]. According to Kapoor [31], the nonbanks are not regulated in areas of transparent documentation and record keeping which is a prerequisite for a safe financial system.

3.4 Bank-Focused Theory:

The bank-focused theory is based on the utilization of non-traditional low-cost delivery channels by a traditional bank to give banking services to its existing customers [21], [31]. Examples range from utilization of automated teller machines (ATMs) to internet banking or mobile phone banking. The bank-focused model has various advantages such as more control and branding visibility to the financial institutions concerned but it also has its challenges. Customers' primary concerns are to do with the quality of experience, security of identity and transactions, reliability and accessibility of service and extent of personalization allowed. Banks address these issues by providing a branchless banking service with an easy to use interface [31].

3.5 Financial Intermediation Theory:

The intermediation theory is derived from the notion that intermediaries assist in reducing transaction costs and informational asymmetries. The theory is based on the theory of informational asymmetry and the agency theory and its aim is to explain why financial intermediaries exist [26]. The existence of financial intermediaries as indicated by the intermediation theory is explained by the existence of high cost of transaction, lack of complete information in useful time and the method of regulation [68]. According to Claus and Grimes [15] and Greenbaum and Thakor [26], the main reason financial intermediaries exist is to reduce information and transaction costs that arise from an information asymmetry between borrowers and lenders.

3.6 Agency Theory:

The agency theory was first proposed by Stephen Ross and Barry Mitnick in the 1970s. An agency relationship is found where one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent [45], [29]. The Banking Act [39] defines agency

in relation to a bank as an entity contracted by an institution and approved by the Central Bank or sub-contracted by such entity to provide the services of the institution on behalf of the institution, in such manner as may be prescribed by the Central Bank. According to the Bank Supervision Annual Report [10], the Central Bank of Kenya introduced the agency banking model that allows third parties to offer specific banking services to the customers on behalf commercial banks in May 2010.

4. EMPIRICAL LITERATURE REVIEW

4.1 Introduction:

In this section, empirical literature from previous studies done on this topic and similar topics has been reviewed. This review has attempted to address the effect of financial innovation on financial performance of commercial banks in Kenya.

4.2 Internet Banking and Financial Performance:

Malhotra and Singh [43] assessed the impact of internet banking on bank performance and risk in India. The results reveal that there is no significant association between internet banking and profitability on one hand, and on the other hand, there is a significant negative association between internet banking and risk profile of banks in India. Onay, Ozsoz and Helvacıoğlu [59] investigated the impact of internet banking on banks profitability. The results of the findings show that internet banking starts contributing to banks return on equity (ROE) with a time lag of two years while a negative impact is observed for one and half years of its adoption. Kombe and Wafula [35] assessed the effect of internet banking on the financial performance of commercial banks in Kenya and established that internet banking improves financial performance since it leads to lower transaction costs which attract potential customers to the bank. Mulwa [50], in his study on effect of internet banking on financial performance of commercial banks in Kenya, concluded that internet banking expenditure caused a significant and negative effect on return on assets, lower bank assets and lowers bank profitability.

4.3 Mobile Banking and Financial Performance:

In their study on mobile banking and financial performance of commercial banks in Kenya, Ritho and Jagongo [62] established that mobile baking has a positive influence on the financial performance of commercial banks in Kenya. In his study on effects of mobile banking on the financial performance of commercial banks in Kenya, Kithaka [34] concluded that mobile banking positively and significantly affects the financial performance of commercial banks in Kenya. Mwange [51] carried out a study on the impact of mobile banking on financial performance of commercial banks in Kenya. He concluded that there exists a positive relationship between mobile banking and bank performance. In his study on the effect of mobile banking on the financial performance of banking institutions in Kenya, Kathuo, Rotich and Anyango [32] concluded that the financial performance of banks that provide mobile banking products has improved as they ensure efficiency of the banking services.

4.4 Agency Banking and Financial Performance:

In his study on the effect of agency banking on financial performance of commercial banks in Kenya, Ndirangu [53] concluded that agency banking has an insignificant effect on the financial performance of commercial banks in Kenya. In a similar study carried out by David [18], it was concluded that there is a strong and positive correlation between return on assets, volume of cash transactions and the banks' size with the financial performance. In her study on agency banking and financial performance of commercial banks in Embu County, Mbugua and Omagwa [44] concluded that agency banking improves performance of commercial banks as it enhances savings on cost of construction of bank premises and leasing costs. Njagi [55] studied the contributions of agency banking on financial performance of commercial banks in Kenya and concluded that agency banking has a high positive influence on the financial performance of commercial banks in Kenya.

