Digital Banking and Financial Performance of Tier-1 Commercial Banks of Kenya

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Abstract: *The purpose of this work was to study and present the impact/effect of digital banking and financial performance of tier one commercial banks in Kenya. There is a huge knowledge gap on the impacts of digital banking on banks financial performance in Kenya across different stakeholders. Most potential and bank customers are not fully informed that the banks offer convenience through digital banking. This research therefore aimed further to study and explore the history and progress made over the years but also report and fill the massive knowledge gaps among Kenyan bank account holders, scholars, and researchers. The research study was supported by theoretical literature which included: Diffusion of innovation theory, Resource based theory and Disruptive innovation theory. From the literature reviewed it is evident that more focus has been laid on Mobile banking, Internet banking, ATMs, Agency banking and their relation to either growth in deposits or sales. None of the studies known to the researcher, either locally or in the African field, have investigated the effect of ICT on commercial banks ' financial performance, concentrating on all the variables discussed.*

I. INTRODUCTION

1.1 Background to the problem

Commercial banks across the world have embraced business process reengineering as strategy to change on their business processes and procedures aimed at improving on their financial performance. The changing dynamics of the banking industry is forcing the financial sectors to reengineer to meet the challenges associated with bank consolidation, rising operational costs, outsourcing, portfolio investment, payments and settlement systems. To meet new competitive challenges due to technology introduction in banks and change in customer's perspective, organizations have been tasked to reconsider their ways of doing business operations (Stanley, Khong, 2003). Foreign banks come with new business models, technology processes, procedures, services and new ways of thinking necessitating the traditional and indigenous banks to reinvent them in order to remain competitive (Chase R, 2014).

Many companies in Africa are experiencing exciting changes hence taking advantage to steer emerging African economies towards a mobile driven, cashless future by introducing new products, services and business models (Bhan, 2014). Globally, banks have invested in mobile and online financial service platforms for companies to offer banking services and minimize overall operating costs (Capgemini, 2012). Furthermore, Capgemini (2012) argues that justifying the high costs of branch banking on the one side and achieving branch-driven revenue growth on the other is the biggest challenge for banks. The ever-changing regulatory climate and intensified retail deposit competition are placing pressure on the profitability of banks, pushing them to reduce their total transaction costs.

As a result of shifts in the market structure resulting from emerging branchless banking, the landscape in the Kenyan banking industry has changed dramatically over the past decade (Rosen, 2013). Rose (2013) further argues that the technological development that has taken place in Kenya over the past decade has been one of the key contributors to this transition, enabling financial institutions to offer alternative financial instruments such as mobile banking to their customers. Consumers are being introduced to Apple pay in the United States of America, while mobile cash has flourished in African countries since 2012. The African continent has been leading the world in the adoption of mobile financial services. The CBK (2017) study showed that there were eight banks in the tier one category / classification that were considered top of digital banking and ultimately reflected in the profitability spectrum of commercial banks. These trading banks were: Kenya Commercial Bank (k) ltd; Cooperative Bank of Kenya ltd; Equity Bank of Kenya ltd; Standard Chartered Bank (K) ltd; Diamond Trust Bank; Barclays Bank of Kenya ltd (now Absa Bank of Kenya ltd); Commercial Bank of Africa Ltd (now NCBA) and Stanbic Bank (K) ltd.

1.2 Statement of the problem

Online banking has been beneficial in improving the banking industry where banks have made enormous profit (Njuguna,Ritho,Olweny, & Wanderi, 2012). On the other hand rising costs of doing business and banking business have had grapping high cost and wastage and inefficient use of resources .The problem has been worsened by increased competition in banking industry as banks scramble for customers. Kenyan banks sought ways to cut

down on costs due to reduced revenue. Information technological changes have been inevitable in all sectors of Kenyan economy including financial sector. Digital banking has speedily evolved and competition intensified among commercial banks following the introduction of distribution channels such as Mobile banking, Internet banking, Agent banking and ATM banking which are the main pillars of commercial banks. Penetration of internet through infrastructure (fiber optic cable) has presented banks with new markets and distribution channels. Electronic banking has been described by Allen, McAndrews and Strahan(2002) as the provision of financial services through electronic computing and communication. Banking markets today are changing to multi-channel distribution of services by the means of hybrid platforms where traditional forms of banking are offered through branches as well as the internet. Past studies show that electronic banking has a number of benefits to commercial banks on cost efficiency. Maiyo (2013) studied how e-banking influenced how Kenyan banks performed financially and established that embracing e-banking has improved performance of banks from a rise in effectiveness, efficiency and productivity. Kiragu (2017) studied how e-banking effected how Kenyan commercial banks performed financially finding that profits increased exponentially. Gaps still exist as to whether banks that embraced all the four financial products of digital banking improve their financial profitability as opposed to those that dwell on one product. Kigen (2010 carried out research on the effects of mobile banking on the transaction costs of banks and established that mobile banking has been able to reduce transaction costs in a considerable way but was not felt by banks where customers were not well informed. Online banking has rapidly grown but there is still not enough evidence of its impact on the financial performance of banks in Kenya. A gap still exists on whether digital banking has resulted into growth of commercial banks profitability. It would be fascination to know whether distribution channels of digital banking have had remarkable improvement in the profitability of commercial banks in Kenya. Finally, therefore this study sought to fill the existing research gap by answering the following research question: Does digital banking influence on the profitability of tier one commercial banks in Kenya?

1.3 Research Objectives

1.3.1 Main objective

The objective of this research was to examine the influence of digital banking on financial performance of tier one commercial banks in Kenya

1.3.2. Specific objectives

1.3.2.1 To determine the effects of Mobile banking on Financial Performance of tier one commercial banks in Kenya

1, 3.2.2. To examine the influence of Internet banking on Financial Performance of tier one commercial banks in Kenya

1.3.2.3. To evaluate the effects of Agency banking on Financial Performance of tier one commercial banks in Kenya.

1.3.2.4. To assess the effect of ATMs on Financial Performance of tier on commercial banks of Kenya

1.3.2.5 To relate the Income levels of Digital banking platforms in association with the Financial Performance of tier one commercial banks in Kenya

1.4 Research Questions

1.4.1 What are the effects of Mobile banking on Financial Performance of tier one commercial banks in Kenya?

1.4.2 How does Internet banking influence the Financial Performance of tier one commercial banks in Kenya?

1.4.3 What are the effects of Agency banking on Financial Performance of tier one commercial banks in Kenya?

1.4.4 What are the effects of ATMs on Financial Performance of tier one commercial banks in Kenya?

1.4.5 How does Income levels of digital banking platform relate with Financial Performance of tier one commercial banks in Kenya?

