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Determinants of financial performance of commercial bank Fintechs in Kenya.

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DETERMINANTS OF FINANCIAL PERFORMANCE OF COMMERCIAL BANK FINTECHS IN KENYA

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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DEDICATION

I dedicate this work to my family who have been a constant support during this period.

I would not have managed to complete the program without them encouraging and championing me all the way.

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LIST OF ABBREVIATIONS

BIS	Bank for International Settlement
CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CMA	Capital Markets Authority
GAFA	Google, Apple, Facebook and Amazon
KCB	Kenya Commercial Bank
PSP	Payment Services Provider
R&D	Research and Development
SME	Small and Medium Enterprise

ABSTRACT

The main objective of this research was to investigate the determinants of financial performance of commercial banking Fintechs in Kenya. Three specific objectives of the study were: to assess the effect of capital adequacy on the financial performance of commercial Banking Fintechs in Kenya; to assess the effect of size of customer base on the financial performance of commercial Banking Fintechs in Kenya; to assess the effect of size of loans advanced to customers on the financial performance of commercial Banking Fintechs in Kenya. The theoretical foundation of this study was guided by four theories: Innovation Diffusion theory, Technology Acceptance model, Resource Based theory and Schumpeterian Innovation theory. Philosophical approach was positivism while panel data research design was employed. The population of the study was 33 banking Fintechs and 10 commercial banks used as a control sample in Nairobi, Kenya. Purposive sampling method was used to select the 33-commercial banking Fintechs and 10 traditional commercial banks in Kenya during the study period of years 2014-2018. For data collection, secondary data related to capital adequacy, size of loans advanced and total customer base was used. Content validity was applied with data reliability measured using data from audited financial statements. To comply with research quality of data collected, diagnostic tests were conducted. Panel data analysis method where STATA data analysis software was used, anchored data analysis. The findings showed that capital adequacy (-0.352) has significant and negative relationship with financial performance of commercial banks. This implies that for every increase by one unit of capital adequacy, financial performance of Fintechs decreases by 35.2%. Findings established that customer numbers (-0.194) has significant and negative relationship with the financial performance of commercial banks. The study findings revealed that size of loans advanced (-0.028) has a negative but no significant relationship with financial performance of commercial banks in Kenya. The study concluded that the existence of significant effect of capital adequacy and number customer indicate that the two variables are important indicators of financial performance of commercial banks after the entry of commercial banking Fintechs. In addition, conclusion was made that the insignificant relationship between size of loan and financial performance of commercial banking Fintechs may translate to non-performing loans or loan defaults. This in essence may lead to decrease in financial performance of commercial banks. The study recommended that the disruptive effect of commercial banking Fintechs has enormous impact on the financial performance and volume of revenue of commercial banks in Kenya. The study recommends that it is necessary to establish the specific attributes of capital adequacy and number of customers that contribute to the significant effect on performance of commercial Banking Fintechs in Kenya. Since size of loans advanced has no significant effect on financial performance of commercial banks, it is important to establish other specific attributes associated with loans advanced that affect financial performance of commercial banking Fintechs. The major contribution of the current study was that previous studies have used multiple regression analysis and descriptive analysis while the current study had employed panel data analysis technique.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Fintechs, an acronym for financial and technology are used in studies to mean innovations that target disrupting the long-main binding financial sector (Pwc, 2017). Financial Technology (Fintechs) has the possibility to disturb and alter finance in a number of ways, mainly in upcoming markets, from insurance to making payments, from credit to financial compliance. As suggested by Dorfleitner, Hornuf, Schmitt and Weber (2017) Fintechs denote companies or representatives of companies that combine financial services with modern innovative technologies.

Fintechs generally aim to attract customers with products and services that are more user-friendly, efficient, transparent, and automated than those currently available. Thus, Fintechs is the new technology innovation that aims to compete with traditional financial entities in delivery of financial services and improving activities in finance. Fintechs are a blend of technology and business models that are innovative which alter, disturb or improve financial products and services (PwC, 2017; Blythin & Cooten, 2017). Fintechs firms comprise both established and startup financial and technology firms trying to do away with or promote the usage of financial services provided by current financial companies (Schuffel, 2016).

The World Economic Forum's (2015) report indicates that Fintechs is more than the latest fad in finance and that banks are genuinely concerned about the consequences of these technological developments on their business models. These ecosystem developments lead to new ways of financial service provision, such as crowd funding (Langley, 2016), which potentially disrupt established financial profit channels. Financial service providers, particularly commercial banks and insurers are rapidly transforming their business models hinging on dense retail networks.

1.1.1 Fintechs and Traditional Commercial Banks

Unlike traditional banks, Fintechs generally aim at attracting customers with products and services that are more user-friendly, efficient, transparent, and automated than those currently available. Traditional banks have not yet exhausted the possibilities for improvements along these lines (Dorfleitner et al., 2017). Different types of innovations have been exhibited by the emergence of Fintechs as defined through crypto currencies

and the BlochChain, new digital advisory and trading systems, machine learning and artificial intelligence. Other innovations are exhibited through peer-to-peer lending, equity crowd funding and mobile payment systems (Mackenzie, 2015).

As suggested by Pierrakis and Collins (2013) disruptive innovation by emergence of Fintechs revolution is shown in Asia and United States of America as a result of crypto currencies and the BlochChain that have transformed the field of financial transactions. These innovations have disrupted the existing traditional banks financial structures and blurred the traditional boundaries of commerce. Ibrahim (2018) cited the example of Mpesa in Kenya that has ushered in radical innovations that have totally changed the parameters of traditional banking financial transactions. It has revolutionized the traditional methods through which commercial banks created and delivered financial products and services.

The bottom line is that Fintechs enhance competition in with traditional commercial banks, provide services that traditional financial institutions do less efficiently or do not do at all, and widen the pool of users of such services. But they will not replace traditional commercial banks in most of their key functions. In most cases, Fintechs provide a more efficient way to do the same old things. Yet traditional banks are well placed to adopt technological innovations and do the old things in the new way themselves (Navaretti, Giacomo, & Pozzolo, 2017). For purposes of this study Fintechs is looked at as combining technical know-how and business models that are innovative which modify, disturb or promote financial product or services.

Most consumers use Fintechs providers to refinance or consolidate existing debts, others to finance major purchases (such as vehicles or real estate). Borrowing by students to fund higher education is prominent in the United States and China. On the business side, small and micro enterprises typically seek funds for working core capital or investment projects. Financing can also be in the form of invoice trading where investors purchase discounted claims on a firm's receivables (Claessens, Frost, Turner & Zhu, 2018). Moreover, Fintechs credit appears to play a larger role in specific market segments. For instance, in the United Kingdom it constituted about 15% of the lending flow of

comparable bank credit to consumers and small and medium-sized enterprises (SMEs) in 2016 (CCAF, 2017).

In the United States, it accounted for as much as 36% of unsecured personal loans extended in 2017 (Levitt, 2018). Estimated Fintechs mortgage originations amounted to 8–12% of the total in 2016 in the United States (Buchak et al., 2017; Fuster et al., 2018). The Fintechs lender Quicken Loans was the single largest mortgage originator in late 2017 (Sharf (2018). Lending services and deposits are accessible via Fin-Techs which allow individuals to finance easily from lenders either private or peer-to-peer. These financial technologies can spread to borrowers often sidelined by traditional banks where they integrate new forms of credit appraisal and new automated payment/money transfer systems (Claessens, et al., 2018).

1.1.2 Commercial Banks Capital Adequacy, Size of Capital Base and Size of Loans Advanced

Vives (2017) in a study on impact of innovation, competition and regulation in banks in Trinidad and Tobago intimated that the major determinants of financial performance of commercial banking Fintechs include size of the economy, size of advanced loans, the existing customer base, amount of core capital, political and legal environment in the market and goodwill from stakeholders. The findings also revealed that digitalization of financial services have increased the competitiveness of the banking sector. The measuring of the extent to which commercial banks have adopted the use of Fintechs technologies may be an exploration of the adoption of data analytics. These data analytics employs sensitive customer personal data to evaluate the extent of use in a bank. Data analytics is an important parameter of lending in commercial banks.

A good case in point in Kenya is the capability of commercial banks to access customer via Mpesa information from Safaricom (Safaricom, 2016). It is also possible to capture the conditions of automated payments in terms of efficiency, security and convenience of customers through checking on how the customer related demands are sustained. The adoption of Fintechs technologies can also be measured through assessing the size of a commercial bank's agency network. In addition, Wachira and Ondigo (2016) in a study on effect of technological innovation on financial performance of commercial banks in

Kenya established that measuring adoption of digitalization may involve an estimation of the volume of digital currencies such as bit coins and cross currency used by a commercial bank.

The regulatory basis of Fintechs and commercial banks is based on Basel Framework that comprise of set standards by Basel Committee on banking supervisor. Basel is basically a global standard setting on prudential regulation of banks. Basel has undergone three reviews from Basel 1, 2 and 3. Basel I was established to create specifications on banks' minimum ratio of capital to risk-weighted assets. Basel 2 focused on introduction of supervisory responsibilities and strengthening of minimum capital requirements while Basel 3 primarily looked at promotion of minimum capital adequacy, supervisory review and discipline in the banking sector. Under Basel 3, the minimum capital for tier 1 and tier 2 banks is 8% of the risk-weighted holdings. They are also supposed to maintain a capital conservation buffer of 10.5% (Asoko Insight, 2018). The consequences of Basel standardization are that its enhanced banking supervision leading to mergers and acquisition in the banking industry (Claessens, et al., 2018).

In 2016, Central Bank of Kenya introduced guidelines on internal core capital assessment process (ICAAP) to ensure banks have core capital. ICAAP is the formalized process of enabling banks to identify, measure, aggregate and monitoring risk with the purpose of prudent allocation of capital (CBK, 2018). CBK also enacted regulations on daily submission of customer details to Credit Reference Bureau (CRB) and standardization of analysis of data by CRBs. The regulator also enacted regulations on review of anti-money laundering and combating the financing of terrorism compliance program (CBK, 2019).

