

# Strategic Technological Innovation in Financial Services and Performance of Commercial Banks in Kenya

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## Abstract.

Innovations drive long-term economic growth, productivity and improvement of performance yet scanty tangible information is available on the strategic influence of technological innovations on the performance of commercial banks. The study sought to determine the influence of technological innovations in financial services on the performance of commercial banks in Kenya. Specifically, the study sought to establish the influence of mobile banking; agency banking and intelligent ATMS on the performance of commercial banks in Kenya and further sought to establish the influence of the strategic partnership with Safaricom/Mpesa on the relationship between technological innovations in financial services and performance of commercial banks. The study was guided by Dynamic Capabilities, Disruptive Innovation and Financial Intermediation Theories. The study used mixed research design to facilitate drawing on the strengths of quantitative and qualitative approaches. The study targeted 10,717 management cadre in the entire banking sector out of whom a sample of 386 was chosen using Yamane formula. Primary data was collected mainly using questionnaires administered using drop and pick technique. Primary data was collected using interview guide from KII and questionnaires for quantitative information. Secondary data was collected using document analysis guide as way of giving relevance to the primary data analyzed. Analysis of data was facilitated using computer supported software SPSS 21 and presented using descriptive and inferential statistics as well as thematic prose from KII. The descriptive statistics include frequency, percentages, weighted averages, mean and standard deviation were used. Correlation analysis and multiple regression analysis were used to infer the relationship between variables. Results of the analysis were presented using figures and tables. The findings showed a positive correlation between technological innovation in financial services and the performance of commercial banks in Kenya. The findings showed that the three technological innovations under study accounted for 66.4% of performance of commercial banks leaving 33.6% of performance to be explained by other factors not under study. The ANOVA results showed that Mobile banking, Agency banking and Intelligent ATMs as technological innovations in financial services together have a significant and positive combined effect on performance of commercial banks in Kenya. On the moderating influence of strategic partnership, the study established a significant influence on the relationship between all the technological innovations under study and performance of commercial banks at various levels of moderation

**Keywords:** Strategies; Technological Innovation; Performance; Bank; Kenya

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## I. Introduction and Background Information

### 1.1 Background to the study.

According to (Cheruiyot, 2010; Quinn, 2010), innovation is the creation, development and implementation of a new product, process or service, with the aim of improving efficiency, effectiveness or competitive advantage. Thus, in the view of Schumpeter (1939), innovation is the successful exploitation of new ideas or modification of old ones to fit contemporary needs. Innovation is the successful implementation of creative ideas within an organization. Technological Innovation has spurred financial innovations that have modified many financial products, services, production processes and organizational structures (Frame, Wall

and White, 2018). The driving perception is that innovation reduces operation cost and saves time. Financial inclusion is a primary measure of banks' performance. Realization of financial inclusion requires strategic approach so the prudence of this study stresses on strategies which banks use for optimal positioning that support their sustainable competitive performance. Kung'u (2015) defined strategy as the match between an organization's resources and skills and the environmental opportunities as well as the risks it faces and the purposes it wishes to accomplish. According to Armstrong and Shimizu,(2007), corporate strategy is the determination of the basic long-term goals of an enterprise and the adoption of courses of action and allocation of resources necessary to carry out the goals. In the words of Drucker (2013), strategy is the company's basic approach towards achieving its overall objectives. It is a careful, deliberate and systematic approach to clarifying corporate objectives, making strategic decisions and checking progress toward the objective. The global banking industry has realized tremendous growth due technological innovations and applications and has embraced technology as a strategic tool for meeting the growing needs of the customers and global financial challenges as noted by Cheruiyot, (2010).

Drucker (2013) defined technological innovation as a process involving equipping in new, improved capabilities or increased utility. He noted that innovations provide firms with a strategic orientation to overcome the problems they encounter while they strive to attain sustainable competitive advantage. Innovation involves acting on the creative ideas to make some specific and tangible difference in the domain in which the innovation occurs (Davila, 2010; Oke and Goffin 2011).

Commercial banks play a critical role in the growth of a country which accounts for the need for their efficiency and effectiveness. That they are the leading players in the cohort of financial services providers of a nation cannot be overemphasized as Monyoncho (2015) noted, further stating that information and communication technology (ICT) has brought a complete paradigm shift on the banks performance and customer service delivery in the banking industry. To this end, banks have invested heavily in and have widely adopted ICT.

Conceptualizing strategy as critical to performance, Ansoff and Sullivan (1993) and Porter (2001), perceived it as the broad determination of the goals of an undertaking and the specification of alternative courses of action to be taken to achieve the predetermined goal of the undertaking thus they related strategy to long-term profitability and survival of the firm; attaining optimization of the firm's profit potential in the form of new products, markets, technologies and competitive strategies. This perspective then creates the nexus of technology and strategy as symbiotic operational partners as posited by Temesgen (2013). The purpose of strategy is to provide directional cues to the organization that permit it to achieve its objectives while responding to the opportunities and threats in the environment (Pearce and Robinson, 2011). King (2007) conceptualized strategy as a framework that reduces role conflict and role ambiguity instead providing satisfaction to the personnel of the organization who are deployed to their strengths.