1.5 Significance of the study

The main aim of the study was to fill significant gaps in knowledge about digital banking landscape in Kenya. The study findings are expected to be of great use to:

1.5.1 Scholars

The research will assist scholars understand the different components of digital banking and its effect on commercial banks ' financial performance in Kenya. They will understand the evolution of digital banking phases and what may have been the changes experienced in the era of dynamic information technology in the banking

industry. The channels of distribution used by various commercial banks to carry out digital banking will be highlighted in the study.

1.5.2Researchers

The researchers will add to their research work about digital banking and gain a better understanding on the field. The findings too can be used as a future reference material.

1.5**.3 Banks**

Commercial banks will provide quality services to its customers and encourage enhanced investment in their various financial institutions and gauge their contribution to financial performance and profitability.

1.5.4Government

The study will provide additional data to the government data base to help them carry out policy formulation that will help in finance control and efficiency in regulation.

1.5.5 Consumer and potential customers

The consumers and potential customers will get an overview of where banks lag in terms of adoption of digital banking and in providing the essential products and services. The study will also provide a benchmark for consumers and potential customers in evaluation of digital banking convenience.

1.6 Scope and Delimitation of the study

1.6.1 The scope of the study

The study was carried out in tier one commercial banks in Kenya which included: KCB (K) ltd; Cooperative bank (K) ltd; Equity bank (K)ltd; Standard Chartered bank (K) ltd; Diamond Trust bank; Barclays bank of Kenya(Now Absa Bank of Kenya ltd); Commercial bank of Africa ltd(Now NCBA) and Stanbic Bank (K).The target group of the study was 80 business heads of department or divisions, comprising of 10 heads from each of the banks in tier one classification of CBK (2017). These were the leading commercial banks in terms of net assets and market share in the banking industry and widely offered digital banking products and services such as: Mobile banking; Internet banking; Agency banking and ATM banking among others which formed the basis of this research study. This study covered a period of 10 years from 2009 to 2018being reasonable to obtain viable and conclusive evidence and analysis of information.

1.6.2 Limitation of the study

1.6.2.1 Time constraint

This was a major hindrance to the researcher. Time allocated was too small vis-à-vis the completion of MBA study which reduced the geographical scope of the study.

1.6.2.2 Population

The population of this study was tier one commercial banks of Kenya as classified by CBK (2017). The tier one category of commercial banks included KCB(K) ltd; Cooperative bank (K) ltd; Equity bank (K) ltd; Standard Chartered bank (K) ltd; Diamond Trust bank; Barclays bank (K) ltd (Now ABSA Bank Kenya ltd); Commercial bank of Africa ltd (Now NCBA); and Stanbic Bank (K) ltd. The researcher targeted all 10 departmental heads/heads of Division from each of the 8 commercial banks hence 80 respondents. The researcher could have covered all the 40 commercial banks excluding Charter house bank, Imperial bank and Chase bank that were under receivership which would have involved huge figures and incur high cost of collecting the required data as per the variables of the research.

1.6.2.3 Financial constraint

This was the main challenge that required budgetary skills to carry out the research within the available budget which reduced scope of the study as well as costs.

1.7 Theoretical framework

The research highlights the fact that technology does not stand on its own, but must be considered along with other factors (Adapa, 2011).Theoretical framework theories for this study were: Diffusion of Innovation Theory; Disruptive Innovation theory and Resource Based theory.

1.8 Conceptual framework

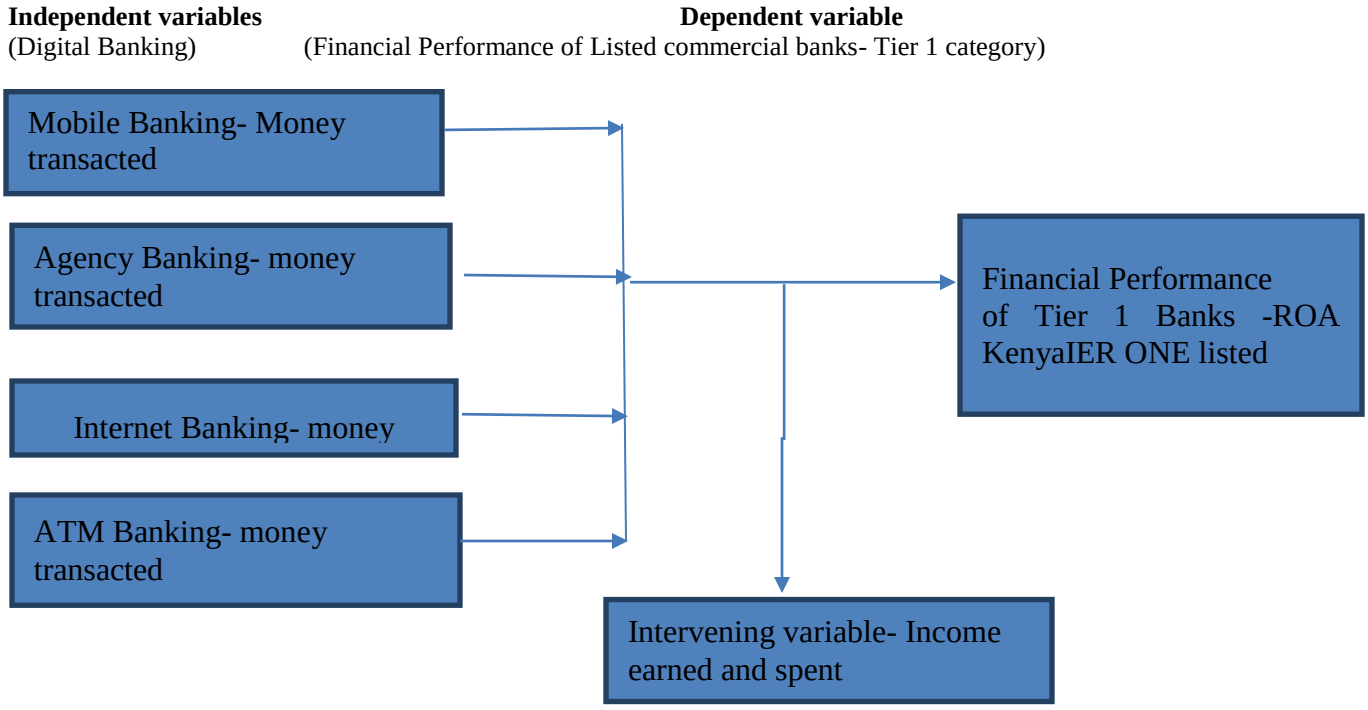

Figure 2.1 Conceptual Framework
Source: ***Researcher compilation (2019)***

The above concept implies that digital banking components such as mobile Banking, Internet banking, Agency banking and ATM individually influences financial performance of commercial banks through Return on Assets (ROA) while other factors remain constant while Income level is the intervening variable.