4.5 ATM Banking and Financial Performance:

In the study carried out by Esfehani and Sadeghi [19] in Iran on the effect of automatic teller machines on efficiency of banks, it was established that the effect of ATM banking on the efficiency of banks is positive and significant. In their study on effect of automated teller machines usage on operational performance of commercial banks in Nakuru County, Abdullai and Nyaoga [2] established that ATM usage has a positive significant relationship with operation performance.

Jegede [28] studied effect of automated teller machine on the performance of Nigerian banks and established that ATMs contribute to the effectiveness of the banking sector. In their study on whether ATMs increase technical efficiency of banks in a developing country carried out in India, Sathye and Sathye [66] established that ATM intensity had a significant negative association with efficiency.

4.6 Financial Innovation and Financial Performance:

Arisa and Muturi [7], in their study on effect of electronic banking on financial performance of commercial banks in Kenya noted that there exists a positive relationship between electronic banking and bank performance though internet banking affects financial performance to a less extent. In their study on electronic banking and bank performance, Oginni, Mohammed, El-maude and Arikpo [57] indicated that electronic banking begins to contribute positively to bank performance after two years of adoption in terms of return on assets (ROA) and net interest margin (NIM) while a negative impact was observed in first year of adoption. Eze and Egoro [22], in their study on Electronic Banking and Profitability of Commercial Banks in Nigeria, established a positive relationship between electronic banking and profitability. They established though that it cannot be concluded that adopting electronic banking is the key factor in improving bank profitability.

Abaenewe, Ogbulu and Ndugbu [1] investigated electronic banking and bank performance in Nigeria. The results revealed that electronic banking has positively and significantly impacted on the return on equity (ROE) of Nigerian banks, but has not significantly improved the return on assets (ROA). Siam [70] investigated the role of electronic banking services on the profits of Jordanian banks and concluded that the effect of electronic banking services on banks profitability is negative in the short run and positive in the long run. Meihami, Varmaghani and Meihami [46] examined the effect of using electronic banking on profitability of banks. The findings show that electronic banking has improved the performance of banks measured by bank incomes. Aduda and Kingoo [3] carried out a study on the relationship between electronic banking and financial performance among commercial banks in Kenya. The results reveal that a positive relationship exists between electronic banking and bank performance.

Al-Smadi and Al-Wabel [6] examined the impact of electronic banking on the performance of Jordanian banks and found that electronic banking has a significant negative impact on banks and hence it affects bank performance negatively. In the study carried out by Akhisar, Tunay, and Tunay [5] on the effects of innovations on bank performance, the findings indicated that almost all the banking services under consideration affect profitability positively. However, the number of point of sale (POS) terminals and the number of customers using internet banking service are determined to affect profitability negatively. Nader [52] analyzed the profit efficiency of the Saudi Arabia commercial banks during the period 1998-2007. The results of his study indicated that availability of phone banking, number of automated teller machines (ATMs) and number of branches had a positive effect on profit efficiency of Saudi banks. On the contrary, Nader found that the number of point of sale terminals (POSs), availability of personal computer (PC) banking and availability of mobile banking did not improve profit efficiency.

In their study on the effect of information communication technology and financial innovation on performance of Nigerian commercial banks carried out in Nigeria, Okonkwo, Obinozie and Echekoba [58] concluded that investment in banking innovation does not improve performance of commercial banks in Nigeria. Nyambariga [56] carried out a study on the effect of financial innovation on the financial performance of commercial banks in Kenya. He established that mobile banking, ATM banking and card usage had positive effects on performance of commercial banks but were not significant whereas agency banking had a negative effect on performance of commercial banks. In a study on the effect of financial innovation on the financial performance of commercial banks in Kenya, Mugane and Ondigo [48] concluded that the relationship between product innovation and financial performance of commercial banks is negative and significant. They also concluded that the relationship between service innovation and return on assets (ROA) and also organizational innovation and return on assets (ROA) is positive and significant.

4.7 Summary of Research gaps:

From the literature reviewed, it is evident that many of the previous studies have adopted the descriptive research design. Descriptive research design cannot be used to correlate variables or determine cause and effect. It aims at reporting on how things are but does not help in addressing the problem at hand. This gap needs to be filled by carrying out a study that adopts a different research design to help solve the prevailing problem.

Majority of the studies carried out do not have moderating and mediating variables. A moderator variable is a variable that affects the strength of the relationship between a dependent and independent variable. A mediator variable is a variable that explains the relationship between the dependent variable and the independent variable. A few of the studies have incorporated a moderating variable but almost all the studies have not incorporated a mediator variable.