Firms develop strategies to enable them seize strategic initiatives and maintain a competitive edge in the market (Porter, 2008). For survival, companies will adopt different strategies dependent on their circumstances. The strategies will then be deployed at different levels i.e. corporate level, business unit level and lower at functional level. Mwega (2011) defines the concept of competitive strategies as the art of relating a company to the economic environment within which it exists. Technology and technological innovations are drivers of competitive strategies because they disrupt the status quo in the business operation landscape. Atalay, Anafarta and Sarvan (2013) regard technological innovation as one of the most important strategic sources of sustainable competitive advantage in an increasingly changing environment. This is because it leads to product and process improvements, makes continuous advances that help firms to survive, allow firms to grow faster, be more efficient and ultimately be more profitable than non-innovators. Kotler (2003) postulates that globalization and rapid technological advancement have immensely transformed the way companies do business worldwide; spurred innovation and development in various sectors and driven the world economic changes. Akamavi (2005) observed that organizations seeking to compete in the hyper-market should strategically match themselves with customers' requirements.

Globally it can be demonstrated that technological applications have been applied by banks to cut out their operational niches. Schumpeter (1939) perceived innovations as the introduction of new products, development of new methods of production, discovery of new sources of supply, discovery of new markets and new ways to organize organizations. Okeet *al.* (2011) conducted a study on US banks and found that innovative financial institutions have used technology as a strategy to give direction which realizes advantage in a changing environment through its configuration of competences and resources with the aim of fulfilling stakeholders' expectations. In Japan, Kubbr (2007) observed that financial institutions have encouraged innovation in order gain competitive advantage in all aspects of their operations. In South Africa financial institutions have been able to create competencies and in order to sustain them the banks have invested in online marketing, mobile banking, and paperless banking and customized customer service. As a result of the rapidly changing technology

and improved financial performance commercial banks have employed skilled and knowledgeable workers who are innovative to and able to deliver change (Khalil, 2012).

Muiruri & Ngari (2014) noted that the Kenyan financial sector too has undergone tremendous changes in the last two decades as seen in the reforms undertaken in the sector leading to proliferation of financial products, activities and innovative services. Banks use financial innovations as formidable strategic approaches to outstrip competition and improve their competitive advantage, (Batiz-Lazo and Woldesenbet, 2006). The OECD Jobs strategy report (2017) affirms that technological change drives long-term economic growth, productivity and improvement in living standards while at the same time, the emergence and diffusion of new ideas, products and production techniques throughout the economy entails a process of “creative destruction”. The report was particularly emphatic on the growth potential inherent in financial services sector technology and its potential multiplier effects.

The Kenyan government Vision 2030 of 2008 was articulated as a guide to developmental strategies for achieving its three pillars of; Economic, Social and Political sustainable growth. Each of these components aims at creating wide economic impact by unlocking human capital potential to spur economic growth, create employment and reduce poverty, (GOK, 2008). Sustainability begins on attainment of global standards of competitiveness which promote growth-based efficiency and effectiveness locally and internationally. Kenya has purposively proposed to promote entrepreneurship development as a strategy of job and wealth creation drawing reference from newly Industrialized South East Asia which promoted entrepreneurial strategies to attain industrialization. In so doing Kenya disregards her own history and culture comparative to South East Asia countries. Increased financial inclusivity and access to credit could possibly broker on this. Central Bank of Kenya (2012) reported that while traditional economic growth models had been premised on manufacturing and production of goods as a result of the industrial revolution, the trend was gradually shifting towards financial emerging economies. This listed Kenya among the nations that are poised to experience tremendous economic growth from technology-based service industries with banking being at the fore of this.

The World Bank in its 2013 status report noted the inherent potential for Kenya’s banking sector to flourish while pointing out the increased need for government to address financial inclusivity since it projected that most jobs would be created in the informal sector where access to finance was increasingly becoming a challenge. Those commercial banks have emerged as key drivers of economic growth, providing direct employment as well as the financial products and services is not in doubt. Technological applications and financial innovation are creating and popularizing new financial channels, technologies, institutions and markets which cannot be taken for granted, (Franz & Omollo, 2014). Technology has resulted in innovative financial products such as mobile banking, agency banking, plastic money, digital banking to mention but a few. These innovations have not only enhanced service quality offering by commercial banks but have been pivotal in introducing new income streams for the banks as well. As testament to this, the CBK supervision report 2017 noted a marked increase in the transaction volumes being terminated using banking alternate channels. KCB for example, transacted over half of their retail transactions on the mobile banking platform with Cooperative and Equity recording even higher numbers in a trend that seemed consistent across the sector. The report also noted the purposive shift by most banking sector players toward technology-based service delivery this being in the backdrop of the rate caps that had been introduced by government that saw most banks actively reduce their physical footprint. The report projected further movement of banking transactions to alternate channels with the expectation that such a move would not only improve efficiency but lead to profitability if well executed.

Kuratko and Hodgetts (2004) defined innovation as the creation of new wealth or the alteration and enhancement of existing resources to create new wealth. A distinction can be made between two types of innovation namely; Product innovation and Process innovation. Product innovation is usually the result of producing and commercialization of new goods (products or services) or with improved performance characteristics. Product innovations assist firms to distinguish themselves from their competitors, through proffering solutions to individual or contextual challenges. Product innovation remains one of the major roots of competitive advantage to firms as noted by Mohd and Syamsuriana (2013). This is because when firms engage in innovation, the quality of their goods and services is improved upon and this enhances the performance as well as the competitive advantage of the firm. In many cases, process innovation may be the consequence of product innovation or/and organizational innovation. New processes basically rest on the use of new technologies to increase the efficiency and quality of production.