There are known interrelationships between the research variables, which are broken down into five post-models: mobile banking only (independent variable) and commercial bank financial results (dependent variable). The principal indicator for mobile banking is the level of investment in mobile banking, while Return on Assets (ROA) is the key indicator of the financial performance of commercial banks. Hagel (2010) argues, however, that ROA is a stronger indicator of financial performance than ROE, as all assets used to finance business operations are clearly taken into account. The use of ROA as a key performance indicator therefore focuses management attention on all the assets needed to operate the company. ROA was used as a success metric in this study as it takes into account all assets used to produce revenue for the company. The second model is Agency Banking, the key measure of which was the amount of investment itself, while the ROA was the financial output of commercial banks. The same applied to the Internet model, the ATM model and the revenue model, whose key measures were investment quantity, while ROA was the financial performance of commercial banks.

1.9 Operational framework

The operational framework was centered on past research authors of Financial performance, digital banking, Mobile banking, Internet banking, Agency banking and ATM in the following format

Table 1.1: Operational Framework

Variable	Author	Year	Measurement	Findings
Financial Performance of Banks	Roger Antoun, Ali Coskun,Bojan Georgievski	Jan 2018	Determinants of financial performance of banks in Central and Eastern Europe measurement: EARNING: ROE,ROA,ROCE EPS,PBT/PAT	Asset quality and earnings and capital adequacy and liquidity were negatively affected by size of business mix while capital adequacy was positively-

				affected by concentration of economic growth
Financial performance of Banks	Skender Ahmeti,Arta Hoti, Sevdie Alshiqi Bekteshi	2014	Performance of banking system in Kosovo 2006 to 2012 EARNINGS: ROA,ROE,ROCE,EPS,PBT/PAT,	Profit flow, liquidity and profitability- improvement from 2006 to 2008 and slowed afterwards
Financial performance of banks	Onjala Vincent Nyanga	2009	Determinants of financial performance of banks in Kenya. EARNINGS: EPS,PBT, PAT,ROE,ROA	Capital adequacy has a negative effect on ROE, and a positive effect on ROA. Operating cost efficiency had a positive effect on both ROA and ROE.
Mobile Banking	Carlos Tam and Tiago Oliveira	2017	Literature of mobile banking and individual performance UPTAKE –number of transactions and revenue collected	M-banking adoption and behaviour dominate majority of research. Perceived ease of use and perceived usefulness are significant drivers
Mobile banking	Gentiana Gjino, Orkida Ilollari	2014	Mobile banking and near future of banking- UPTAKE-number of transactions and revenue collected	Mobile banking will change retail banking in 5 years. Mobile banking meet consumer preferences, increase loyalty, strengthen relationship and positively impact on bank profits
Mobile banking	Witold Chmielarz, Konrad Luczak	2015	Mobile banking in the opinion of users of banking applications in Poland Usage- number of transactions and revenue collected	Mobile banking applications offered by Universal bank are available for mobile devices running the Android, and windows phone operating systems
Mobile banking	K Petrova PhD	2017	Mobile banking: background-services and adoption Usage – number of transactions and revenue collected	Communication technology redefining convergence of telecommunications and computing, possible provider of bundled banking services, adoption of mobile banking to depend on provision of secure, reliable and easy customer user interface
ATM	Emeka Okafor, Favour N Ezeani	2012	Use of ATM among bank customers in Ibadan Metropolis, South Western Nigeria Usage- number of financial transactions and revenue collected	Most customers access ATMs and utilize multiple transactions; most users of ATMs are young people who tend to be drivers of emerging technology in a developing society.
ATM	Solomon A.Adepoju	2010	Challenges of ATMs usage and fraud occurrences in Nigeria-in Minna Metropolis Usage- number of financial transactions and revenue collected	Adoption and usage of ATMs is increasing and so is perpetuated forms of fraud ranging from card theft, skimming, pin theft, card reader techniques, pin pad techniques and forced withdrawal
ATM	Evangeline Wachira	2013	The effect of Technological Innovation on the Performance of Banks in Kenya Usage- number of financial	Customer transparent technology was found to be effective in driving banks performance, customer assisted

			transactions and revenue collected	technology influences banks performance which also impacts on profitability
Agency Banking	Mahindra Comviva	2018	The rise of Agency Banking in Kenya Usage- number of financial transactions and revenue collected	Agency banking has grown in terms of agents share, Equity leads the market ahead of Airtel with a share of 11% and Safaricom continue to lead the market of M-PESA with a share of 79% in 2014
Agency Banking	Mbugua, Irene Njoki; Omagwa ,Job	2017	Agency Banking and Financial Performance of commercial banks in Embu town of Kenya. Usage – number of financial transactions and revenue collected	Low transaction and banking costs realized; contributed to decongestion of banking halls
Agency Banking	Josephat Lotto (author of Institute of Finance Management)	2016	The Role of Agency banking in Promoting Financial inclusion: Descriptive analytical Evidence from Tanzania. Usage- number of financial transactions and revenue collected	Reduced distance to reach customer service points; costs are reported to be lower and reduced time spent queuing in banking halls
Internet Banking	Grui Anton	2014	The impact of Internet Banking on the use Banking Services. Usage – number of financial transaction and revenue collected	Used by youth and high salaried persons; youth acquainted with internet technology; low cost transactions
Internet Banking	Oluoch, Fredrick Michael	2017	Factors Affecting Internet Banking Adoption in Kenya. Usage –number of financial transaction and revenue collected	Banks to create awareness on the benefits of internet banking; customers have access to global markets; reduced c costs of banking; saved on time and improve banking services; ease of money transfer and receipts
Internet Banking	Cheruiot, Solomon K	2010	Impact of Internet Banking on Financial performance of commercial banks in Kenya. Usage- number of financial transactions and revenue collected	Most larger banks use and benefit on internet banking than non-user; have better operating ratios and profitability

II. LITERATURE REVIEW

2.1 Review of theories

This section discussed the theories established by other researchers, authors and scholars relevant to digital banking and financial performance of commercial banks. The study specifically dwelt on Rogers' diffusion of innovation theory, Barney's resource- based theory and Christensen's disruptive innovation theory.