Although some Fintechs platforms will be able to issue credit at a lower interest rate in many cases these loans are costlier than the classic traditional bank term loan. While the rates charged rarely disclosed, they range from below 10% to more than 45% on an annualized basis. Goldman Sachs reports that the average annual percentage rate on loans charged by OnDeck was 51.2% in the fourth quarter of 2014. However, as bank credit is not available for small businesses in many cases, the only feasible alternatives

are merchant cash advance providers or pay-day loan providers with interest rates as high as 75-110%, and even higher in some markets (World Economic Forum, 2015). According to requirements of Basel III on size of loans advanced, the minimum leverage ratio is calculated by dividing Tier I capital by the total average consolidated assets of a bank (Asoko Insight, 2018). In Kenya CBK introduced regulations on classification of non-performing loans as stipulated by CBK Prudential guidelines (CBK, 2019).

In terms of size of loans advanced, Fintechs providers operate with a lean operational set-up, maintaining no branches and fewer personnel to make underwriting decisions. They can therefore offer loans at competitive rates or have some cushion for credit losses at the potentially higher level of risk that they underwrite. In this regard, the traditional banking entities are feeling more pressure from Fintechs companies due to the aspect of the competitiveness of Fintechs. traditional commercial banks estimate they could lose up to 28% of their market share, while other bankers estimate they are likely to lose 24% (PWC, 2016a).

In advancement of loans to potential clients, traditional financial institutions have noted the market disruptions that are due to the influence of Fintechs and are responding to it. In order to counter their perception as lagging behind, 77% are increasing internal efforts to innovate and 56% have put disruption at the heart of their strategy. Boosting internal innovation will ensure that incumbents are able to appropriately respond to the market changes that are rapidly occurring (PWC, 2017).

1.1.3 Financial Performance in Fintechs and Commercial Banks

Commercial banks assume an imperative role in preparing monetary assets for speculation by giving credit to different organizations and financial specialists. Loaning speaks to the heart of the managing an account industry and advances are the predominant resources as they create the biggest share of working pay. However, loans expose the financial institutions to a higher level of risk. This necessitates a balance of both the risk incidental to high loan book size and with the income generated from the loans (Kithinji, 2010).

Financial performance of commercial banks performance may be measured through the evaluation of financial ratios. Such ratios may include profit after tax, Return on Asset (ROE), earning per share and other market valuations that may be employed. In most occasions, profit after tax is commonly employed in measuring financial performance of commercial banks (Athanasoglu et al, 2008). Mackenzie (2015) stated that financial interrelation ratio; total loans to control deposits, bank portfolio composition, customer satisfaction and market size are other dimensions that may be utilized in measurement of financial performance of commercial banks. In addition, financial performance may be expressed through measurement of external determinants which may include legal and economic environment in which the bank operates and also checking at the internal factors derived from statements of financial position and statements of comprehensive income.

The bottom line is that Fintechs enhance competition in financial performance of commercial banks, provide services that traditional financial institutions do less efficiently or do not do at all, and widen the pool of users of such services (Asoko Insight, 2018). But they will not replace banks in most of their key functions which might not affect financial performance growth negatively. In most cases, Fintechs provide a more efficient way to do the same old things. Yet banks are well placed to adopt technological innovations and do the old things in the new way themselves.

In Kenya, this has seen two of the largest banks; Equity Bank Limited and Kenya Commercial Bank (KCB) enter into the Fintechs space with each establishing their own Fintechs so as to protect their market share. Although Fintechs have had a staggering effect on the market, financial institutions and Fintechs companies are moving closer together and redrawing the lines that separate them. Financial Institutions have begun to look inward, driving internal innovation through partnerships with Fintechs companies, innovations, and technological developments (PWC, 2017).

In relation to growth of Fintechs in Kenya, the capping of interest rates at 4 percentage points above the policy rate, in compliance with the Banking Act (2016), has increased the flow of customers to Fintechs lenders. As banks increased their threshold for lending, a significant proportion of individuals and Small and Medium Enterprises have

been excluded from borrowing as their risk is out priced. Similarly, with many large banks suspending the issuance of unsecured personal loans, customers have sought out alternative creditors in the Fintechs segment (Asoko Insight, 2018).

1.1.4 Fintechs and Traditional Commercial Banks in Kenya

In Kenya, a commercial bank is an entity that offers financial services such as issuing money, lending money and processing transactions and creating credit. By 1980s there were 24 commercial banks in Kenya with 400 branches, agencies and commercial units. According to Kenya Finance Directories (2014), by 2014, there were 44 commercial banks in Kenya, one mortgage finance company, six deposit taking microfinance institutions, five representative offices of foreign banks, 111 foreign exchange bureaus and 2 credit reference bureaus. Commercial banks in Kenya are licensed, supervised and regulated by the CBK as mandated by the Banking Act (Cap 488). Under the same Act, commercial banks in Kenya have laid down rules to operate for instance, minimum reserves, accounts and audit, information and reporting requirement, inspection and control of institutions and deposit protection fund (CBK, 2014).

According to CBK (2017), balance sheets had major components government securities, placements, loans and advances. The Kenyan banking sector remained resilient on the backdrop of turbulence in 2017, characterized by interest rate capping, unfavorable weather conditions and a prolonged electioneering period. The key highlights of the sector's financial performance were the sector's gross loans and advances decreased by 5.68 percent from KSh.2.29 trillion in December 2016 to KSh.2.16 trillion in December 2017. However, total net assets grew by 8.1 percent from Ksh.3.7 trillion in December 2016 to KSh.4.0 trillion in December 2017, with the growth being supported by investments in government securities. Customer deposits increased by 10.75 percent from Ksh.2.62 Trillion in December 2016 to Ksh.2.90 Trillion in December 2017. The growth was attributed to increased deposit mobilization by banks as they expanded their outreach and leveraged on digital platforms. The pre-tax profit for the sector decreased by 9.6 percent from Ksh.147.4 billion in December 2016 to Ksh.133.2 billion in December 2017. The decrease in profitability was attributed to a higher decrease in income compared to a marginal decrease in expenses.

The banking sector income declined by 3.12 percent in the period ended December 2017 whereas expenses marginally decreased by 0.5 percent over the same period. The banking sector remained well capitalized with core capital ratio standing at 18.8 percent in 2017, well above the regulatory requirement of 14.5 percent. The banking sector average liquidity ratio as at December 2017 stood at 43.7 percent as compared to 40.3 percent registered in December 2016. The increase in the ratio is mainly attributed to a higher growth in total liquid assets compared to the growth in total short-term liabilities. Total liquid assets grew by 16.32 percent while total short-term liabilities grew by 10.35 percent. The banking sector's average liquidity in the twelve months to December 2017 was above the statutory minimum requirement of 20 percent. The ratio of gross non-performing loans to gross loans increased from 9.2 percent in December 2016 to 12.3 percent in December 2017.

The banking sector in Kenya has, over the last few years, witnessed significant growth in consumer lending and corporate lending (Afande, 2014). This is evidenced by the growth in demand for credit as the amount of gross loans increased by 23.125% in the year across all sectors. The highest demand for credit was witnessed from personal/household, transport, communication, agriculture and trade sectors. Commercial banks in Kenya diversify their loan portfolios across economic sectors namely; agriculture, manufacturing, building and construction, mining and quarrying, energy and water, trade, tourism, restaurants and hotels, transport and communication, real estate, financial services and personal/household as well as geographical comprising of foreign and domestic loans (CBK, 2015).

However, the entrance of Fintechs in the financial sector in Kenya has led to mergers and collapse of some banks. For example, some three commercial banks have collapsed or put under receivership. They are Chase Bank, Imperial Bank and Dubai Bank. These banks also collapsed due to non-performing loans and poor management (Financial Conduit Authority, 2019). In reaction to the collapse of these financial institutions, the CBK placed a bank on licensing of new commercial banks in order to reorganize and put strategies for enhancing its supervisory capacity. CBK has continuously encouraged mergers and consolidation of the banking industry. Commercial banks on the other hand

have continued to adopt mobile-money and digitalization of services, through increasing the agency banking model (PWC, 2017).

In terms of innovation in the financial sector, Kenya is among the top three countries in Africa followed by South Africa and Nigeria. Apart from Mpesa which is the leading and most popular Fintech in the East Africa region, the exponential expansion of small and medium enterprises has increasingly motivated financial innovators to create financial payment tools. Kenya is rated as the most attractive market for Fintech workers in Africa, with Kenyan enterprises paying the highest salaries for the workers in Africa. The famous Fintechs in Kenya include 3G Direct Pay Group, Abacus, Bambapos, Bitsoko, Branch International, Chura, ConnectAfrica, Eclectics International, iNukaPap and Jambo Pay (Mitheu, 2018).

1.2 Statement of the Problem

Globally, the Fintech industry is growing rapidly. In the first half of 2015, $ 4.8 billion was invested in Fintech firms globally. In the first half of 2018, approximately $57.9 billion was invested in Fintech entities throughout the world. This was a tenfold increase in Fintech firms' investment globally (UN Capital Development Fund, 2018). European Central Bank Report (2019) indicates that the banking sector is expecting Fintech entities to execute more transactions than traditional banks by 2020. The phenomenon growth is due to reduction of entry cost and cost of provision of services has removed the entry barriers of Fintechs which characterize the banking sector. Fintechs have succeeded in providing banking services under-banked markets and all categories of people with internet access.

This has led to Fintech firms creating new types of banking services that have disrupted financial performance of some components of the banking system (Financial Conduit Authority, 2019). Thus, the banking sector has recognized Fintechs as a competitive industry. In a research by De Young et al. (2015) in Oslo Norway, Fintechs had the advantage of lesser organizational costs, advanced technological assets and extra proficient compared to commercial banks. UN Capital Development Fund (2018) had stated that reduction on operation cost by Fintechs had led to cannibalization of banking products and services. This has affected negatively affected the financial performance of

commercial banks. As suggested by Vives (2017) the major determinants of financial performance of commercial banking Fintechs include size of advanced loans, the existing customer base, amount of core capital, political and legal environment in the market.