### **1.1.1 Conceptualizing Technological innovation and financial services**

Application of technology is strategic approach that is usually employed to increase efficiency, output and reduce costs. Alu (2002) observed that information technology affects financial institutions by easing enquiry, saving time, and improving service delivery. According to King (2016), banks would have to reorient themselves as technology companies if they are to follow the money into digital spaces. He further

noted that there was a shift from bank products to banking experiences, where the utility of the bank is served through technology.

Technological innovation as a concept is associated with the idea of a flow generation, application, and dissemination of technologies. Fisher (1998) conceptualized technology applied in today's banking environment in three distinct domains: Customer Independent (a technology that involves a customer conducting and completing a transaction with a bank entirely independent of any human contact with the institution e.g. ATMs, Phone banking and Internet banking); Customer assisted (a bank employee will use customer-assisted technology as a resource to complete a transaction e.g. Call Centre Officers will use a Customer Relationship Management (CRM) system to understand a customer's profile and provide instant responses to customers' queries on the banking transactions and up-to-date billings and Customer transparent technology which represents the real core of bank operations and customers never see it but expect it.

Globally, different banks have adopted different strategies in order to remain competitive amidst the stiff competition. Citigroup and HSBC have an extensive network of retail affiliates compared to other financial institutions worldwide. Citibank for example has had to change its corporate, business and marketing strategies in order to ensure sustainability of the bank and also to beat its competitors as noted by Timmers (2009). It is also engaged in the introduction of e-commerce and e-business strategies to introduce new products into the markets and expanded its operations to other areas such as wealth management, stock broking and financial trading services. Citigroup and Goldman Sachs have built competitive advantage in the USA and Europe by offering superior service to corporate clients and are leading providers of corporate financial services (Grosse, 2014). In 2004, Barclays bank was the first bank in the United Kingdom to launch an online banking system where customers have access to their accounts, manage them while also paying and receiving money. Since then, it has applied continuous improvement and new development in its information and communication technology to build an enabling e-business environment. The implementation of e-business technologies has advanced the bank to become one of the top five global banks with strategic implementations of web-based applications (Barclays Bank reports, 2013). The Digital Banking Benchmark report (2017) noted that the financial services ecosystem was increasingly becoming more competitive and dynamic, composed of fully digital banks, Fin techs and non traditional competitors leading to traditional banks struggling to deliver innovative functionalities whilst still hesitating about the key priorities to pursue. The report emphasized the need for traditional banks to become more agile with respect to service delivery and new products if they are to remain relevant in the financial service sector going forth.

The KBA (2018) reported that adoption of alternative banking channels by lenders in Kenya in the past five years was bringing to an end face to face interaction with financial services providers. The average customer is now likely to bank daily without ever setting foot inside a banking hall, utilizing instead new channels such as agents, mobile money and online banking. Today, most countries have deeper and more stable financial systems, thanks to innovations that have helped banks leapfrog more traditional banking models. The banking sector in particular has benefited from the rapid penetration of mobile technology across the continent with Kenya being a frontrunner in this space. Such technological advancements are not just shaping how people interact with one another; they are also changing the behavior and expectations of customers who are increasingly becoming used to the immediacy offered by technology (Bodo, 2016).

The introduction of M-PESA in 2005 in Kenya has been globally acclaimed as one of the most disruptive technologies ever put to good use, having moved monetary transactions into the digital age and also becoming an extremely versatile transaction platform. The rate of adoption of digital financing in Kenya is considered among the highest in Africa making Kenya the home of mobile money, further reaping the benefits that come along with the service, (Bichanga & Ali, 2014). A 2017 McKinsey Global Institute (MGI) report suggested that focus should be on the implications and benefits of digital financial adoption to a continent that is populated by 1.2 billion people and 200 million micro, small and midsize (MSME) businesses that today lack access to savings and credit. The report projected that widespread adoption of digital finance could increase the continent's GDP by six percent, or a total of USD 3.7 trillion by 2025. It however noted that currently, digital financial adoption in the continent was below 20% which was below the threshold required for the projected gains to be realized. Technology thus could hold the key to economic prosperity for Africa. As the speed of technological innovation increases, banks are facing a new challenge as to where to focus their investment and what technology to use. The evolving competitive environment, coupled with the external developments will require banks to continually rethink their strategies.

Nubler (2017) posits that the recent wave of innovation and technological change has sparked a lively debate on the future of work. Some believe that technological innovations will destroy jobs on a massive scale, forecasting a jobless future while others are confident that forces will be mobilized that create new jobs and even a golden age of quality job creation. According to her, this optimism is supported by historical experience which demonstrates that initial phases of job destruction were eventually followed by strong job creation. This is important because job creation plays a key role in economic participation and further economic growth which

underpins the need for increased financial inclusivity. This then forms an important consideration for financial institutions that seek to remain relevant in the new age.

### **1.1.2 The Industry and the Firm Performance**

Industry performance is measured in terms of quality-of-service delivery and lead time efficiency. Barney (2004) recognizes controversy on different opinions of performance among organizational researchers. Moullin (2008) equates performance to the economic efficiency and effectiveness of an activity. Similarly, Daft (2007) recognizes efficiency and effectiveness as a performance indicator as an organization strives to achieve its goals. None the less, he puts more emphasis on the result, achievement of set goals. Ricardo (2009) simplifies performance as the ability of an organization to achieve its goals and objectives and tends to ignore the efficiency and effectiveness of the process. He further identifies various concepts as key performance measures. These measures include result-oriented behavior and relative measures, education and training, concepts and instruments, management development and leadership training. He points out these concepts as the necessary skills and attitudes of performance management. To this end, performance assumes both a qualitative and a quantitative shape.