2.1.2 Diffusion of Innovation Theory (DOI)

DOI theory was developed by Rogers (1962). It originated in communication to describe how an idea or commodity gains traction over time and diffuses or spreads through a particular population or social structure. The end result of this distribution is that individuals follow a new concept, action or product as part of a social structure. Adoption means that a person does something different from what they previously did (i.e. purchasing or using a new product and performing a new action, etc.). The secret to acceptance is that the concept, conduct or product must be viewed by the consumer as new or creative. It is through this that it is possible to mitigate. According to Rogers, diffusion of innovation refers to a process through which an innovation is communicated to different channels over a period of time in a social system. The theory of diffusion of innovation (DOI) (Rogers, 1983) could be considered as one of the earliest theories that have attempted to explore factors that may influence an individual to adopt an innovation or a new technology. The main thesis of this theory is that innovation adoption is a process of

uncertainty about the new technology that individuals will gather and synthesize information about technology. The result of this process is beliefs that cause individuals to accept or reject the technology. Rogers (1995, p.212) suggested five key beliefs affecting the adoption of any innovation. First is relative advantage, which he defines as ''the degree to which an innovation is perceived as being better than the idea it supersedes''. According to Rogers relative advantage requires the adopter to analyze the cost and benefits of using an innovation, which can be expressed economically, socially, or in other ways. Relative advantage is basically analogous to usefulness as used by Davis, Bagozzi and Warshaw (1989, pp.224, 242-244) in their technology acceptance model (TAM). "Second is compatibility, which is defined as ''the degree to which an innovation is perceived as consistent with the existing values, past experiences and the needs of potential''. Compatibility is evaluated relative to the adopters' socio-cultural values and beliefs, previously introduced, ideas and clients' needs for innovation. In the context of Internet Banking, there is a feeling that if the technology is consistent with their current ways of doing financial transactions and the technology does not go against their current values, the technology has a higher chance to be accepted. Third is complexity which is defined as ''the degree to which an innovation is perceived as relatively difficult to understand and use''. Complexity reflects the level of physical or mental effort necessary to use an innovation. This belief is the opposite of ease of use as adopted by Davis *et al.* (1989) in TAM. The fourth belief is trial ability which is defined as ''the degree to which an innovation may be experimented with on a limited basis''. Trial ability allows the adopter to test drive an innovation so that it gives meaning to the adopter. The final belief is observance ability which is defined as ''the degree to which the results of an innovation are visible to others''.

2.1.3 Resource Based Theory (RBT)

Barney (1991) defined the term resource to include all properties, skills, organizational processes, company characteristics, data, information, e.tc, managed by a corporation that enables the organization to design and execute strategies that maximize its effectiveness and efficiency '(Barney, 1991). The foundation of the resource-based theory is the capacity of the organization to take advantage of existing resources and skills and create new ones at the same time (Wernerfelt, 1984; Pisano, Shuen & Teece, 1997). Exploitation of resources captures entrepreneurial rents through firm level efficiency advantages (Pisano*et al.,* 1997pp.513-514) whereas firms with valuable and rare resources will engage and conceive of strategies that others cannot because these firms lack the required organizational resources to explore and innovate outside their knowledge domain. Competitive advantage is sustained if other competitors are unable to obtain the same resources (Barney, 1991). Barney suggests that resources only endow sustained competitive advantage if: 1) they are valuable in that they exploit opportunities and neutralize threats in the firm's environment; 2) these resources are rare amongst current and potential competitors; 3) they are perfectly imitable and; 4) there are no strategically equivalent substitutes for these resources that are valuable, rare or imperfectly imitable. He states three reasons why resources may be perfectly imitable namely: 1) the acquisition of resources is dependent on unique historical conditions or paths, 2) the link between the firm's resource and its sustained competitive advantage is usually ambiguous and 3) the resources are socially complex (Barney,1991 pp.105-107).

2.1.4 Disruptive Innovation Theory

The concept of disruptive innovation by Christensen is a mechanism by which a product or service takes root, initially in simple applications at the bottom of a market, then continually rises up the market, ultimately displacing existing competitors (Christensen, 1997). The theory on disruptive innovation originates from Christensen's book ''The Innovator's dilemma'' 1997. The book elaborates on how technological innovation takes place and how market leaders and incumbents in their industry fail to stay on the forefronts of innovation resulting in being disrupted. In order to resolve the innovator's dilemma, where incumbent's firms can avoid being disrupted and become the disrupter themselves, Christensen and Raynor (2013) published another book entitled ''the innovator's solution''. Incumbents such as 'UBER' and Tesla are often labeled as disruptive but do not embody this term according to Professor Clayton M Christensen who first coined the term disruptive innovation. Based on Christensen's theory, to be genuinely disruptive, a firm should either create new markets that incumbents have missed, or enter at low-market foothold which has been sustained growth and profitability through the creation of new products and services for their core customer (Christensen *et al.,* 2015). As companies tend to innovate faster than their customer's needs evolve, most organization eventually end up producing products or services that are actually too sophisticated, expensive and complicated for many customers in their market. Companies pursue these sustaining innovations at higher tiers of their markets because this is what has historically helped them succeed-by charging the highest prices to their most demanding and sophisticated customers at the top of the market where companies will achieve the greatest profitability. Christensen's '' Disruptive innovation theory'' is widely popular and few academic management theories have had as much influence in the business world (King& Baatartogtokh, 2015).

2.2 Critique ofthe Theories

The critique of the theories in this study include: Diffusion of innovation theory; Disruptive innovation theory; and Resource based theory.

2.2.1 Critique of Diffusion of Innovation Theory

The classical diffusion paradigm has been critiqued for reifying expert driven top-down approaches to address problems and thus, by default overlooking and rejecting local solutions and upstream intervention (Papa, Singhal & Papa, 2006; Singha & Dearing, 2006). Diffusion of innovation Theory presents four elements that facilitate the diffusion which are innovation, communication, time and social system. For the aspect of perceived innovation, the innovation element is defined as an idea, practice, procedure or object that is perceived as novelty by a targeted group of individuals (Lundbald, 2003). The perceiver may not have sufficient knowledge about the innovation or have some knowledge about it but have not yet developed a favorable or unfavorable attitude toward it (Roger, 2009). According to Rogers (2010), relative gain, compatibility, difficulty, trialability and observability are considered as factors affecting consumer reaction to innovation (Lundbald, 2003; Rogers, 2010). Recent studies indicate that there are three variables that need to affect consumer response to service innovation, which are relative advantage, compatibility and difficulty (Agag & El-Masry, 2016).