Several studies have been done globally on the effect of Fintechs on the financial performance of commercial banks, but most have centered on generalities and in all sectors. For example, Navaretti et al. (2017) study examined Fintechs anchored by telecommunication firms and the effects on the financial performance of banks. The variables studied included credit banking, regulatory framework and core capital. Kimiri (2018) examined effect of Fintech strategy on financial service delivery to the unbanked in Nairobi, Kenya. The variables studied were cost leadership, differentiation strategies and focus strategies. However, the study has not focused on determinants of financial performance amongst commercial banking Fintechs.

Blythin and Cooten (2017) studied on development of Fintechs in Nairobi, Kenya. The study focused on capital adequacy, regulatory framework and managerial talent. Wachira and Ondigo (2016) studied on effect of technological innovation on financial performance of commercial banks in Kenya. The variables studied included customer independent technology, customer assisted technology and customer transparent technology. Kiilu (2016) investigated the effect of Fintechs on financial performance of commercial banks in Kenya. The variables studied included liquidity, regulatory framework and credit financing. Therefore, scanty research has been undertaken in Kenya to establish the determinants of financial performance of commercial banking Fintechs in Kenya measured through capital adequacy, size of customer base and size of loans advanced. This study therefore addressed this empirical gap.

1.3 Objectives of the Study

1.3.1. General Objectives of the Study

The general objective of the study is to investigate the determinants of financial performance of commercial banking Fintechs in Kenya.

1.3.2. Specific objectives of the Study

i. To assess the effect of capital adequacy on the financial performance of commercial Banking Fintechs in Kenya.
ii. To assess the effect of size of customer base on the financial performance of commercial Banking Fintechs in Kenya.
iii. To assess the effect of size of loans advanced to customers on the financial performance of commercial Banking Fintechs in Kenya.

1.3.3. Research Questions

i. What is the effect of capital adequacy on the financial performance of commercial Banking Fintechs in Kenya?
ii. What is the effect of size of customer base on the financial performance of commercial Banking Fintechs in Kenya?
iii. What is the effect of size of loans advanced to customers on the financial performance of commercial Banking Fintechs in Kenya?

1.4 Significance of the Study

The study is important to:

This study may enable policy makers in commercial banks in Kenya to identify gaps in their credit portfolio and thus enable effective competition with Fintechs. These strategic steps may assist traditional banking institutions to borrow from the strategies employed by Fintechs like digitalization to enhance their financial performance in the face of the intense competition.

The findings will shed light to management of commercial banks on the various areas of operation to diversify and strengthen in order to competently enhance financial performance in the face of unprecedented competition from Fintechs. The understanding of the challenges in the financial market may lead to better reaction to mitigate the threats posed by the entrants of Fintechs.

The findings of the study will offer future scholars a foundation of further research in the subject area. This study also contributes to the existing body of knowledge on the

financial aspects of entrance of Fintechs challenges in relation to financial performance of commercial banks.

1.5 Limitations

The findings of this study need interpretation with appropriate consideration of a number of limitations. First, with the fact that Fintechs is an emerging technology in the financial sector, few studies have focused on this area. This created a challenge in accessing empirical studies that have compared the interaction between Fintechs and the financial performance of commercial banks in Kenya. Secondly, due to the sensitivity of sharing of financial information with third parties, there was limitation in accessing in-depth information on the interaction between lending Fintechs and performance of commercial banks. This led for reliance on secondary data.

1.6 Scope of the Study

Three determinants of financial performance of commercial banks in Kenya were studied and they are: capital adequacy, size of customer base and size of loans advanced by commercial banks. The study focused on commercial banks in Kenya during the study period of 2011-2018 and the aspect of 33 Fintech commercial banks and 10 that are analogue needs. The period under review was from 2011 to 2018. This period represents the time before and after the entry of lending Fintechs, in 2015, into the traditional bank lending sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review that entails the discussion of the study variables. The chapter introduces and expounds on the theories that anchors the study. The existing research gaps and the conceptual framework are also discussed.

2.2 Theoretical Review

Theoretical review provides a framework through which variable in the study can be understood from a universal perspective. As stated by Creswell (2009), multiple theory approach in quantitative and qualitative research assists in formulating strong bases for the extraction and analysis of the constructs in the study. This study used multiple approaches in formulation of the theoretical foundation of this study as guided by four theories: Innovation Diffusion theory, Technology Acceptance model, Resource Based theory and Schumpeterian Innovation theory.

2.2.1. Diffusion of Innovation Theory

This theory was developed by Everett Rogers in 1962. The theory often looks at the process of diffusion of innovation in firms. The process of innovation usually displays an S pattern. Long-wave theory as explained by Schumpeter's (1934) on the waves of economic development shows that the move from existing business cycles to fresh ones results in the growth of industries. The implication is that, creative destruction process leads to economic growth whereby new process or product innovations does not grow out of the past ones but does away with them (Schumpeter, 1939, 1967).

According to Bower and Christensen (1995), the biggest trend in business is lack of ability of existing firms to stay ahead when technologies or markets shift. In this study, the brick and mortar financial institutions, (banks) are the existing firms facing disruption from Fintechs. According to Christensen, Reynor & McDonald (2015), innovations that are disruptive "emanate from low-end or new-market footholds". These grips can grow when leading firms stay too near to their high margin present customers and disregard innovations that suit some customer needs better (Bower & Christensen, 1995; Day & Schoemaker, 2005). Puschmann (2017) makes use of Foster's (1986)

distinction between incremental and innovations that are disruptive to illustrate Fintechs' capacity to disturb incumbent financial institutions.

Most new innovations that are disruptive permit users to go beyond technologies or practices that exist and make use of cutting-edge approaches, or enhance a position by moving beyond others very fast or by omitting some stages of an action or process (Cambridge Business English Dictionary, 2017). Advanced mobile phone ecosystem in Kenya has enabled much of the 'springing' within the finance sector (Muthiora, 2015). Aron (2017) summaries the effect of mobile money platforms such as Mpesa and argue that new technology employed has surpassed many formal banking services. This in turn has reduced barriers such as the high cost of business in brick and mortar banking (Aron, 2017). Overall, disruptive innovation and 'leapfrogging' will be addressed in relation to the formation of a disruptive Fintechs sector.

A criticism of Diffusion of Innovation theory is that it fails to acknowledge the important role played by social nature of complex technologies like Fintechs. It does not consider that the significance of the new technology like Fintechs lies in the interpretive nature of groups, organizations and industries. The diffusion, adoption and significance of new technology are dependent on the existing culture, economic structure of the society and the supporting infrastructures like education system, and government policies (Lyytinen & Damsgaard, 2001).

This theory is applicable in this study since it highlights the disruptive effect of Fintechs technologies which have diffused in the traditional banks resulting into new ways of capital adequacy or inadequacies in the process of financial transactions. The new technology has enabled the customers of commercial banks to have a new mode of financial transaction at their disposal. The net effect is that the traditional financial might of commercial banks have been significantly disrupted. This in essence has disrupted the capital adequacy of commercial numbers and even the number of customers. The theory therefore anchors capital adequacy as a variable of the study.

2.2.2. Resource Based Theory

An organization can develop competitive advantage over its rivals when it has a strategic resource. These organizations can enjoy strong profits through these competitive

advantages (Barney, 1991). Wernerfelt (1984) described tactical resource as a venture that is rare, valuable, hard to copy, and no substitutes. It can help firms to create strategies to capitalize on opportunities. Strategic resources give organization a competitive edge against rivals by aligning the resources, skills and expertise in core competence. In this case, core competence is what puts the organization a better place than its competitors (Chi, 1994).

Strategy is a plan and arrangement of actions that ensures the firm's objectives, polices and all of its activities are designed towards achieving the vision of the organization (Barney & Clark, 2009) A plan that is soundly connected with the company's objectives as well as aims take a critical part of gathering and also distribution of the company's finances into a practical background founded on the firm's potentials, external environmental set along with reliant shifts by their competitors.

Mintzberg (1994) defines a strategy as a plan of actions that is designed to achieve certain goals and objectives. Strategy is a strength that Fintech entities possess that enables them to execute more transactions than commercial banks. Through application of strategy of employing technology as a resource, Fintechs have been able to increase the size of their customer base. The main criticism of this theory is that it has too much orientation on the power of capabilities. This is because it is impossible to find a resource that satisfies all of Barney's VRIN criteria. Another criticism is that the theory dwells too much on sustainable competitive advantages rather than competitive survival of organizations in case of sustainable competition like the one threatening commercial bank. Therefore, this theory supports increase of size of customer base on the financial performance of commercial Banking Fintechs in Kenya.

2.2.3. Schumpeterian Innovation Theory

Schumpeterian Innovation was proposed by Joseph Schumpeter in 1934. According to Schumpeter, the role of entrepreneur is to make innovations in the production order, using an invention to produce a new good or produce an old good in its new form, finding a new resource of raw material or a market for products; and organizing an industry. As starting point of realizing these innovations, Schumpeter considers the state

of stable balance. An innovation should occur so that a development can be in an economy in a stable state. Thus, economy begins to develop, and balance is upset (Gallouj, 1997).

Schumpeter (1934) emphasized the role of entrepreneurship and the seeking out of opportunities for novel value generating activities which would expand and transform the circular flow of income, but it did so with reference to a distinction between invention or discovery on the one hand and innovation, commercialization and entrepreneurship on the other. This separation of invention and innovation marked out the typical nineteenth century institutional model of innovation, in which independent inventors typically fed discoveries as potential inputs to entrepreneurial firms.

Schumpeter argued that innovations as a perpetual gale of creative destruction that were essential forces driving growth rates in a capitalist system. Schumpeter's thinking evolved over his lifetime to the extent that some scholars have differentiated his early thinking where innovation was largely dependent on exceptional individuals/entrepreneurs willing to take on exceptional hazards as an act of will. His later thinking recognized the role of large corporations in organizing and supporting innovation. This resulted in his emphasis on the role of oligopolies in innovation and which later was falsely viewed as the main contribution of his work (Freeman, 1994). Schumpeter drew a clear distinction between the entrepreneurs whose innovations create the conditions for profitable new enterprises and the bankers who create credit to finance the construction of the new ventures (Schumpeter, 1939). He emphasized heavily that the special role of credit-creation by bankers was 'the monetary complement of innovations' (Schumpeter, 1939).