Performance measurement and performance management practices have become common place in all businesses. The knowledge of the association between innovation and firm performance offers practical insights for proper management of firms. Gerba and Viswanadham (2016) opined that performance can be in terms of financial and non-financial performance, which may include; return on investment (ROI), sales volume, sales value, profitability, total assets, employment size, capital employed, market share, customer satisfaction, productivity, turnover, delivery time, employees turnover, etc. It may be said to be a group of standards and benchmarks that are adopted and used by organizations to achieve competitive advantage, customer satisfaction, and maximum level of profitability. Kalpan and Norton (2004) came up with a performance measure framework which gives organizations a balanced view of performance; under four perspectives; Financial, Customer, Learning and growth, and Internal processes. The present study operationalized performance using this Balanced Scorecard approach.

### **1.1.3 Commercial Banks in Kenya**

In Kenya, the banking industry has emerged as key driver of economic growth, providing direct employment as well as the financial products that have been a key ingredient of growth. The banking sector in Kenya is licensed and regulated by the Central Bank of Kenya (CBK). Banks through the Kenya Bankers Association (KBA) promote self-regulation through the various processes and initiatives that are overseen by the association. The Kenyan commercial banks are classified into three peer groups using a weighted composite index. The index comprises net assets, customer deposits, capital and reserves, number of deposit accounts and number of loan accounts. A bank with a weighted composite index of 5 percent and above is classified as a large bank. A medium bank has a weighted composite index of between 1 percent and 5 percent while a small bank has a weighted composite index of less than 1 percent. For the year ended December 31, 2019, there were 9 large banks with a combined market share of 74.68 percent, 9 medium banks with a combined market share of 17.10 percent and 21 small banks with a combined market share of 8.22 percent, (CBK, 2020).

The banking sector registered improved performance in 2019 with profit before tax increasing by 4.2 percent to Ksh.159.1 billion in December 2019 from Ksh.152.7 billion in December 2018. The increase in profitability was attributed to a higher increase in income (Ksh.27.1 billion) compared to increase in expenses (Ksh.7.6 billion). The large peer group accounted for 89.79 percent of the total pre-tax profit, an increase from 84.99 percent recorded in 2018. The small peer group proportion of total pre-tax profit decreased from negative 0.07 percent in 2018 to negative 1.03 percent in 2018. This was attributable to 7 banks making losses at a higher magnitude in 2019 compared to 8 banks, which made losses at a lower magnitude in 2018. The medium peer group proportion of total pre-tax profit declined to 11.24 percent from 15.08 percent due to National Bank of Kenya Ltd, which made a loss of Ksh.821.2 million in December 2019, as compared to a profit of Ksh.587.5 million in December 2018. Total deposits increased by 7.17 percent from Ksh.3.36 trillion in December 2018 to Ksh.3.60 trillion in December 2019. The industry's total net assets stood at 4.8 trillion at the end of 2019. This growth was supported by mobilization of deposits through agency banking and mobile phones platform (CBK, 2020).

As at December 31, 2019, the Kenyan banking sector comprised of the Central Bank of Kenya (CBK), as the regulatory authority, 42 banking institutions (41 commercial banks and 1 mortgage finance company), 9 representative offices of foreign banks, 14 Microfinance Banks (MFBs), 3 Credit Reference Bureaus (CRBs), 19 Money Remittance Providers (MRPs), 8 non-operating bank holding companies and 69 foreign exchange (forex) bureaus. Out of the 42 banking institutions, 40 were privately owned while the Kenya Government had majority ownership in 2 institutions. Of the 40 privately owned banks, 23 were locally owned (the controlling shareholders are domiciled in Kenya) while 17 were foreign-owned. The 23 locally owned institutions

comprised 22 commercial banks and 1 mortgage finance company. Of the 17 foreign-owned institutions, all were commercial banks with 14 being local subsidiaries of foreign banks and 3 being branches of foreign banks. All licensed forex bureaus, microfinance banks, credit reference bureaus, money remittance providers, non-operating bank holding companies were privately owned, (CBK, 2020).

The number of bank branches decreased from 1,505 in 2018 to 1,490 in 2019, which translated to a decrease of 15 branches. CBK attributed this decrease in physical bank branches to the adoption of alternative delivery channels such as mobile phone banking, internet banking and agency banking. Since all the commercial banks have their head offices in Nairobi and they are centrally run, the study was domiciled at the respective banks' head offices in Nairobi.