The period covered by a study is very crucial and could affect the results of the study. Many of the studies carried out cover a period of five years. Five years is not long enough to give the actual picture of what is happening on the ground. By carrying out a research that will cover a minimum of ten years, more reliable results will be obtained and hence filling the gap that is currently evident.

Data collected can be primary data or secondary data. Primary data is data collected by the researcher for the first time while secondary data is data that has already been collected for some other purpose by other researchers in their research. Majority of the studies carried out used either primary data or both primary and secondary data. Primary data has a disadvantage of not being very objective and therefore could give results that are not very accurate. Secondary data is very objective and can lead to reliable results.

A majority of studies have used purposive sampling method. Purposive sampling has low levels of reliability and high levels of bias. The numbers of banks studied in the various studies carried out are few and a census method would be more appropriate to study the effect of financial innovation on financial performance of commercial banks. Data collected using the census method is very reliable since every subject being studied is included in the data collection exercise.

5. RECOMMENDATIONS AND CONCLUSION

5.1 Proposed Conceptual Framework:

The following is the conceptual framework that is proposed to be adopted in the study. There are four independent variables i.e. internet banking, mobile banking, agency banking and ATM banking. The dependent variable is financial performance of commercial banks. The conceptual framework has incorporated two other variables i.e. a mediating variable and a moderating variable.

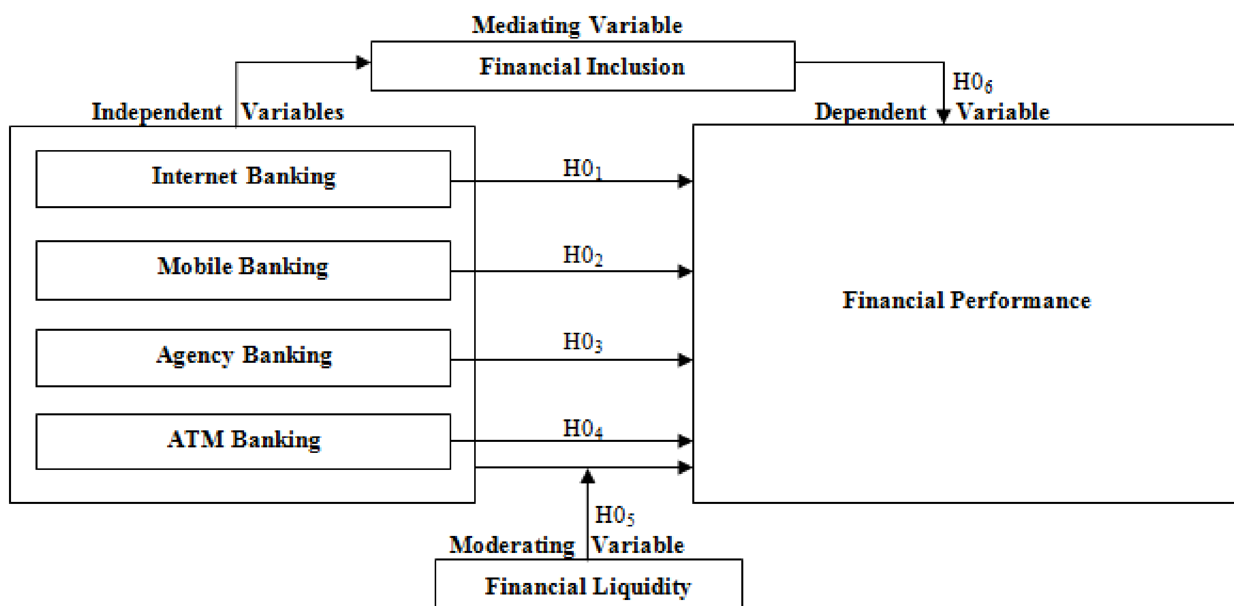

Figure 5.1: Independent and Dependent Variables

5.2 Proposed Methodology:

5.2.1 Introduction:

According to Kothari [37], research methodology is the solving of the research study problem systematically. It brings out the logical steps a researcher should follow in studying a research problem. The following is a discussion on the proposed methodology to be adopted in the study. The focus is on research philosophy, research design, empirical model, target population, sampling design, data collection, data analysis and data presentation.

5.2.2 Research Philosophy:

The research philosophy that will be adopted in this research is positivist research philosophy. Positivism asserts that all truth can be verified and proven scientifically and can be measured and observed. It involves testing the accuracy of a theory with statistical data. Deductive reasoning will be followed since it explains causal relationships between variables, allows the testing of hypothesis, allows concepts to be operationalised in a way that enables facts to be measured quantitatively and embraces generalization from a sample [67].