2.2.2 Critique of Disruptive Innovation Theory

The concept of disruptive innovations has received considerable attention amongst practitioner and scholars (Ansari, Garud & Kumaraswamy, 2016). The phenomenon refers to a unique type of innovation in which specific process takes place and incumbents are ultimately disrupted by entrants (Christensen & Raynor, 2003). Christensen extends the debate on the concept of disruptive innovations to include products and business models (Christensen & Raynor, 2003; Christensen, Raynor & McDonald, 2015). The definition of disruptive business models is one which disrupts an established model or redefines what value creation and capture mean. Consistent with prior research, both disruptive technologies and disruptive business models are likely to be introduced primarily by entrants (Danneels, 2004; Ansari, *Garud& Kumaraswamy*, 2016). Danneels suggests that radical innovations are revolutionary products based on transformative technology, as opposed to incremental innovations arising from changes to the perception of technology already implemented. The theory of Disruptive Innovation (Bower and Christensen (1995); Christensen (1997) was created to illustrate how often smaller new market entrants can disrupt large incumbent companies. The theory notes that new actors who use transformative innovations with new performance attributes (Adner, 2002 and Danneels, 2004) who initially only attract niche consumers are always replaced by the incumbent company because they are 'worse initially as measured by the performance indicators of conventional consumer value' (Christensen & Overdorf, 2007). Over time, however, the latest products improve at such a rapid pace that in the future they can squarely target conventional consumer needs (Christensen et al., 2002), thereby upsetting the incumbent organization. Explanations on why incumbents do not notice or make sense of an emerging innovation: inability to identify the transformative potential of emerging technologies is variously attributed to shortcomings in the cognitive abilities of incumbent executives, such as: mistakes in management, obsolete beliefs; ineptitude; irrationality (Danneels, 2004); attention diversion due to a fixation on the core business A number of authors argue that while incumbents are often aware of the unfolding revolution, they nevertheless struggle to adjust due to resource constraints of organizational inertia, lack of capacity, pressure from external stakeholders such as investors, or the fact that it is not economical to make the shift in the short term for fear of cannibalizing existing products (Hill and Rothaermel, 2).

2.2.3 Critique of Resource Based Theory (RBV)

Resource based theory is an alternative to transaction cost economics for explaining firm integration. The presumption is that businesses abandon arms-length agreements (e.g. licensing) and seek joint equity ventures and wholly-owned subsidiaries not simply to minimize transaction costs, but because higher levels of incorporation offer a more efficient means of transmitting know-how that is implicit, difficult to imitate, and likely to result in above-normal returns (Kogut & Zander, 1993). RBT indicates that the resources and skills of the firm impact the company's growth and success (Barney & Clark, 2007). A collection of productive resources and administrative organization is known as the firm (Penrose, 1959). When the theory was first implemented, RBT's primary concern was which features could produce sustained competitive advantages. McGunagle (2007) wonders why companies in the same sector show different results. RBT claims that it is possible to combine and cumulate capital, assets and skills in nature (Barney & Clark, 2007). There is a clear rent-generating capacity in each package of strategic and complementary resources that varies with resource variations and is highly dependent on management skills (Tallman, 2005). The fundamental premises of the RBT are that companies are equipped differently with resources that are more or less strategically important and that these resources are not readily transferable through companies. Barney and Clark (2007) argues that RBT's fundamental principle is that all properties, capabilities, organizational

processes, business characteristics, business-controlled information knowledge allow the company to execute strategies that maximize its efficiency and effectiveness. Albers (2005) claims that if they become the source of sustained competitive advantage (SCA) and SCA exists when attempts to replicate this advantage by rivals have been terminated, the resources of an organization are considered strategic resources.

2.3 Empirical Review

This section of the research study will review the following variables: Mobile banking, Internet banking, Agency banking and Automated Teller Machine (ATM), financial performance, one of the leading coefficients of measuring the performance of profitability Return on assets (ROA), Mobile banking and financial performance, Internet banking and financial performance, Agency banking and financial performance, ATM and financial performance. Further to review of variables, the researcher includes an overview of classification of commercial banks by CBK in tiers/category.

2.3.1 CBK Classification of commercial banks

Central Bank of Kenya listed 40 commercial banks in its annual report 2017.This number excluded three banks that were under receivership then: Imperial bank, Chase bank and Charter house bank. Commercial banks are classified into three tiers/category based on size, market share and net assets. Tier one category is that of the top banks and number 8, tier two is medium sized banks numbering 11 while tier three are the small banks numbering 21. Tier one controls 50% of the Kenya banking sector market share while the other 50% is shared between the medium and small banks. Tier one has a weighted index of 5% and above, tier two has a weighted index of between 1 and 5% while tier three has a weighted index of below 0%. Further to CBK 2017 annual report indicated that tier one a weighted market shares of 65.98%, tier two had 26.10% while tier three reported 7.92%.

2.3.2 Mobile Banking

Mobile banking is the use of a mobile phone or another mobile device to perform a financial transaction linking to a customer's account (Muisyo, Alala & Musiega, 2014). Banks and other financial service companies take the opportunity to generate new business, attract or retain customers, control costs, and gain other advantages by deploying applications for mobile phone users. Mobile banking has changed the way banks perform their operations leading to introduction of new products and services that are aimed at lowering costs and reaching a larger number of customers (Oluoch, 2012). Mobile banking services are available to mobile phone users of two major mobile service providers namely "SAFARICOM" and "ZAIN". "SAFARICOM'S "service is branded "M-PESA" and "ZAIN" service goes by the "ZAP" brand name. Telkom and "ECONET" wireless are the latest entrants in the industry and are expected to roll out their mobile banking services in the course of time. In Kenya mobile banking is implemented by the largest mobile service provider, "SAFARICOM" which launched "M-PESA" in 2007. With the increase of 10,000 subscriptions per day, Kenya had over 7 million clients out of 38 million people by 2010. Kenya provides services of depositing and transfer of money with M-PESA agents numbering 10,000 (Syed, 2010). Though mobile banking has potential to improve saving rate and provide access to financial product, but it is still facing challenges such as payments system (Islam, 2014).