### **1.1 Statement of the Problem**

Past studies (Monyoncho, 2015; Muiruri and Ngari 2014; Batiz-Lazo and Woldeesenbet, 2006 and OECD, 2017) affirm that technological changes and innovation drive long-term economic growth, productivity and improvement in performance of banks yet it is not clear if it also promotes access to finance and financial services in commercial banks. The reality is that banking services are homogeneous and to ensure banks survival within the industry, they need to adopt a strategy that will give them competitive advantage over their rivals. Noteworthy is the fact that industry trends point to the fact that late entrants in the banking industry are now among the ones with the highest number of customers as evidenced by CBA and Mshwari, (Central Bank of Kenya, 2015). World Bank Group considers financial inclusion a key enabler to reduce extreme poverty and boost shared prosperity through Universal Financial Access. Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance-delivered in a responsible and sustainable (World Bank, 2017). In 2018, The World Bank identified financial inclusion as a key enabler to reduce extreme poverty and boost shared prosperity noting that increased inclusion particularly by established commercial banks would stimulate far reaching strides towards the attainment of Sustainable Development Goals. Specific for local relevance, Vision 2030 seeks to create a stable macro environment that allows for growth and creation of wider economic opportunities across the country's citizenry and this is only possible if majority of citizens actively accessed financial services from commercial banks. The study therefore focused on the extent to which technology influences performance of commercial banks with an eye to tease out specifically how it can increase access to finance argued from the perspective of improved performance. This was motivated by the fact that banks are pivotal pillars in any economic framework and if their intermediation role is efficiently operationalized then more persons should be able to access structured credit and contribute to the growth aspirations of the country that actively promote entrepreneurship. The study further addressed gaps in (Chipeta and Muthinja, 2018; Almarazi and Al-zahrani, 2015; Aluvadeen and Rosa, 2015) all of whom had studied similar constructs and whose studies had several gaps further articulated in the attached gap analysis.

### **1.2 Study Objectives**

The main objective of the study was to determine the influence of Strategic Technological Innovations in Financial Services on the Performance of Commercial Banks in Kenya using the following specific objectives:

- i. Evaluate the influence of Intelligent ATMs on the performance of Commercial Banks in Kenya.
- ii. Establish the moderating influence of Strategic partnership on the relationship between technological innovations in financial services and performance of Commercial banks in Kenya.

## **II. Literature Review**

### **Theoretical Review**

The study was anchored on the following two theories: Dynamic Capabilities Theory, Disruptive Innovation Teece (2001) propounded dynamic theory as a modification of resource-based theory. It emerged as both an extension to and a reaction against the inability of the capabilities to address rapidly changing environments (Choi & Moon, 2015). They suggested that DC may be considered as a source of competitive advantage. Dynamic capabilities are responsible for enabling organizations to integrate, marshal and reconfigure their resources and capabilities to adapt to rapidly changing environments. Dynamic capabilities (DC) theory appeared as an alternative approach to solve some of the weaknesses of RBV theory Song & Triche, (2015). Here, strategic resources provide an organization with a golden opportunity to develop competitive advantages over its rivals. Dynamic capability therefore stresses the importance of management in adjusting, incorporating, reconfiguring the firm's inside and outside assets while cognizant of its practical abilities to adapt to the changing market environments.

The dynamic capability theory has extended RBV to the realm of evolving capabilities (Okoth, 2013). Dynamic capabilities aim to provide a consistent framework for the understanding of competitive advantage driven by sustainable good firm performance. This theory is relevant for the study since its main industry of interest banking, is essentially an industry of intermediation. It provides a systematically structured view and specifies that successful players cannot restrict the variables they consider to perform well and have to continuously seek which other variables come to play jointly with others for the best results and within their current and future business strategies (McMillan, 2002).

Disruptive Innovation Theory of Christensen (1997) propounds that the industry leaders are displaced from the industry and the new entrants take over the market. Bauman, (2013) who is a proponent of disruptive theory, digital technology is enabling new disruptive business models for making payments and matching savers with borrowers. He contends that traditional intermediaries face potentially significant loss of market share to firms that sit outside or on the margins of the current financial regulatory system steadily as evidenced by the declining proportion of the money supply held in banknotes and coins. This is evidenced in the rapid increase in use of debit and credit cards over the last 30 years. . McMahon & Zhu (2014) argued that technology combined with new business models is a disruption that is removing traditional intermediaries from financial transactions.

## **Section 2.2 Conceptual Review**

M-Pesa emerged in Kenyan banking industry as a disruptive innovation from the telecommunication firms offering mobile money transfer notably M-Pesa from Safaricom. MShwari a product of Safaricom and CBA bank, stands out as the biggest disruptive innovation along with Mpesa in Kenya in the last decade. Statistics from Safaricom Ltd, indicate that Mshwari was officially launched on 27 November 2012 and drew 70,000 subscribers on day one of its operational launch. In one month, it had attracted 1 billion Kenyan shillings in deposits-a level which took traditional banks in Kenya many months or even years to reach. M-Pesa by 2013 had recruited 10.2 million customers and the number has steadily grown to over 20 million presently. To be able to deal with this challenge banks have engaged in innovation (CBK, 2015). This theory is suitable for this study because it explains the type of innovations banks adopt as disruption from the traditional banking services.

## **2.2 Mobile banking and Performance of Commercial Banks**

Rose (1999) describes mobile banking as a service provided by financial institutions in cooperation with mobile phone operators. It allows customers with busy lives to conveniently do their banking using their phones anytime. It is also about getting banking services to the unbanked, those who do not have bank access or bank accounts, and those who are at the bottom of the economic pyramid, often living in remote areas. They receive the benefits of banking services such as being able to save and borrow in a cost-efficient and secure way. Mobile banking is most often performed via SMS or the Mobile Internet but can also use special programs downloaded to the mobile device (Hicks and Niehans, 1998). Mobile banking is one innovation which has progressively rendered itself in pervasive ways of cutting across numerous sectors of economy and industry. Zimmerman (2010) noted that mobile banking in the developing world was an object of scepticism among financial insiders. While proponents argued that cell phones could revolutionize personal finance in poorer countries, regulators warned of money laundering and most bankers worried that low customer balances wouldn't be worth transaction costs.