As independent agents who have no proprietary interest in the new enterprises they finance, bankers are the capitalists who bear all the risks (none is borne by the entrepreneurs). That requires having the special ability to judge the potential for success in financing entrepreneurial activities. Schumpeter emphasized that it is just as important to deny credit to those lacking that potential as it is to supply credit to those having it (Schumpeter, 1939).Schumpeter's brief discussions of historical episodes of innovations

in the field of banking might appear to suggest a positive role for financial innovations in financing the entrepreneurial ventures that produce the primary wave growth spurts. The spread of joint stock banking was cited as one of the most important innovations that occurred in the early1800s (Schumpeter, 1939).

Schumpeter (1939) propositions particularly interesting allusion to innovations in the banking sector is found in Schumpeter's discussion of the banking acts of the 1930s. He stated that the 1933 act introduced important reforms which included the strengthening the Federal Reserve's power to regulate member banks' extension of credit for speculative purposes and the separation of commercial banks and their security affiliates. For all his insight on the role of innovation, Schumpeter still did not really explain the source of innovation. He was able to point to its importance and its role in timing economic cycles but did not address its source.

This rather interestingly allowed Keynesian economics to argue that levels of investment were the cause of innovation. It was not until the 1960s that economists would begin again to search for the source of innovation. The importance of innovation was highlighted by researchers like Abramovitz (1956) and Solow (1957) who were able to demonstrate how little neo-classical economics was able to explain. Based on data on the United States economy from 1909-49, Solow showed that only 12.5 percent of the increase of per capita output could be traced to increased use of capital. This left a surprisingly large 87.5 percent residual that Solow attributed to technical change.

Schumpeter's assertions have been supported by Porter (1992) that innovation is vital for a country's long-run economic growth and competitive advantage. Porter (1992) argues that to compete effectively in international markets, a nation's businesses must continuously innovate and upgrade their competitive advantages. Innovation and upgrading come from sustained investment in physical as well as intangible assets. Financial markets play critical roles in mobilizing savings, evaluating projects, managing risk, monitoring managers, and facilitating transactions.

The major weakness of Schumpeterian theory of innovation lies in the argument that changes in technology drive the general boom and bust phenomenon. Critics argue that

causality works in the exact opposite direction. This means that instead, it is the general boom that creates technological changes and market disruptions. Some of these disruptions are good for the economy whereas other disruptions are bad (Witt, 2016).

The theory is applicable in the study since it introduces some aspects of the technological innovations like Fintechs that is characteristic of the financial technological industry. It also introduces the aspect of creative destruction that characterizes Fintechs firms and the overall effect of the disruptive force that eventually replaces the traditional monopolistic tendencies of commercial banks. This means that the size of loans that commercial banks are able to advance to the potential customers is competing with the amount the existing Fintechs are able to disburse. There is thus intense competition on loan advanced due to the radical innovation of Fintechs. The theory anchors size of loan advanced as a variable in the study.

2.2.4. Technology Acceptance Model

Technology Acceptance Model was developed by Davis (1989). The model proposes that the relationship between the user's acceptance to any innovative technology and the users' apparent ease of use and usefulness of such technology. The Technology acceptance theory suggests that there are several issues determine the decision about how and when the technology will be used. These issues include the apparent convenience and the perceived user-friendliness of a particular technology (Davis, 1989).

Legris, Ingham and Collerette (2003) argued that they proved that TAM is a theoretical model that can help clarify and envisage customer actions of IT. Sabi (2014) explained TAM theory as the most relied and applied theory as evidenced by thirty-one articles or sixteen percent out of the one hundred and eighty eight articles he reviewed. A limitation of this theory is that the cardinal assumption that behavior is measurable is falsified. This is because behavior of customers is not quantifiable in an empirical investigation. This is because behavior of potential customers is dependent on various subjective factors such as the existing norms and behaviors in the organization (Sabi, 2014). In this study, the theory is relevant because it is a factor that assist in

anchoring size of customer base as a significant determiner of financial performance of commercial banking Fintechs in Kenya.

2.3 Determinants of Financial Performance of Commercial Banks

The determinants of financial performance of commercial banking Fintechs is borrowed from Vives (2017). The author suggested that the major determinants of financial performance of commercial banking Fintechs include size of advanced loans, the existing customer base, and amount of capital, political and legal environment in the market. In this section, capital adequacy, size of customer base and size of loans advance are discussed.

2.3.1. Capital adequacy

Bank capital is the difference in the value of the bank's asset and its liabilities, or debts. The asset portion of a bank's core capital includes cash, government securities, and interest-earning loans while the liabilities sections of bank's core capital include loan-loss reserves and any debt it owes. A bank's core capital: can be bought off as the margin to which creditors are covered if the bank would liquidate its assets (Barus, Muturi, Kibati & Koima, 2017).

Banks core capital can be in form of issues and paid-up share is money with which the business of banking is started. Overtime, the capital funds of the bank reflect the accumulated capital. Core capital (also known as capital requirement or regulatory capital) is the amount of capital a bank or other financial institution has to hold as required by its financial regulator (Zerfeshewa, 2010). This is usually expressed as a core capital ratio of equity that must be held as a percentage of risk-weighted assets.

Capital adequacy relates to the quantum of fund that are needed and retained by a financial institution in order to effectively conduct its financial transactions prudently. The core capital in the position of a bank normally depends on a number of factors ranging from the size of the bank, the operation risks of the bank, the forces interacting with the market, lending policy of the bank and the managerial capabilities of the bank (Asikhia & Sokefun, 2013). It is also pegged on its portfolio in terms of the cash and assets within the bank.

Core capital may also be viewed as a bank's percentage ratio on its primary capital as contrasted with the loans and investments. This parameter is normally used as a measurement of the financial stability and strength of a bank (Amahalu, Abiahu, Okika & Obi, 2016). As per the requirements and specification of international settlements (BIS), core capital adequacy should comprise of a primary capital base equal at least to eight percent (8%) of the total assets.

Capital adequacy of a bank is very important in the light of the global financial crisis where bail out measures is now being employed by the regulatory authorities to keep the financial system afloat, Even, there is existing levels of capital adequate to be considered for the increasing levels of risk and this has been an issue of debate between bankers and the supervisory authorities (Barus et al., 2017).

Basel Framework spells out the regulations for supervision of commercial banks. Under the regulatory framework of Basel 3, the minimum core capital for tier 1 and tier 2 banks is 8% of the risk-weighted holdings. They are also supposed to maintain a capital conservation buffer of 10.5% (Asoko Insight, 2018). In Kenya, three commercial banks have failed to meet the requirements and they include Chase Bank, Imperial Bank and Dubai Bank. After the financial distress in these banks, CBK placed a limitation on bank licensing to reorganize and put strategies for enhancing its supervisory capacity (CBK, 2018).

2.3.2. Size of customer base

The size of the bank is normally measured in terms of assets such as the volume of the customer base. A study by Goddard, et al. (2004) showed that there is a significant and positive relationship between the bank's size in terms of customers and its financial performance. This is associated with the fact that the bigger the size of the bank the lower the cost of raising capital for that bank and thus the higher the profitability ratios. The size of the commercial bank or any other business entity in terms of the customers is a very significant determinant of profitability due to various issues.

Commercial banks that have a large customer base are able to expand their operations geographically to regions where competition is not very high or to regions where the market is largely untapped. Such a move would increase the customer base of the bank

in a significant manner and this would also lead to increased customer deposits (Goddard, et al., 2004). It is important to remember that most of the profits of commercial banks come from the reinvestment of the customer deposits as well as through lending to borrowers.

Increased customer deposits mean that the bank has a higher lending capacity. Such a high lending capacity will result in the bank making more money from the loans and thus recording higher profit margins than those commercial banks that have a smaller customer size. It is therefore clear that there is a relationship between the size of the bank in terms of customer base and its level of financial performance or profitability (Ongore & Kusa, 2013). Another dimension related to the relationship between the customer base of the bank and its profitability is the idea that a bank with more customers is able to make huge investments in technology and other input factors which increase the firm's efficiency as well as its customer base.

Investments in technological innovations as well as engaging in joint ventures with technological companies such as companies providing mobile money transfer services is one way of improving the performance of the commercial banks. In Kenya for example, one of the largest commercial banks in terms of assets (Kenya Commercial Bank) has entered into various partnerships with Safaricom and other mobile networks to develop a mobile money transfer platform which has enabled to increase its revenues in a significant manner and thus its profitability (Ongore & Kusa, 2013).

2.3.3. Size of loans advanced by commercial banks

According to the bank theory, there are six (6) main types of risk which are linked with credit policies of banks and these are credit risk (risk of repayment), interest risk, portfolio risk, operating risk, credit deficiency risk and trade union risk. However, the most vital of these risks, is the credit risk and therefore, it demands special attention and treatment (Barus et al., 2017). The funds extended to customers as credit also called assets. A research on the effect of loan book on profitability of banks by Simiyu (2016) found that growth in a banks' loans portfolio adversely affects the banks financial performance in the subsequent years.

It also found that growth in banks' loan portfolio resulted in increased in non-performing loans in subsequent years. These findings support the findings by Amahalu et al. (2016) that current loan growth leads to increases in loans losses in subsequent years. Diversification is seen as a technique of minimizing exposure to loss. However, the findings of this study failed to support that loan portfolio diversification reduces the problem of bad loans as banks grow their loan portfolios. Interest rates provide a pricing mechanism for loans in financial markets (Muhindi & Ngaba, 2018). As generally indicated by the law of demand, lower prices (interests' rates for the case of loans) would help attract more demand. Normally, commercial banks lower their lending rates so as to attract more borrowers and grow their loan book. The study also found that commercial banks lend more cautiously following periods of financial performance of commercial banks. In periods of economic expansion banks do not pay much attention to borrowers' credit history (Simiyu, 2016).