2.3.3 Internet Banking

Internet banking also known as online and virtual banking refers to a type of electronic banking known as e-banking which allows bank customers to carry out retail financial transactions through an electronic connection between the bank and customers. The main types of e-banking include PC-home banking, telephone, and the internet (Nasri, 2011). Sullivan and Wang, (2013) defines internet banking that takes the form of a website which enables customers to generate normal banking activities on their accounts without visiting a bank branchThulani, Tofara and Langton (2009) refer to internet banking as a mechanism that enables bank customers, through the use of the bank website, to access their accounts and general information on bank products and services without the interference or inconvenience of sending letters, faxes, original signatures and confirmations by telephone. Online banking has been seen as the most effective way for customers to minimize costs and retain or improve services. Hua (2009) notes that conventional financial institutions aim to reduce operating costs, enhance consumer banking services, attract customers and increase customer share by providing internet banking services. The Internet is the cheapest distribution platform for banking goods, allowing the company to reduce its branch networks and reduce the number of service employees.

2.3.4 Agency Banking

The guideline on agent banking CBK/PG/15 defines agency banking as an entity contracted by an institution and approved by Central Bank to provide defined banking services on the institutional behalf in the manner specified. 'Agent banking operation' means a business conducted on behalf of an entity by an agent as allowed under the Guideline. "Institution" has the significance of the banking Act ascribed to it. 'Outlet' means the place of business of the agent directly accountable to the Head Office, which is used to carry out the agent's

commercial operation, but does not include a mobile device. 'Real time' means the electronic processing of transactional data immediately upon entry or receipt of a command of the data. In order to include agency banking, banks have introduced migratory networks for their services. Agency banking advantages include decongestion of banking halls and long queues, reduced transaction rates, and facilities that are closer to the home of the customer. Agency banking has longer operating hours, shorter queuing than in bank branches with more accessibility for the illiterate and the weak who feel threatened in branches, increased revenue for additional foot traffic, separation from other services, prestige from association with well-known functional organization, extra commission income and incentives increased customer base and business

Agency banking has been in operation for more than seven years. According to Central Bank of Kenya statistics, 87% of agents are distributed to three banks – equity with 25428 agents, KCB 12883 and Cooperative bank with 8856 agents (2017). The three banks transacted KES 734 billion in 2016 up from 442 billion in 2015.In Kenya, agency banking is best known for its "M-PESA" mobile phone- based payment services since 2007. The publishing of the 2010 agent banking guidelines gave banks mandate to partner with non-bank- based models. A bank agent is equipped with an EMV certified POS terminal which they use to process withdrawals and deposit after the consumer swipes their EMV certified bank debit or credit card.

Agency banking was introduced in India in 2006 when banks were allowed to appoint Micro Finance Institutions (MFIs) and post offices as business correspondents for small deposit taking (Porteous, 2006). The countries in Africa that have adopted Agency banking within the last decade include Kenya, South Africa and Ghana (Bold, 2011). According to Njuguna (2010), the agent banking model was introduced in Kenya to alleviate the problem of low financial inclusion and the high cost of banking incurred by customers. The banking Act through Finance of 2009 allowed Commercial banks to contract agents to offer financial services on their behalf to the majority of the unbanked population. Central Bank of Kenya issued rules and regulation to govern agent banking in May 2005 which marked the beginning of a new era in Kenya's banking industry for Agency Banking practices.

2.3.5 Automated Teller Machine (ATM)

Automated Teller Machine (ATM) is a computerized telecommunications system that provides clients without the need for a human clerk or bank teller to access financial transactions in a public location. ATM services can be performed 24hours a day, 7 days a week and on most modern ATMs the customer is identified by inserting a plastic ATM card with a magnetic stripe or chip or a smartcard with a chip that contains a unique card number and some security information, such as an expiration date and serial number (Khan, 2010). Automated Teller Machine is also a revolutionary service delivery mode that provides diversified financial services such as cash withdrawal, transfer of money, cash deposits, payment of utility and credit card bills, requests for checkbooks and other financial inquiries (Amoah-Mensah, 2010). They face many obstacles in the attempts by banks to meet customer needs, some of which include accessibility of accounts when customers are not close to their mother banks and long waiting times in the banking hall (Islam, Kumar & Biswa (2007). ATMs are placed not only near or inside the premises of banks, but also in locations such as shopping malls, fuel station, supermarkets, restaurants where large number of people gather (Steve, 2002). Ogbuji,Onuoha and Izogo (2012) observed the ATM as one of the existing replacement of cascading labor-intensive transaction system effected through what is popularly referred to as paper based payment instruments. The researcher in this study observes that ATM channels are now becoming critically important as a self-service technology that influences financial performance of banks/institutions.

2.3.6 Income and diversification

DeYoung and Roland (2001) address three main reasons why non-interest income mayarm bank's income. First, revenue from traditional lending activities is likely to be more stable over time compared to non-interest activities. Because non-interest- income gives more disadvantages to bank rather than to customer due to low switching cost. However, in loan scheme, switching- cost, is relatively high for bank and customers. Second, diversifying to non-interest income can require heavy fixed investments in technology and human resources leading to higher capital expenditure and initial investment. Therefore, it gives higher payback period, incremental, operating - leverage, and volatile earnings. Lastly, non-interest- income activities are commonly performed under little regulatory capital, especially in less developed market. DeYoung and Roland (2001) address three main reasons why non-interest income mayharm bank's income. First, revenue from traditional lending activities is likely to be more stable over time compared to- non-interest activities. Because non-interest- income gives more disadvantages to bank rather than to customer due to low switching cost. However, in loan scheme, switching- cost is relatively high for bank and customers. Second, diversifying to non-interest income can require heavy fixed investments in technology and human resources leading to higher capital expenditure and initial investment. Therefore, it gives higher payback period, incremental operating leverage and volatile earnings. Lastly, non-interest income activities are commonly performed under little regulatory capital, especially in less developed market.

An outline of Kenyan commercial banks audited and published financial statement, there are three sections: Balance sheet, Income statement and other disclosures. Income statement contains net interest income (NII) and non-interest income (NONII) as major revenue streams. Interest income components are: loans and advances, government securities, deposits and placements with other banking institutions and other interest income. Non-interest income components too: fees and commissions on loans and advances, other fees and commissions, foreign exchange trading income, dividend income and other non-interest income. Diversification level for commercial banks per year is calculated and averaged for banking sector, peer group, ownership and faith as per CBK classification 2018. ROE and ROA are returns (EBIT) on equity and assets respectively.

2.3.7 Financial Performance

This refers to any of the numerous subjective measures to appraise how a firm is using assets at its disposal to make profit. It is the status of a company's financial wellbeing over a definite time period. It serves as a key factor for contrasting companies in the same industry. Vital measures of financial performance include capital adequacy and ratios such as profitability, liquidity, solvency and efficiency ratios such as return on assets (Julie, Bryn & Irene, 2010).

The researcher in this study dwelledon one of the tools, return on assets to demystify the influence of Digital banking and financial performance of tier one commercial banks in Kenya covering a period of 10 years (2009 to 2018).