Mobile money empowers men and women by giving them the confidence and an independent place to store and control funds that is private and inaccessible to other members of the family. Kings (2011) noted that the value proposition for use of mobile money focuses on several benefits which include; increased operating efficiencies, less paperwork, better transparency and accountability via the electronic records and more independence and self-sufficiency for users. Mobile banking serves to give the customers a new easier, convenient and quick approach to banking which most commercial banks are competing on to attract the largest customer base and in turn be able to increase profits.

Ching, Sim, Kam & Tan (2011) carried out a desk review of the factors affecting Malaysian mobile banking adoption with the aim of examining the relationships between constructs of perceived usefulness, perceived ease of use, social norms, perceived risks, perceived innovativeness, and perceived relative advantages towards behavioral intention in adopting mobile banking in Malaysia. The finding was that perceived usefulness, perceived ease of use, relative advantages, perceived risks and personal innovativeness all had a significant relationship to adoption of mobile banking services in Malaysia. The contextual realities of the Malaysian and Kenyan financial services industries are also different and as such the findings of the present study may vary from those of Ching et al (2011).

In her study: "Increasing Access to Financial services", McGregor (2013) focused on Mobile banking: by analyzing how technology helps unbanked and under banked populations decrease financial risk and gain entry to more secure financial services. The study found that consumers increasingly turn to mobile phones to meet personal financial needs when banking services are not generally available. The study further found three

significant roles played by mobile banking which included providing financial services in locations without banks, raising important regulatory and competition policy issues in financial services and lastly, splitting and separating financial services into its components which provide important conceptual insights into the nature of financial services as a whole by serving to demystify the sector.

In Kenya, Wambari (2009) studied mobile banking seeking to establish the importance of mobile banking in the day to day running of micro and small businesses (MSEs) with aim of understanding the opportunities and challenges involved in using mobile banking as a business tool. The study found that the adoption and use of mobile phones is a product of a social process, embedded in social practices such as SMEs Practices which leads to some economic benefits. Further it found that Mobile banking affected performance of organization behavior and decision making of the entire Kenya economy. Kigen (2010) studied the impact of mobile banking on transaction costs of microfinance institutions and found that mobile banking had reduced transaction costs considerably though the full impact of the same was not directly felt by banks because of the then small customer base. The study projected great gains in terms of operational cost saving for financial institutions that would embrace this technology.

Using a descriptive survey, Waiganjo (2018) studied the effect of mobile banking investment on the financial profitability of Tier 1 commercial banks in Kenya. Her finding was that the monthly value moved through mobile banking and the number of users of mobile banking influenced financial profitability of the banks to a significant extent and that there was a positive correlation between perceived increased customer base, mitigating fraud and cybercrime, investing in security systems, and risk management practices; and financial profitability of the banks. The study recommended that policy makers needed to consider mobile banking in their formulation of policies because of the technological developments and the expected switch from physical branch networks to technologically supported banking channels. It further recommended more research done on challenges associated with adoption of mobile banking in commercial banks in Kenya.

#### **2.4.2 Agency banking and Performance of Commercial Banks.**

Agency banking was first developed in Brazil in 1999 and has slowly gained popularity in developing countries. In Kenya, it was instituted in May 2010 after the publication of prudential guidelines by the Central Bank of Kenya. Agalla (2014) noted that agency banking is increasingly impacting on the financial performance of banks especially in Kenya and South Africa where penetration is projected to grow tremendously. Vutsengwa & Ngugi (2013) noted that banking agents were increasingly utilized as important distribution channels for financial institutions. The scope of services they offer may include facilities to conduct bank and stock market transactions, account transfers, balance inquiries, bill payments, and stop-payment requests. Banking agents are usually equipped with a combination of point of sale (POS) card reader, mobile phone, barcode scanner to scan bills for bill payment transactions, Personal Identification Number (PIN) pads, and sometimes Personal computers (PCs) that connect with the bank 's server using personal dial up or other data connection. Clients that transact at the agent use a magnetic stripe bank card or their mobile phone to access their bank account (Wanyoike, 2014).

Chipeta and Muthinja (2018) carried out an impact assessment of financial innovations and bank performance in Kenya using a document analysis and found that 90% of agency banking transactions was controlled by three commercial banks and that 30% of total revenues of these banks was directly attributable to agency banking. The study however found the great dominance of mobile banking over agency banking in Kenya a fact the study attributed to the fact that agency banking had been in operation actively for only 3 years over the 10-year study period. The implication being that the impact of agency banking was likely to be felt more in the future, considering the fact that the impact of financial innovation on firm performance is time lagged. In addition, the study noted that agency banking has been adopted by only 15 out of 42 commercial banks, thus the innovation was yet to be felt more widely. The study noted that while agency banking significantly contributed to the firm performance, the true impact of technological innovation was derived by firms that combine several technologies to deploy their services.

### **III. Research Methodology**

This study was anchored on Social Constructivism paradigm. Alexander Wendt (1999), a key proponent of constructivism paradigm views structures of human association as products and proceeds of shared ideas rather than material forces, and that the identities and interests of purposive actors are dynamically constructed by these shared ideas rather than given by nature. Constructivists argue that life phenomena construct reality and that reality is dynamic as to present multiple realities of the same situation depending on the social lenses worn. According to Creswell (2013), constructivism is an interpretive framework for individuals' to understand their world and develop their own particular meanings that correspond to their experience.

It used mixed research design which characteristically focuses on research problems that require an examination of real-life contextual understandings, multi-level perspectives and cultural influences. The study used qualitative approaches to get insider picture from veterans in the industry; it collected quantitative information in survey approach from practitioners and document analysis to be able to triangulate the findings for authenticity. Thus, it was the one that was best suited for this particular study.