2.4 Empirical Review

2.4.1. Effect of capital adequacy on the financial performance of commercial Banking Fintechs

A study was carried out by Thiongo, Matata and Simiyu (2016) on the effect of loan portfolio growth on financial performance of commercial banks in Kenya. The study was seeking to evaluate the effect of growth in commercial bank's loan book, the effect of change in banks asset quality, the effect of change in banks liquidity and the effect of change in banks capital adequacy on the financial performance of commercial banks in Kenya. The study concluded that amount of bank capital has a positive and significant effect on financial performance of commercial banks in Kenya. The study recommended that commercial banks should increase the amount of core capital in order to improve financial performance. The conceptual gap was that the study focused on loan portfolio growth and failed to address capital adequacy in relations to financial performance of commercial banks.

Blythin and Cooten (2017) carried out a study on the development of Fintechs in Nairobi, contributions to financial inclusion and barriers to growth. Mixed-methods approach comprising of 21 semi-structured interviews, along with informal interviews,

policy analyses and comprehensive bibliographic research was used. The findings of the study showed that Nairobi has emerged as a Financial Technology (Fintechs) hub due to the pioneering success of Mpesa, the inadequacy of incumbent financial institutions and Kenya's conducive business and regulatory environment.

However, Fintechs companies in Nairobi face a number of challenges inhibiting their growth, such as: shortages of managerial and software-development talent, poor access to data and information, and insufficient levels of credit and investment. There is also evidence that some Fintechs can actually do harm, notably due to a lack of regulation, which therefore permits companies to offer easy-access, high-interest credit to financially illiterate consumers. The conceptual gap was that the authors did not address effect of Fintechs on capital adequacy and the overall financial performance of commercial which this study sought to address.

Li, Spigt and Swinkels (2017) studied on the impact of Fintechs start-ups on incumbent retail banks' share prices in USA. The target population of the study involved start-ups on the stock returns of 47 incumbent US retail banks for 2010-2016. The study employed the use of data on both the dollar-volume of funding and number of deals and related these to stock returns with panel data regression methods. The findings established that a positive relationship exists between the growths in Fintechs funding or deals and the contemporaneous stock returns of incumbent retail banks. This study had the contextual gap of focusing on retail banks in USA which is a developed economy as compared with Kenya.

2.4.2. Effect of size of customer base on the financial performance of commercial Banking Fintechs

Kemunto and Kagiri (2018) studied on the effects of implementation of Fintechs strategies on competitiveness in the banking sector in Kenya. The study was based on the descriptive research design. The target population of this study is Kenya Commercial Bank branches in Nairobi Central Business District (CBD). There are 12 KCB branches in Nairobi CBD. The sampling frame for this study consist of managerial level employees from Operations, Corporate & Regulatory Affairs, Credit, Risk, Human Resources, Information Technology and, Finance departments from these branches.

Herein, either a senior or an assistant manager from each of these 7 departments of the 12 bank branches was targeted. This made a total of 84 employees.

The study utilized primary data collected using a structured questionnaire. Data was analyzed using descriptive and inferential methods. The study found that an increase in e-banking; mobile banking; agency banking and process automation would lead to increase in competitiveness in commercial banks respectively. This shows that the strongest factor influencing competitiveness in commercial banks was mobile banking followed by process automation. The third most important independent variable was agency banking. Conversely, the least influencer of the competitiveness in commercial banks was internet banking. The conceptual gap in this study was that it focused on effects of implementation of Fintechs strategies on competitiveness in the banking sector in Kenya.

Kumar, Bijoy and George (2012) studied on the interrelationship between the Internet Banking (IB) service quality dimensions and adoption of IB by customers in Kerala. Using a structured questionnaire, primary data were collected from 240 IB users from both public sector banks and private sector banks, identified randomly from various parts of Kerala. Multiple regression was used to study the interrelationship between dependent variable (Adoption i.e., Years of IB use) and independent variables (web security, reliability, responsiveness, fulfillment, efficiency and privacy). The findings indicate that the strongest predictor based on Beta values is website security followed by privacy and responsiveness. The banks should take appropriate strategies and tactics to empower and delight customer force to popularize and penetrate IB services since it is cheap, convenient and easily accessible. The contextual gap is that the focus was on Internet Banking and service quality dimensions in India. The current study related Fintechs and financial performance of commercial banks in Kenya.

Saeed, Azim, Choudhary and Humyon (2015) researched on service quality factors of internet banking and the effect on higher customer satisfaction level in Pakistan. The research design was a longitudinal approach of 24 commercial banks in Karachi Pakistan with a sample size of 233 respondents. Data was collected through questionnaires and analyzed by descriptive and inferential statistics. Based on the

findings, the need for the management to establish a sequential priority to improve customer service quality in online banking service was realized. Five service quality dimensions namely, reliability, privacy, reputation, empathy and website design were noted to play a vital role in filling gaps between customer expectations and customer perceptions regarding the internet banking services. The conceptual and contextual gaps are that the focus was on internet banking and customer satisfaction in Pakistan.

2.4.3. Effect of size of loans advanced to customers on the financial performance of commercial Banking Fintechs

A study was carried out by Claessens, Frost, Turner and Zhu (2018) on the Fintech credit markets around the world. The study was conducted by the Bank of International Settlements (BIS) on Fintechs credit markets around the world in terms of size, drivers and policy issues. The study found out that Fintechs credit has grown rapidly around the world in recent years, but its size still varies greatly across economies BIS (2018). In addition, the study revealed that the higher a country's income and the less competitive its banking system, the larger is Fintechs credit as such the size of an economy's Fintechs credit market is positively related to its income level, and negatively related to the competitiveness of its banking system and the stringency of its banking regulation. Despite its fast expansion, Fintechs credit remains relatively small in most economies. This study was carried out in developed countries notably China, the United States and the United Kingdom. This is the contextual gap this study sought to address by analyzing effect of Fintechs on financial performance of commercial banks in Kenya.

Jagtiani and Lemieux (2017) explored the advantages/disadvantages of loans made by a large Fintechs lender and similar loans that were originated through traditional banking channels. Specifically, the study used account-level data from the Lending Club and Y-14M bank stress test data. Findings established that Lending Club's consumer lending activities have penetrated areas that could benefit from additional credit supply, such as areas that lose bank branches and those in highly concentrated banking markets. Findings also revealed a high correlation with interest rate spreads, Lending Club rating grades, and loan performance. However, the rating grades have a decreasing correlation with FICO scores and debt to income ratios, indicating that alternative data is being used and performing well so far. Lending Club borrowers are, on average, more risky than

traditional borrowers given the same FICO scores. The contextual gap was that the study was based in USA which is a developed economy with the current study based in Kenya, a developing country.

2.5 Research Gap

According to Intellcap (2018) the Fintechs market is projected to grow at 25% from $3300 billion to 5082 billion in 2019 with digital finance 'market share' expected to grow from 10% to 27% during the same period. Global investments in Fintechs more than tripled in 2014, reaching more than $12 billion while banks spent an estimated $215 billion on IT worldwide in 2014 as part of their digitization strategies. Further reaffirming PWC prediction that Fintechs may become the new business model come 2020 (PWC, 2016). However, Intellcap (2018) argue that from a personal finance management perspective, East Africa is a low insurance/investment focused market, and as such it will be hard for Fintechs to make an impact, except where the value proposition is exceptional, such as aggregation/price comparison engines, data based premium calculation among others. As such there seems to be a mismatch between consumer perceptions of the potential of Fintechs, and those from within the financial sector.

Worldwide studies have been carried out to examine the effects of growth of Fintechs on the financial performance of commercial banks. In Kenya, the most notable study done in the area of lending Fintechs has been the regulation of digital credit in Kenya (Mitheu, 2018). Ngigi (2012) also observes that financial innovation as a result if Fintechs entry in the banking industry has had a huge impact on profitability. According to CBK (2017), financial innovation is a great contributor to economic growth which in turn enhances banks financial performance.

Kiilu (2016) on the other hand did a study on the effect of Fintechs on financial performance of commercial banks in Kenya and found out that increased use of mobile payments has a positive impact on financial performance of banks. This study seeks to shed light on whether the threat of Fintechs in Kenya on traditional bank lending sector is real or a façade irrespective of the existing regulatory framework. Overall, some studies have been done both in Kenya and abroad on Fintech, but these studies have

been broad. Nevertheless, few studies have been carried in Kenya to establish the determinants of financial performance of commercial banking Fintechs in Kenya. This study therefore addressed this gap.

2.6 Conceptual Framework

Figure 2.1 shows relationship between the independent and dependent variables. The variables to be tested are the determinants of financial performance of commercial banks.

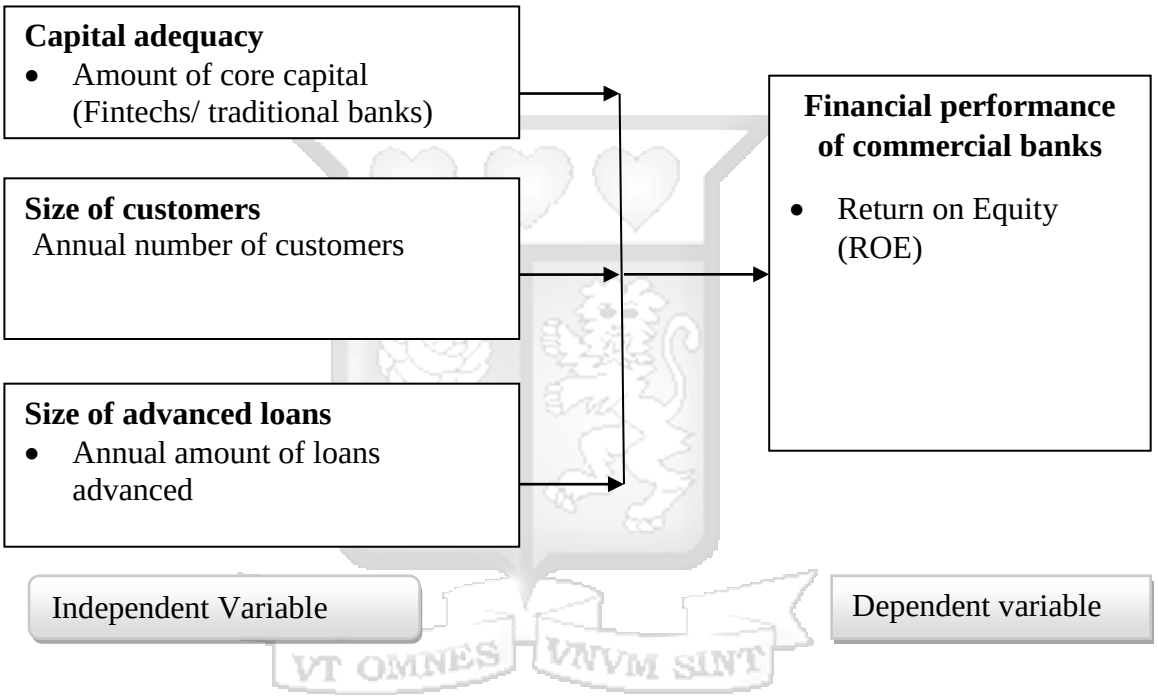

Figure 2. 1 Conceptual framework

Source: Author, 2019

The capital adequacy of commercial banks was measured by evaluating the amount of core capital for Fintechs and commercial banks. Customer size was evaluated through analysis of annual number of customers. Size of loan advanced was measured through evaluation of annual amounts of advanced loans. The financial performance of commercial banks was measured by evaluating the Return on Equity (ROE).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