2.3.7.1 Return on assets (ROA)

The rate of return on assets show the amount of management efficiency in applying existing resources for obtaining profit and is one of profitability ratios that source of profit is investigated not absolutely but also in connection with its acquisition source and its analysis. This rate is obtained by dividing the net profit to total assets (Anyasi & Otubu, 2009). Dew (2007) defines ROA as the total resources owned and controlled by a bank and divided by profit before tax. Profit before tax is a profitable measure that looks at a company's profit before provision of corporate income tax. PBT is the net balance after deducting all expenses from revenue. It can result to a loss before tax if expenses are higher than revenues (Cicea & Hincu, 2009). The higher the ROA, the more the profitable the bank and that it's efficient in using its resources (Wen, 2010). Return on assets can be expressed as net earnings per unit of a given asset which shows the conversion of the bank's assets into profit. Higher return on asset is appreciated and favorably considered by the owners of the banks. ROA is usually affected by disposal and acquisition of asset. The higher the level of asset increase, the higher the rate of ROA decrease and vice versa. Assets of the bank, unlike other business organizations, are financial in nature, like loans and Treasury bills (Thukaram, 2006).

2.**3.8 Mobile Banking and Financial Performance of tier commercial banks in Kenya**

Many retail transactions in Kenya have moved to the mobile phone. Bank customers can move money from their bank accounts to their e-money accounts or from their e-money to their bank accounts. This improvement of the mobile money services has increased the velocity and has resulted to more profits for the banks through commission incomes (Hasan, Schmiedel & Song, 2013). Kingoo(2011) asserts that mobile and internet banking have made organizations to provide banking services via mobiles and online. Customers have also been provided with easy access to financial services and other benefits. As digital technology becomes the demand of the day, new opportunities are developing that are difficult to assume, as many companies are looking for ways to adopt technology as a survival technique. Hernando and Nieto (2007) study on effect of mobile banking and financial performance of Spanish commercial banks, determined that banks that executed mobile banking were able to entice more customers and this definitely directed to increased contact to customer deposits leading to positive financial performance.

Tiwari, Buse and Herstatt (2006) defines mobile banking as a transaction that is started and completed by using mobile access to computer networks with assistance of electronic instrument. Mobile banking therefore means provision of bank related financial services with the assistance of mobile service. In the financial market /intermediary, e-money, e-brokering, e-financing, e-insurance, e-exchange, e-banking, e-supervision are the latest development of the banking industry with new information technology (IT) as the most contributing factor. Customers have been waiting in the banking halls in recent decades to pay their school fees, services or some other financial transactions. A critical position in raising service standards has been primarily driven by innovation. Mobile banking provides various features, including mobile banking options, but half of the world's population has either refused to accept or been denied mobile banking and financial services (Anyasi & Otubu, 2009). The mobile banking sector's efforts have, however, been found to differ across the world. Over the past few years, advancement in information technology has changed how companies conduct and run their business (Al jabriz, 2012). Mobile banking services can be used to increase skills and help businesses grow through efficient, affordable and secure money service support systems that minimize the need for cash transactions and associated risks (Anyasi & Otubu, 2009).

Fraudulent activities and mobile money technology (Wishart, 2006). A significant literature gap exists in revealing how the financial performance of commercial banks in Kenya has been influenced by mobile banking. By establishing the impact of mobile banking on the financial results of Barclays Bank of Kenya, this study sought to fill this knowledge gap. External (macroeconomic) and internal (bank-specific) variables can be listed as the determinants of banks ' financial performance (Al-Tamini, 2010). Internal factors affect the performance of individual banks, according to Aburime (2005), with a primary emphasis on internal management and board decisions. External variables are country-wide or sector-wide variables that are beyond the company's ability to monitor and influence the banks ' financial output in turn. The overall financial performance of commercial banks in Kenya has increased in the last couple of decades (Oloo, 2010).Oloo further asserts that not all banks are profitable, as there are others that declare losses. A contrary study by Mohamed (2011) to determine the impact of electronic banking on performance of commercial banks in Jordan found a negative impact between electronic banking and financial performance. The findings attribute the relationship to increased risk exposure from electronic banking.

2.3.9 Internet Banking and Financial Performance of tier one commercial banks of Kenya

Kannabiran and Narayan (2005) refer online banking through traditional banks that enable customers to perform all routine transactions, such as account transfers, balance enquiries, bill payments and stop payment requests while others offer online loan applications. In a report on the effect of mobile and internet banking on financial institutions' efficiency in Kenya, Okiro and Ndungu (2013) found that clients were able to access account details anywhere at any time. The study found that the introduction of internet banking, due to increased customer deposits, encouraged the improvement of financial results in the banking industry. Between 1994 and 2002, Hernando and Nieto (2005) analyzed the performance of multichannel banks in Spain and found higher profitability for multichannel banks through increased commission revenue, higher brokerage fees and potential reductions in staffing levels. The conclusion was that internet channel had a positive impact on banks profitability after one and a half years of adoption. In another research study Hernando and Nieto (2016) on whether internet delivery channels change bank's performance, they found that adoption of internet as a delivery channel involved gradual reduction in overhead expenses which translates to and improvement in banks profitability. The study also indicated that internet is used as a complement to rather than a substitute for physical branches. The profitability benefits associated with the implementation of a transactional website are largely attributed to a substantial decrease in operating costs. Introduction of internet banking has resulted in exceptional speed in banking system and has a key role in the globalization of banking system (Malhotra & Sing, 2009). Pikkarainen, Karjaluoto and Pahnila, (2014) describes internet banking as an internet platform that allows customers to use different types of banking services, ranging from bill payment to making investment. Further to the above, the use of internet banking leads to reduction of costs which in return leads to an increase in profitability. The internet helps banks to penetrate other financial markets without requiring their physical presence in the markets. The widespread availability of internet banking is expected to affect the mixture of financial services produced by banks, the manner in which banks produce these services and the resulting financial performance of these banks (Youn,Lang& Nolle, 2014).