**3.1 Area of study and target Population**

The study was conducted in Nairobi County. Nairobi County hosts the country’s capital city and has an estimated population of 4 million residents spread over an estimated area of 696km<sup>2</sup>. The county has 17 parliamentary constituencies namely; Westlands, Dagoreti North, Dagoretti South, Langata, Kibra, Roysambu, Kasarani, Ruaraka, Embakasi South, Embakasi North, Embakasi East, Embakasi West, Makadara, Kamkunji, Starehe and Mathare (Republic of Kenya, 2014). The county was chosen because Nairobi hosts the capital city of Kenya and has the concentration of all the commercial banks headquarters. Moreover, all their main branches are domiciled here which informs the presumption that the objectives of the study will be met from this locality. The target population was 10717 (CBK report, 2019) out of whom 386 selected using Yamane formula.

**3.2 Instrumentation and data collection**

Primary data was collected using structured questionnaires to collect quantitative data while an interview guide was used to collect qualitative data. The structured questionnaire was in Likert scale format. It was in a scale ranging of 1-5, where each respondent was required to rate each and every statement given. Kothari (2012) acknowledges interviews and questionnaires as good methods of collecting primary data. He observes that questionnaires are low cost, free of bias, and gives the respondents’ adequate time and thus the results can be more dependable and reliable. Quantitative data was collected using interview guide with KII. Document analysis was used to collect secondary data from relevant documents of banks operations, operations report, and regulatory documents including CBK reports. Reliability and validity of the instruments were ascertained using Cranach’s Alpha.

Data collection procedures complied with ethical observance. Questionnaires were administered through drop and pick and was mainly through self-administration. Letters of Introduction and data collection authority letter from the University and National Commission for Science, Technology and Innovation (NACOSTI) license and permit were attached to the questionnaires. This helped in improving the response rate. The researcher further engaged the targeted key informants and secured interviews mostly through calls especially given the COVID pandemic that made physical contact a challenge.

**3.3 Data Analysis**

Data was analyzed with the aid of SPSS 21 using both descriptive and inferential statistics. The descriptive section used frequency counts, percentages, means, standard deviations and weighted averages to provide the summary statistics and inferential statistics.

**IV. Findings**

**4.3.1: Intelligent ATMs and Performance of Commercial banks**

The study further sought to establish the influence of Intelligent ATMs was on the Performance of commercial banks in Kenya. Respondents were requested to rate on a five point Likert scale, their level of agreement with the various statements which were indicators of the influence of Intelligent ATMs on the performance of commercial banks in Kenya. The range was between ‘strongly disagree (1)’to ‘strongly agree’ (5). The results are presented on table 4.1 below.

**Table 4. 1: Intelligent ATMs Descriptive Statistic**

	N	Minimum	Maximum	Mean	Std. Deviation
ATMS have the increased the bank’s product and service offering.	229	1	5	4.2664	0.98842
The bank can easily modify products/ services on this platform.	229	1	5	4.0742	1.11162
The bank’s main competitors are heavily invested on this platform	229	1	5	4.048	1.09318
ATMS have increased the bank’s operational efficiency	229	1	5	3.9432	0.99177
ATMS host most of the banks products and services.	229	1	5	3.79913	1.11756
Continued investment in ATMS is mainly driven by customer feedback	229	1	5	3.6419	1.1597
ATMS have increased the bank’s product lifecycles	229	1	5	3.6114	1.15548

Continued investment in ATMS is mainly motivated by their profit making potential	229	1	5	3.607	1.12122
Customer transaction volumes have increased on this platform in the last year.	229	1	5	3.5808	1.11951
ATMS have low maintenance costs thus contributing positively to profitability.	229	1	5	3.5764	1.10801
Customer feedback is easily captured on this platform	229	1	5	3.5633	1.17789
Income from ATMS has high margin thus contributing positively to profitability	229	1	5	3.3188	1.12727

The respondents were in agreement with the statement that ATMS have the increased the bank’s product and service offering with a mean score of 4.2664 The bank’s main competitors are heavily invested on this platform with mean score of 4.048 , the low standard deviations of 0.98842 indicates that the variations among the respondents was low respondents further agreed The bank can easily modify products/ services on this platform with mean score of 4.0742, ATMS have increased the bank’s operational efficiency with a mean score of 3.9432.ATMS host most of the banks products and services with mean score of 3.79913, Continued investment in ATMS is mainly driven by customer feedback with mean score of 3.6419,ATMS have increased the bank’s product lifecycles with mean score 3.6114,Continued investment in ATMS is mainly motivated by their profit making potential with a mean score 3.607 and Income from ATMS has high margin thus contributing positively to profitability with means score of 3.5633.

**4.3.2: Moderating influence of Strategic Partnerships and the relationship between technological innovation in financial services and Performance.**

The study also sought to assess the moderating influence of strategic partnership on the relationship between technological innovations in financial services and performance of commercial banks in Kenya. Respondents were requested to rate on a five point Likert scale, their level of agreement with the various statements which were indicators of the moderating influence of strategic partnerships on the relationship between technological innovation and performance of commercial banks in Kenya. The range was between ‘strongly disagree (1)’ to ‘strongly agree’ (5). The results are presented on table 4.2 below.