5.2.3 Research Design:

Research design is the structure of research or the glue that holds all of the elements in a research project together [36]. The researcher proposes to use explanatory non experimental research design to establish the effect of financial innovation on the financial performance of commercial banks in Kenya. According to Saunders, Lewis and Thornhill [67], an explanatory study involves studying a situation or a problem in order to establish and explain the causal relationship between variables. A non experimental research is a systematic empirical inquiry in which a researcher does not have direct control of independent variables because their manifestations have already occurred [33]. An explanatory non experimental research design is appropriate in studies involving explanation of how the phenomenon operates by identifying the underlying factors that produce change in it such that there is no manipulation of the independent variable [33].

5.2.4 Empirical Model:

In order to establish the relationship between financial performance of commercial banks and internet banking, mobile banking, agency banking, ATM Banking, financial inclusion and financial liquidity, the study researcher proposes to employ multiple regression model. The general empirical model that will be used in the study is as follows: $FP = \beta_0 + \beta_1 IB + \beta_2 MB + \beta_3 AB + \beta_4 ATMB + \beta_5 FI + \beta_6 FL + e$; where: FP = Financial Performance; β_0 = Constant Coefficient; β_1, β_2, β_3, β_4, β_5, and β_6 = Coefficients of the independent variables; IB = Internet Banking; MB = Mobile Banking; AB = Agency Banking; ATMB = ATM Banking; FI = Financial Inclusion; FL = Financial Liquidity and e = Error term.

5.2.5 Target Population:

A population is a complete set of individuals, cases or objects with some common observable characteristics [49]. The proposed target population in this study will be composed of all the fourty three licensed commercial banks in Kenya. The target population will be sourced from the Central Bank of Kenya.

5.2.6 Sampling Design:

A census approach is proposed to be adopted for this study due to the small number of commercial banks. A census approach enhances validity of the collected data by including certain information in the study. Forty three licensed commercial banks will be used in the study.

5.2.7 Data Collection:

The researcher proposes to use secondary data type. Secondary data is data that has already been collected for some other purpose by other researchers in their research [67]. According to Ghauri and Grønhaug [23], secondary data type has enormous savings in resources in particular time and money. Secondary data type is likely to be of a higher quality [73]. It also easily takes care of time constraints and is fit for undertaking longitudinal studies [67]. The data for this study will be collected from the Central Bank of Kenya and audited financial statements of commercial banks for the period 2007 to 2016.

5.2.8 Data Analysis and Presentation:

The data collected will be analysed using inferential statistics which will include multiple regression analysis and analysis of variance (ANOVA). The statistical package for social science (SPSS) software is proposed to be used to analyse the data. For ease in presentation, analyzed data will be presented in figures, tables, percentages, graphs and charts. To evaluate the explanatory power of the regression model developed, analysis of variance (ANOVA) will be carried out to test whether any of the independent variables is related to the dependent variable using the following hypothesis: $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$; H_1 : At least one $\beta \neq 0$. If the null hypothesis is rejected, then at least one of the independent variables is linearly related to financial performance of commercial banks. If the null hypothesis is not rejected, then there is no linear relationship between financial performance of commercial banks and any of the independent variables.

The data will be tested for normality, homoscedasticity, multicollinearity and linearity. To make valid inferences from the regression analysis, the residuals of the regression should follow a normal distribution. Normality will be tested using the Shapiro-Wilk test. Homoscedasticity refers to whether the residuals are equally distributed or whether they tend to bunch together at some values and at other values, spread apart. Homoscedasticity will be tested using Breusch Pagan test. Multicollinearity refers to when the predictor variables are highly correlated with each other. Multicollinearity will be tested using the variance inflation factor (VIF) values. Linearity will be tested using ANOVA.

5.3 Conclusion:

Many studies have been carried out in relation to financial innovation and financial performance. So far, the findings in these studies have been inconclusive. Majority of the studies found that financial innovation is positively related to the financial performance [7], [22], [46], [3]. Other studies established that only some of the independent variables were positively related to financial performance with the others being negatively related to financial performance [5], [52], [48]. There were still some studies that established that financial innovation was negatively related to financial performance [6], [58], [56]. It was interesting to note that in some studies, financial innovation was negatively related to financial performance in the first year and then in the second and subsequent years, it became positively related to financial performance [57].

Based on the varying results in the many previous studies that have been carried out in this area and the research gaps discussed earlier, there is a need to carry out an elaborate study on the effect of financial innovation on the financial performance of commercial banks in Kenya. The proposed study will therefore be aimed at addressing these two issues and especially the research gaps.

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