2.3.10 Automated teller machine (ATM) and financial performance of tier on commercial banks in Kenya

According to Wise and Ali (2009) banks invest in ATMs to reduce branch cost since customers prefer to use them instead of a branch transaction business. The benefit of ATMs is a slight rise in fee revenue, which greatly offsets the expense of large rises in the amount of transactions made by customers. Ogbuji, (2012) noted that ATM is one of the latest cascading labor-intensive transaction mechanism replacements carried out by what is generally referred to as paper-based payment instruments. Consequently, the ATM performs the typical roles of bank cashiers and other counter workers. Both the automated and human tellers' combined services suggest more efficiency during banking hours for the bank. ATMs are a cost-effective way of achieving greater efficiency over time than human tellers. ATMs carry out complex work: they reliably identify customer, find their account information and then accurately complete the transaction-all while protecting the confidentiality of their private information. But separated from this work by a hard, metallic surface and a vague "processing transaction" for granted in a way that they do not when they are face-to-face with tellers who are working in their behalf(Ryan, 2019).ATM and deposit machines now enable customers to perform banking transactions beyond banking hours. Banks are inclined towards utilization of the available electronic banking device as others gain a competitive advantage. ATMs are cost-efficient way of achieving higher productivity as they realize higher productivity per period of time compared to human tellers. ATMs continue operating when human tellers stop,continued productivity for the banks is incurred even after banking hours(Hasan, Schmiedel & Song, 2013).A study by Adeniran, 2014) confirms that ATM intends to decongest the banking halls as customer can now go to the nearest ATM outfit to consummate their banking transaction such as cash withdrawal, cash deposit, bill payments and transfer of funds between accounts. The findings further revealed that the impact of ATM services in terms of their perceived ease of use, transaction cost

and service security is positive and significant. Wachira, (2013) in a study of effects of technological innovation on performance of banks in Kenya found that customer transparent technology was effective in driving banks performance, customer assisted technology influences banks performance which also impacts of profitability.

2.3.11 Agency Banking and financial performance of tier one commercial banks in Kenya

Ndwiga (2013) sought to explore the impact of agency banking on Kenya 's commercial banks ' financial results. The data was collected over a period of 3 years, from 2010 to 2012. The results revealed that Co-op bank, Equity bank and Kenya commercial bank showed a significant performance index out of all the banks that had rolled up the service; further findings showed that annual performance improved significantly. This meant that the continuous development in agency banking led to a significant increase in financial results in those banks that had rolled up service because of their operational quality and convenience. A clear positive impact between agency banking and financial performance was identified in the analysis. A study by Johnson, Scholes and Whittington (2008) describes a strategy to deliver positive financial results as the long-term path and reach of an enterprise that, through its arrangement of resources and skills, profits in a changing climate. Through its configuration of capital and competencies in agency banking, the advantage in a evolving world aims to achieve growth by mobilizing deposits through the aggregation of low-cost deposits, growing the customer base through new customer acquisition drives, growing the amount of financial transactions through cash withdrawals and cash deposits facilitated by agency banking. The role of agency banking operations in the financial performance of commercial banks was investigated by Jagongo and Molonko (2014). They claimed that from the lower part of the economic context, many financial institutions, including commercial banks, earn tremendous income from citizens. As most financial institutions use different market penetration strategies to move into this market segment with the goal of retaining their competitive edge, this led to high competition. In a study on how alternative financial distribution influences commercial bank efficiency, Oyugi (2015) revealed that the adoption of alternative banking channels, like agency banking, was good because they were uncomplicated and available. These alternative banking methods have been used in the transfer of money, bill payments, repayment of loans and withdrawals of cash. This has resulted in the financial results of different commercial banks being enhanced. A research by Ndirangu (2013) to determine the impact of agency banking on Kenyan commercial banks revealed an upsurge of banking industry agent outlets. The banking sector's productivity has increased. In the analysis, the empirical issue was whether there was a relationship between agent activities in terms of value transacted and profitability for banks.

The use of bank agents to meet customers has positive consequences for the financial results of commercial banks in Kenya, according to Wawira (2013). Without spending heavily in opening branches, banks reach out to several potential clients and are thus rated as a cost-effective measure. Agency banking is a banking contribution sector through low transaction cost deposit mobilization, where most banks report high deposit volumes, thereby providing an ample pool of funds against which lending is made. Banking agencies are also said to contribute to increased market share, with a positive impact on banks ' financial results. The higher the market share, the greater the performance of the economies of major banks.

2.3.12 Income and Financial Performance of tier one commercial banks in Kenya

De Young and Rice (2004) assert that financial institutions generate increased portion of their income from non-intermediation activities. Other research findings in USA and Europe on impact of income source diversification on banks financial performance are said to differ (Stiroh, 2004; De Young & Rice, 2004). Stiroh further argues that diversification benefits from shifting into non-interest income in USA banks increases bank revenue and reduces volatility of bank profits. A study done by Muthoni (2012) to establish the effect of diversification of income sources of commercial banks in Kenya on their financial performance found that interest income, fees and commissions on loans and advances, other fees and commissions, foreign trading income and other non- interest income contributed positively to financial performance.In rising non-interest earnings, Davis and Tuori (2000) showed that banks obtained diversification advantages, which in turn helped to smooth profitability. Sahoo and Mishra (2012) found that banks with greater operational diversification suffered from the problem of higher financial performance volatility and a larger asset base did not inherently assist a bank in taking its financial performance to stability.

III. CONCLUSION

There are marked emerging FINTECH innovations that need further study to be carried out in key areas that impact on financial performance of organizations / institutions. FINTECH and Financial series (June 2017) IMF staff discussion, consider digital banking would require to be broken down into its elements that include internet banking, mobile banking, agency banking, ATM and others that relate to an understanding of financial performance of banks. Local studies were conducted at a time when internet banking had been in place for a short period in Kenya (Cheruiyot, 2010). There is a gap left in understanding online banking residual effect on financial performance of

commercial banks. Currently banks are investing on diversified service channels that impact on financial performance of banks in Kenya. ATM, Self-service-cash deposit ATMS are being installed in most banks e.g. KCB. Absa bank of Kenya (Barclays Bank of Kenya)'s agency banking is being adopted by all banks (CBK guideline institution, 2011).

In Kenya's financial innovation sector, failure to empirically evaluate the importance of financial innovations to innovative firms has managerial consequences in the sense that there is no motivation to innovate in the absence of empirical evidence; Studies which have attempted to link financial innovations to firm performance have created a bypass around empirical approaches, consistent with findings of Frame & White's (2004).

From the literature reviewed therefore, it is evident that more focus has been laid on Mobile banking, Internet banking, ATMs, Agency banking and their relation to either growth in deposits or sales. None of the studies known to the researcher, either locally or in the African field, have investigated the effect of ICT on commercial banks' financial performance, concentrating on all the variables discussed above. Most studies have not conclusively explored all the four factors in the umbrella of digital banking affecting commercial banks. All of the known and available research findings by business scholars are based on generalization and not proportional contribution in the financial performance of banks.

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