This chapter introduced and described the research methodology, which was used to carry out this study. It further outlined a description of the research design, sampling techniques, population of the study, data collection methods and finally, the data analysis procedures that was used to analyze data for the study.

3.2. Research Philosophy

Philosophy is important in the research process as it opens researchers' minds to other possibilities, which can lead to both an enrichment of research skills and an enhancement in the confidence that one is using the appropriate methodology. Research philosophy is more concerned with development of knowledge and the nature of that knowledge (Creswell, 2009). Two major research philosophies in the Western tradition of science are positivism (scientific) and interpretivism (antipositivism) (McMillan & Schumacher, 2010). Being a science-based study therefore, this study will adopt the positivism philosophical approach. Similar studies by other scholars Muriithi (2016) and Kithinji (2018) used positivism philosophical approach.

3.3. Research Design

A research design refers to arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research with economy to procedure (Kothari, 2004). According to Cooper and Schindler (2003), the research design provides answers to issues such as techniques to be used to gather data, the kind of sampling strategies and tools to be used and how to deal with time and cost constraints. In this study, longitudinal research design was employed. The choice of this design was guided by the fact that 33 commercial banking Fintechs and 10 traditional banks were studied over a five-year period between years 2014-2018. In addition, both cross sectional (studying of 33 and 10 firms) and longitudinal (studying of 5-year period) approaches were employed.

3.4. Population and Sampling

Population refers to a complete set of individuals, cases or objects with some common observable characteristics (Mugenda & Mugenda, 2003) from which the researcher wishes to make some inferences (Cooper and Schindler, 2003). The population of the study must be carefully chosen, clearly defined, and delimited in order to set precise parameters for ensuring discreteness to the population (Robson, 2002). The population of study for this research was the 33 banking Fintechs and 10 traditional commercial banks in Kenya (Appendix 1).

A sampling method is a way of selecting a portion of the population such that the selected portion presents the population adequately (Chandran, 2004). Cooper and Schindler (2003) describe a sampling procedure as the systematic process of selecting a number of individuals for a study to represent the larger group from which they are selected. There are two main methods of sampling, namely, probability and non-probability sampling (Kothari, 2004). Due to the small size of the population, a census method was used to categorize the banks into two strata: 33 commercial banking Fintechs and 10 traditional banks. From each stratum, all the samples were selected.

3.5. Data Collection Techniques

The study employed the use of secondary data as a means of acquisition of requisite information regarding the study objectives. Secondary data refers to that data that has been collected by other researchers but not related to the area under study but for some other purpose and at a different time in the past (Mohajan, 2017). Secondary data was obtained from secondary sources such as CBK Bank supervision report, internet and World Bank reports. The secondary data that the researcher managed to obtain related to capital adequacy, size of loans advanced and total customer base. The financial statements of the commercial banks were reviewed in order to assess the effect of Fintechs in Kenyan traditional bank sector and the final financial performance.

The nature of data retrieved from the financial statements was based on specific objective which measured capital adequacy, loans advanced and total customer base. The period under review was from 2014 to 2018. This period represented the time before and after the entry of lending Fintechs into the traditional bank lending sector. Fintechs

entered the lending sector early 2015. The secondary data set consisted of yearly observations. The collected data related to 33 commercial banks over a five-year period i.e. during the years 2014 to 2018.

3.5.1. Validity of Data

Validity refers to the extent at which a variable is able to consistently measure what it purports to measure (Hair, Money, Page & Samouel, 2009). Three form of validity common in research include content, content and construct validity. In this study, content validity was applied.

3.5.1. Reliability of Data

Reliability is the dependability data as interpreted by the bridge between the construct and the data (Bryman & Bell, 2011). In this study, data reliability was measured using data from audited financial statements and the auditing aspect provided the aspect of data reliability.

3.6. Research Quality

To conform to research quality, the study tested for a number of diagnostic tests that included: normality, Heteroscedasticity, Multicollinearity autocorrelation and linearity.

3.6.1. Normality Test

A normality test is used to decide whether sample data has been drawn from a normally distributed population (Sekaran & Bougie, 2010). There are several methods of assessing whether data are normally distributed or not. They fall into two broad categories: graphical and statistical. Normality plays a vital role in predicting the scores of the dependent variable and also in knowing the shape of the distribution (Paul & Zhang, 2009). This study adopted Shapiro Wilk test to test for normality. It tells how well a theoretical distribution models the empirical data. Park (2003) states that the quantile-quantile plot compares ordered values of a variable with quantile of a specific theoretical distribution (i.e., the normal distribution). If two distributions match, the points on the plot will form a linear pattern passing through the origin with a unit slope.

3.6.2. Multicollinearity Test

Multicollinearity refers to the phenomenon where one independent variable in the situation of a multiple regression model is linearly predicted from the analysis of the others with a certain degree of accuracy (Sekaran & Bougie, 2010). Multicollinearity was performed on the data by examining VIF (Variance Inflation Factor) and assessing the tolerance (1/VIF). Independent variables are considered collinear if the value of VIF exceeds 3. Multicollinearity was also tested in this study.

3.6.3. Homoscedasticity Test

In a linear regression model, it is assumed the error term has a normal distribution with mean zero and constant variance of which is called homoscedasticity (Chandran, 2004). In a situation where the error term does not have constant variance, it is said to be heteroscedastic. When the regression error is homoscedastic that is when the regression model is accurate across the range of the dependent variable (Bryman & Bell, 2011). When the homoscedasticity assumption is met, residuals form a pattern less cloud of dots.

3.6.4. Tests of Significance

T-tests were used to test the significance of the relationship between the independent and dependent variables. A key statistic is R^2 which is a measure of goodness of fit was used to show the percentage variance in the dependent variable that was explained by the independent variable. Also, the F-Statistic (ANOVA table) was used to show how independent variables significantly explain the variance in dependent variable. The F critical at 5% level of significance was compared with F calculated to show if the model is significant or not. The significance should be less than 0.10 in order to indicate if predictor variable weakly explain the variation in the dependent variable (Sekaran & Bougie, 2010).

3.7. Data Analysis

In this study, data analysis was conducted through panel data analysis method where STATA data analysis software was used. The data collected was analyzed in accordance with the study objectives. The fixed effect model was used to estimate the determinants

of financial performance of commercial banking Fintechs. The model was employed since similar study by Muriithi (2016) used the model to establish the financial risk associated with financial performance of commercial banks in Kenya. Panel data analysis was used to analyze information which related to effect of Fintechs capital adequacy, customer numbers and size of loans on the financial performance of commercial banks in Kenya. To better understand the effect of Fintechs on financial performance of commercial banks, the study used panel data analysis model i.e.

$Fin.Perfit = \beta_1 Capital.Adequacy_{it} + \beta_2 Customer.Size_{it} + \beta_4 Loan.Size_{it} + \alpha_{i+}\mu_{it} + \varepsilon it$

Where,

$Yit = \beta 1 Xit + \alpha i + uit$ [eq.1]

Where

– αi (i=1….n) is the unknown intercept for each entity (n entity-specific intercepts).

– Yit is the dependent variable (DV) where i = entity and t = time.

– Xit represents one independent variable (IV),

– $\beta 1$ is the coefficient for that IV,

– uit is the between entity error term

- εit is within entity error

3.8. Operationalization of Variables

Table 3.1 indicates criterion for the operationalization of the independent and dependent variables. Operationalization is in terms of measurements, supporting past studies, supporting theories and tests for the variables.

Table 3. 1 Table of operationalization of variables

	Variables	Measurement of variables	Supporting past studies	Supporting theories	Test
1	Capital adequacy	Capital of lending Fintechs	Thiongo, Matata and Simiyu (2016) Blythin and Cooten (2017) Li, Spigt and Swinkels (2017)	Diffusion of innovation theory	Panel data analysis
2	Customer size	Annual number of customers	Kemunto and Kagiri (2018) Kumar, Bijoy and George (2012) Saeed, Azim, Choudhary and Humyon (2015)	Resource Based theory	Panel data analysis
3	Size of loan	Annual amount of loan	Claessens, Frost, Turner and Zhu (2018) Jagtiani and Lemieux (2017)	Schumpeterian theory of innovation	Panel data analysis
4	Financial performance	Return on Equity	Ngigi (2012) Kiilu (2016)	Technology Acceptance Model	Panel data analysis

3.9. Ethical Considerations

Ethical considerations such as confidentiality, anonymity and voluntary consent are very important issues in research (Mugenda & Mugenda, 2003; Tripathy, 2013). Since the data was not available freely on the internet, books or other public forums, permission for further use and analysis was sought from relevant authorities. Also, ownership of the original data was acknowledged. Where the research was part of another research project and the data was not freely available, except to the original research team, explicit,

written permission for the use of the data was obtained from the research team and included in the application for ethical clearance. Permission was first sought from Strathmore University to confirm that the information collected was used for academic purposes only. Furthermore, the researcher obtained research permit from the National Commission for Science, Technology and Innovation (NACOSTI).