**Table 4.2: Moderating influence of Strategic Partnerships and the relationship between technological innovation in financial services and Performance**

	N	Minimum	Maximum	Mean	Std. Deviation
Partnership with Safaricom has increased the bank’s ability to increase financial access	229	1.00	5.00	4.4105	.85177
Partnership with Safaricom has increased customer access to bank services.	229	1.00	5.00	4.3450	.92657
Partnership with Safaricom has increased the bank’s ability to respond to market demand.	229	1.00	5.00	4.2402	1.00828
Partnership with Safaricom has increased the bank’s operational efficiency.	229	1.00	5.00	4.2227	.92633
Partnership with Safaricom has increased the bank’s revenue generation avenues.	229	1.00	5.00	4.1179	1.10782

The respondents were in agreement with the statement Partnership with Safaricom has increased the bank’s ability to increase financial access with mean score of 4.4105,The low standard deviation of 0.85177 explain that the variations among the respondent was low, further the respondents were in agreement with statement thatPartnership with Safaricom has increased customer access to bank services with mean score of 4.3450, Partnership with Safaricom has increased the bank’s ability to respond to market demand with mean score of 4.2402, Partnership with Safaricom has increased the bank’s operational efficiency with mean score of 4.2227, Partnership with Safaricom has increased the bank’s revenue generation avenues with a mean score of 4.1179 and The bank’s performance would be negatively affected without this partnership with mean score of 3.9430

**4.4 Information gathered from KII.**

The study targeted a total 88 key informants selected purposively for their roles and perceived access to in-depth knowledge and information that would add value to the study. The study reached 37 key informants. They comprised mainly C-Suite Executives from across the commercial banks, management executives at the Kenya Bankers Association and strategic managers from the Central Bank all of whom were engaged as key informants.

The study learned that financial services industry has seen remarkable changes that have seen banks challenged by the new service providers who can harness the latest technologies faster and offer alternative

business models. Other new operators have entered the marketplace and developed global businesses on the strength of digital enablement and particularly mobile commerce. These new financial players are enabling financial access with global footprints over and above any single commercial banks. Their competitive advantages are based on speed, convenience, versatility and cost efficiency. This then has seen banks respond with a roll out of alternate banking services mainly premised on digital channels and the internet of things with the main channels being Mobile, Agent network and Self-Service physical portals mainly intelligent ATMS. Majority of the respondents believed that the future of the banking industry lay in alternate channels. About 10% of the respondents however saw the traditional Brick and Mortar banking model remaining and even gaining traction as the economy grows drawing reference from established retail banking models that have leveraged on alternate channels to increase service penetration but retain physical presence for growth.

## **V. Summary of findings conclusions and recommendations**

### **5.2.1 Influence of Intelligent ATMs on the Performance of Commercial Banks in Kenya**

The first objective of the study was to determine the effect of organizational culture as a strategy implementation driver on performance. It was found out that the firm has specific procedures of operation to ensure proper strategy implementation, that coordination of functional units is encouraged for easy communication on strategy implementation activities, that employees holding positions of authority are in-charge of a specific number of subordinates, and that all departments have a decentralized monitoring and evaluation office responsible for the strategy execution. The value of ANOVA was noted to be less than the p-value and this led to the conclusion that organizational culture as a strategy implementation driver has a significant effect on performance. Hypothesis three ( $H_{03}$ ) stated that organizational culture as a strategy implementation driver had no significant effect on performance. The hypothesis was rejected at 95% confidence interval hence it was established that there was a positive significant effect organizational culture on performance.

### **5.2.2 Moderating Effect of Factory Size on the Relationship between Strategy Implementation Drivers and Performance**

The second objective of the study was to establish the moderating effect of factory size on the relationship between strategy implementation drivers and performance. Based on the change in  $R^2$  between model 2 and model 1 of 4.5% and between model 3 and model 1 of 14.9 the study established that there is a significant presence of the moderating effect of factory size on the relationship between the strategy implementation drivers and performance of tea processing factories. This was reinforced by changes in the F-value. Comparisons of the regression coefficients showed that the positive relationship between leadership and performance ( $\beta = .013, p > .05$ ) is weakened by the presence of factory size as a moderator ( $\beta = -.004, p > .05$ ). It is noticeable that the effect of leadership changes from positive to negative. Further, the regression coefficient of the interaction term between leadership and factory size is established not to be statistically significant hence it is inferred that factory size has no moderating role in the relationship between leadership and performance. However, the interaction between firm size and the other strategy implementation drivers i.e. structure, culture and human resource development were statistically significant hence factory size was inferred to have a moderating role in the relationship between organizational structure and performance, between culture and performance and between human resource development and performance.

## **5.3 Recommendations**

Commercial banks should invest more in modelling technological innovations for enhancing inclusion and access since many more current and potential clients can be reached on the platforms financial channelled through technology.

Since the study found that commercial banks seemed to have retained resilience of operations than many corporate entities even during the disruptions of the pandemic their energies are best spent on forging strategic and innovative alliances that would reduce their cost of doing business and retain their margins.

Since Commercial banks all offer the same services to clientele, they should be should ensure new products introduction, reduction of costs, improved innovation process and conformance to regulations are used to influence performance of commercial banks to satisfy customer needs.

## **5.5 Suggestions for Further Study**

Future study should look at the vulnerability to the banks as a result of strategic technological innovations which could culture fraudulent transactions as the of product innovation is not in question.

The second area of future studies could explore similar approaches as the current study but focus more on strategic innovations targeting rural based clientele.

Finally, the study also recommends a study to define strategic factors which motivate technological innovations in the financial institutions in Kenya.

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