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

4.1. Introduction

This chapter presents the research findings and discussion. The research findings were analyzed as per the research objectives which were: to assess the effect of Fintechs capital adequacy on the financial performance of commercial banks in Kenya; to assess the effect of Fintechs size of customer numbers on the financial performance of commercial banks in Kenya; to assess the effect of Fintechs size of loans advanced on the financial performance of commercial banks in Kenya. Therefore, this section analyses and interprets data collected from secondary sources in the period 2014-2018. The analysis is divided into three sections namely: diagnostic tests, descriptive statistics and inferential statistics.

4.2. Descriptive Statistics

Table 4.1 presents the mean, standard deviation, minimum and maximum values of the variables. The variables are capital adequacy, number of customers and size of loans of banks and Fintechs.

Table 4. 1 Descriptive statistics of banks and Fintechs

No.	Traditional banks	Mean	Std. deviation	Minimum values	Maximum values
1	Capital adequacy	0.538	0.635	0.088853066	0.987233453
2	Number of customers	158539.5	223371.5	592	316487
3	Size of loans	2914.2	5881.05	13,418	18,815,320,000
No.	**Fintech banks**	**Mean**	**Std. deviation**	**Minimum values**	**Maximum values**
1	Capital adequacy	0.207	0.245	0.033664849	0.380467774
2	Number of customers	74900	105498.9	301	149499
3	Size of loans	2042.8	3742.18	8,706	44,652,812,000

Results indicate that for capital adequacy, the mean for banks was 0.538 and standard deviation of 0.635 which is an average compliance with Basel 3 requirements. In contrast Fintechs had a mean of 0,207 and standard deviation of 0.245 indicating a higher compliance with Basel 3 requirements. For number of customers, banks had a mean of 158539.5 and standard deviation of 223371.5 indicating average compliance rate. However, Fintechs had a mean of 74900 and standard deviation of 105498.9 indicating high compliance rate. Finally, banks had a mean of 2914.2 and standard deviation of 5881.05 for size of loans indicating average compliance rate. Fintechs has a mean of 2042.8 and standard deviation of 3742.18 indicating higher compliance rate

4.3. Diagnostic Tests

4.3.1. Normality Test

A normality assessment is conducted to determine whether the data set is well modelled by a normal distribution (Paul & Zhang, 2010). This is shown in table 4.2.

Table 4. 2 Normality test

	Skewness			Kurtosis		
Variables	Statistic	Std. Error	Sig.	Statistic	Std. Error	Sig.
Fintechs Count	.660	.179	.001*	.432	.355	.034
Capital Adequacy	.316	.179	.000*	.692	.355	.001
Number of customers	.373	.179	.001*	.883	.356	.007
Size of loans	-.126	.179	.001*	.155	.355	.001

The normality test results indicate that the data was not normally distributed since the hypothesis for normality test is as follows: H0: data is normally distributed and H1: data is not normally distributed and since the p-values are lower than 0.05 at 95% level of significance. Skewness ranged from -0.126 to 0.660 while kurtosis was ranging from 0.155-0.883. Therefore, even though the data was not normally distributed, it was transformed using natural logs.

4.3.2. Heteroscedasticity Diagnostic Test

The null hypothesis is homoscedastic (lacks the problem of Heteroscedasticity) and alternative hypothesis is that data is heteroscedastic. This is shown in table 4.3.

Table 4. 3 Heteroscedasticity test

Heteroscedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.655431	Prob. F (4,33)	0.595
Obs*R-squared	2.544322	Prob. Chi-Square (4)	0.619
Scaled explained SS	1.234425	Prob. Chi-Square (4)	0.7534

The results show that since the observed R square p-value was 0.619 > 0.05 at 95% level of significance which means that the null should not be rejected i.e. data is homoscedastic and thus lacks the problem.

4.3.3. Serial Correlation Test

The null hypothesis is that data lacks the problem of serial or auto correlation and vice versa for the alternative hypothesis. This is highlighted in table 4.4.

Table 4. 4 Serial correlation test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.122395	Prob. F (2,33)	0.3442
Obs*R-squared	2.459981	Prob. Chi-Square (2)	0.2814

The R-square p-value was 0.2814 > 0.05 at 95% level of significance which means that the null should not be rejected i.e. data is lacks the problem of serial correlation.

4.3.4. Variance Inflation Factor

Variance Inflation Factor (VIF) is the diagnostic tests for multicollinearity whose null hypothesis is that there is no such problem and vice versa for the alternative hypothesis. The results are shown in table 4.5.

Table 4. 5 Multicollinearity test

Variables	**Financial Performance**	
	Tol.	**VIF**
Fintechs financial performance	.902	1.109
Capital Adequacy	.971	1.030
Number of customers	.984	1.016
Size of loans	.900	1.111
Regulations dummy	.840	1.020

The results indicate the VIF for all variables was below 5 and hence problem of multicollinearity is absent.

4.4. Correlation Test

Before regression analysis, correlation analysis was conducted to establish the association between variables. Pearson Product Moment Correlation Coefficient was used to establish this association. The results are shown in table 4.6.

Table 4. 6 Correlation test findings

Variables		**Y**	**X1**	**X2**	**X3**
Y=financial performance	Pearson Correlation Sig. (2-tailed)	1	**.526**	**.508**	**.291**
X1- capital adequacy	Pearson Correlation	.732*	1	.538	.850**
	Sig. (2-tailed)	.002		.012	.108
X2- customer base	Pearson Correlation	.732*	.889**	1	.597
	Sig. (2-tailed)	.016	.001		.068
X3- size of loan	Pearson Correlation	.752*	.889**	.658*	1
	Sig. (2-tailed)	.012	.001	.039	

Findings of correlation analysis showed that capital adequacy had moderate positive correlation of 0.526 with financial performance of Fintechs. Customer base also had a moderate positive correlation of 0.508 with financial performance of Fintechs. Finally, size of loan had a weak positive correlation of 0.291 with financial performance of Fintechs. This implies that since the level of significance is less that the set 0.05, an increase in investment in capital adequacy, size of customer base and size of loan advanced led to an increase in financial performance of commercial banking Fintechs.

4.5. Panel Data Analysis

Since the data was panel of 33 Fintechs and 10 banks during the study period of years 2014 to 2018, there was a need to determine which regression model was appropriate between fixed effects and random effects using Hausman test whose null hypothesis is that random effects model is appropriate and alternative hypothesis is that fixed effects model is appropriate.

4.5.1. Hausman test for Fintechs

In this study, the Hausman test statistics to discriminate between the specifications and highlighted in table 4.7.

Table 4. 7 Hausman test for Fintechs

Test statistic Chi (3)	P-value
12.99	0.005

The results indicate that the test statistics yielded a chi statistic of 12.99 with three degrees of freedom with a corresponding p value of 0.005. This is an indicator that the null hypothesis that the regressors and individual heterogeneity are strictly exogenous is rejected at 1% significance level. Therefore, the fixed effects specifications are preferred over random effect specification giving the necessity for interpretation of fixed effects model in the long run. In order to establish the bound where coefficients of financial performance would lay, the naïve OLS was estimated as shown in table 4.8.

4.5.2. Fixed Effects Model Regression Analysis

From table 4.8, the dependent variable is financial performance and independent variables are capital adequacy, customer numbers, and size of loan advanced. The fixed effect model was used to estimate the determinants of financial performance of commercial banking Fintechs.

Table 4. 8 Fixed effect panel regression estimates model

Dependent variable		**ROE**
Explanatory variable		**Coefficient**
Capital adequacy		-0.352***
Customer numbers		-0.194***
Size of loan advanced		-0.028
Constant		-2.286***
	Post Estimation Diagnostics	
R-square	Within	0.087
	Between	0.4181
	Overall	0.2847
	Rho	0.589
F-test (4,33)		9.18***
Chow	F (4,33)	9.34***
	KEY	
P-value< 0.01		***
P-value< 0.05		**
P-value< 0.1		*

The results indicate that capital adequacy (-0.352) and customer numbers (-0.194) have significant and negative relationship with the dependent variable, financial performance

of commercial banks. However, size of loans advanced (-0.028) has a negative but no significant relationship with financial performance of commercial banks in Kenya. This implies that for every increase by one unit of capital adequacy, financial performance of Fintechs decreases by 35.2%. Similarly, for every increase of customer numbers by one-unit, financial performance of Fintechs decrease by 19.4%. This also implies that when capital adequacy levels are low, financial performance of Fintechs is high and when customer numbers are low, financial performance of banks is high (high interest rates changed by Fintechs). The results support positivism research philosophy where results confirm the reality.

From the analysis, it is evident that size of the loan is the only independent variable that is significant since its p-value is -0.028 which is lower than 0.05 at 95% level of significance. The overall R squared for size of loans advanced was 28.4%. Capital adequacy and customer numbers do not have significant effect on financial performance of commercial banking Fintechs i.e. their p-values are greater than 0.05. It is imperative that size of loan p-value is negative which implies a negative relationship between size of loan and financial performance of commercial banking Fintechs.

In addition, F statistic was 9.18 and was greater than the critical value at one percent level of significance. Thus, the variables determining financial performance of commercial banking Fintechs have joint significance in explaining the variations in ROE. Results of interclass correlation (rho) are 58.9 percent translating that 58.9% of variations in ROE is resulting from differences within commercial banking Fintechs. The results of within and between R-square is 8.7 percent and 41.8 percent respectively. This implies that 8.7 percent of variations in ROE are due to differences within commercial banking Fintechs.

Similarly, 41.8% percent of the variations are due to differences between commercial banking Fintechs. In addition, the overall R-square for size of loan advanced is 28.4 percent implying that the variables under consideration account for 28 percent of the change in financial performance. Thus, the remaining 72 percent may be resulting from other variables not included in the model. The chow test statistics is 9.47 which are greater than the critical value at one percent significant level. This means that the null

hypothesis that the fixed effects are equal to zero is rejected at one percent significant level.

4.5.3. Hausman Test for banks

For the 10 traditional banks, the Hausman test statistics to discriminate between the specifications and highlighted in table 4.9.

Table 4. 9 Hausman test for banks

Test statistic Chi (3)	P-value
15.95	0.0012

Table 4.9 shows that the test statistics yielded a chi statistic of 15.95 with three degrees of freedom with a corresponding p value of 0.001. These values indicate that assumptions that null hypothesis of the regressors and individual heterogeneity are strictly exogenous is rejected at 1% significance level. Therefore, the fixed effects specifications are preferred over random effect specification giving the necessity for interpretation of fixed effects model in the long run. In order to establish the bound where coefficients of financial performance would lay, the naïve OLS was estimated as shown in table 4.10.

4.5.4. Fixed Effects Model Regression Analysis

Table 4.10 indicates the dependent variable as financial performance while independent variables are capital adequacy, customer numbers, and size of loan advanced. The fixed effect model was used to estimate the determinants of financial performance of 10 traditional commercial banking.

Table 4. 10 Fixed effect panel regression for control variables

Dependent variable		**ROE**
Explanatory variable		**Coefficient**
Capital adequacy		-0.642***
Customer numbers		-0.257***
Size of loan advanced		-0.120
Constant		-3.182***
	Poor Estimation Diagnostics	
R-square	Within	0.5931
	Between	0.6276
	Overall	0.6260
	Rho	0.5210
F-test (4,10)		606.91***
Chow	F (4,10)	172.63***
	KEY	
P-value< 0.01		***
P-value< 0.05		**
P-value< 0.1		*

The analysis of the results of the ten traditional commercial banks show that capital adequacy (-0.642) and customer numbers (-0.257) have significant and negative relationship with the dependent variable, financial performance of commercial banks. However, size of loans advanced (-0.120) has a negative but no significant effect with financial performance of commercial banks in Kenya. This implies that for every increase by one unit of capital adequacy, financial performance of banks decreases by 64.2%. Similarly, for every increase of customer numbers by one unit, financial performance of banks decrease by 25.7%.This also implies that when capital adequacy levels are low, financial performance of banks is high and when customer numbers are low, financial performance of banks is high (perhaps due to cost of administration and high transaction fees charged by banks). If the reality is confirmed by results it shows that the results support positivism research philosophy where results confirm the reality.

Overall R squared was 62.6% implying that variables under study accounted for 62.6 percent of change in financial performance. Therefore, the remaining 37.4% may result from variables exclusive of this study.

CHAPTER FIVE: DISCUSSION OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

The general objective of the study was to investigate the determinants of financial performance of commercial banking Fintechs in Kenya. Hence based on the comparative analysis of the objectives, this study provided answers to research questions in chapter one. The answers to the research questions are based on descriptive statistics, correlation analysis and regression analysis discussed in this chapter. The discussions on the findings of this study are organized on the basis of research questions. The study was founded on the notion that each subscriber holding a phone or two is likely to be a Fintechs customer. This chapter summarizes the findings of the study through the analyzed variables in this study. Thereafter, conclusions are made and finally policy recommendations and areas of further research are suggested.

5.2. Discussion of the Findings

The discussion of findings as per the analysis revolves around the research questions. It is evident that Kenya has emerged as a Financial Technology (Fintechs) hub due to the pioneering success of Mpesa, the inadequacy of incumbent financial institutions and Kenya's ideal business and regulatory environment. However, commercial banking Fintechs in Kenya face a number of challenges inhibiting their growth, such as: competition from commercial banks, shortages of managerial and software-development talent, poor access to data and information, and insufficient levels of credit and investment.

In regard to financial inclusion, Fintechs is undoubtedly allowing many formerly excluded Kenyans to access financial products and services. However, these Kenyans tend to be on the middle of the economic pyramid, and also owners of smartphones with access to internet, whereas those at the bottom of the pyramid remain financially excluded. There is also evidence that some Fintechs can actually do harm, notably due to a lack of regulation, which therefore permits companies to offer easy-access, high-interest credit to financially illiterate consumers. As per study findings, the relationship

between financial performances of commercial Banking Fintechs in Kenya was positive and significant.

5.2.1. Effect of capital adequacy on the financial performance of commercial banking Fintechs

This study sought to determine capital adequacy on the financial performance of commercial banking Fintechs. Based on fixed effects model regression analysis findings showed that capital adequacy (-0.352) has significant and negative relationship with financial performance of commercial banks. This implies that for every increase by one unit of capital adequacy, financial performance of Fintechs decreases by 35.2%. This also implies that when capital adequacy levels are low, financial performance of Fintechs is high. The results support positivism research philosophy where results confirm the reality.

Findings contrast with Thiongo, Matata and Simiyu (2016) whose study established that amount of bank capital has a positive and significant effect on financial performance of commercial banks in Kenya. The cause of this variation was due to the fact that the current study employed secondary data and panel data analysis while Thiong'o, Matata and Simiyu (2016) used primary data, descriptive analysis and multiple regression analysis and hence the reason for the difference.

5.2.2. Effect of size of customer numbers on the financial performance of commercial Banking Fintechs in Kenya

Findings established that in relation to financial performance of commercial banking Fintechs, customer numbers (-0.194) has significant and negative relationship with the financial performance of commercial banks. This implies that for every increase of customer numbers by one-unit, financial performance of Fintechs decrease by 19.4%. This also implies that when customer numbers are low, financial performance of banks is high (high interest rates changed by Fintechs). The results support positivism research philosophy where results confirm the reality.

The findings contrast Kumar, Bijoy and George (2012) who established that customers' security followed by privacy and responsiveness are strong indicators for increasing

customer numbers. Findings also disagree with Saeed, Azim, Choudhary and Humyon (2015) who revealed that reliability, privacy, reputation, empathy and website design were noted to play a vital role in filling gaps between customer expectations and customer perceptions regarding the internet banking services. The variation in findings is attributable to use of secondary data and panel data analysis by current study Kumar, Bijoy and George (2012) used questionnaires and multiple regression analysis and hence the reason for the difference. Similarly, Saeed et al. (2015) used quantitative analysis and path analysis and hence the reason for the difference.

5.2.3. Effect of size of loans advanced to customers on the financial performance of commercial Banking Fintechs in Kenya

The study findings revealed that, size of loans advanced (-0.028) has a negative but no significant relationship with financial performance of commercial banks in Kenya. The implication is that customer numbers may not offer a clear outcome on the relationship between commercial banking Fintechs and financial performance of commercial banks.

Findings contrast with Jagtiani and Lemieux (2017) whose findings revealed a high correlation with interest rate spreads, Lending Club rating grades, and financial performance of commercial banks. The variation in findings may be attributable to use of secondary data and panel data analysis by current study while past studies like Jagtiani and Lemieux (2017) used account level data and descriptive statistics hence the reason for the difference.

5.3. Conclusion

The study concludes that the existence of significant effect of capital adequacy and number customer indicate that the two variables are important indicators of financial performance of commercial banks after the entry of commercial banking Fintechs. Additionally, the implication of significant effect of capital adequacy to performance of commercial banks may reflect the fact that access to capital is an important attribute of the competitiveness and financial performance of commercial banks. It may also point to the ability of Fintechs to effectively outperform traditional banks since they offer customers alternatives to traditional banking solutions.

In addition, conclusion is made that the insignificant relationship between size of loan and financial performance of commercial banking Fintechs may translate to non-performing loans or loan defaults. This in essence may lead to decrease in financial performance of commercial banks.

The consequence of the significant effect of customer numbers to performance of commercial banks may reflect the disruptive effect of Fintechs to the commercial banks is that customers have left the traditional banking halls since they have the capacity to transact outside the bank environs effectively. Thus, in conclusion, the disruptive effect of commercial banking Fintechs has in effect affected the financial performance of commercial banks in Kenya.

5.4. Recommendations

It is evident that the disruptive effect of commercial banking Fintechs has enormous impact on the financial performance and volume of revenue of commercial banks in Kenya.

5.4.1. Capital adequacy and number of customers on financial performance of commercial Banking Fintechs

The study recommends that it is necessary to establish the specific attributes of capital adequacy and number of customers that contribute to the significant effect on performance of commercial Banking Fintechs in Kenya.

5.4.2. Size of loan and financial performance of commercial Banking Fintechs

Since size of loans advanced has no significant effect on financial performance of commercial banks, it is important to establish other specific attributes associated with loans advanced that affect financial performance of commercial banking Fintechs.

5.5. Contribution to Knowledge

This study has assisted in highlighting the use of panel data analysis technique as a useful method of analysis data relating to financial performance of entities like commercial banking Fintechs. It has shown that unlike in majority of past studies that employed multiple regression analysis, use of panel data analysis technique is also reliable.

5.6. Recommendation for Further Study

Similar studies should be conducted on determinants of financial performance of commercial banking Fintechs in Kenya using primary data just like some of the past studies captured in the empirical review section.

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4. LIST OF APPENDICES

5. Appendix 1: List of Licensed Commercial Banks in Kenya

ABC Bank (Kenya)	Kenya Commercial Bank
Bank of Africa	Mayfair Bank
Bank of Baroda	Middle East Bank Kenya
Bank of India	National Bank of Kenya
Barclays Bank of Kenya	NIC Bank Limited
Citibank	Oriental Commercial Bank
Commercial Bank of Africa	Paramount Universal Bank
Consolidated Bank of Kenya	Prime Bank (Kenya)
Cooperative Bank of Kenya	SBM Bank Kenya Limited
Credit Bank	Sidian Bank
Development Bank of Kenya	Spire Bank
Diamond Trust Bank	Stanbic Bank Kenya
Dubai Islamic Bank	Standard Chartered Kenya
Ecobank Kenya	Trans National Bank Kenya
Equity Bank	United Bank for Africa
Family Bank	Victoria Commercial Bank
First Community Bank	
Guaranty Trust Bank Kenya	
Guardian Bank	
Gulf African Bank	
Habib Bank AG Zurich	
Housing Finance Company of Kenya	
I&M Bank	
Jamii Bora Bank	

Source: Central Bank of Kenya (2019)