



**EFFECTS OF TECHNOLOGICAL INNOVATIONS ON FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA: A CASE OF EQUITY BANK OF KENYA**

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Accepted March 2, 2015

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**ABSTRACT**

The role of technological innovations on efficiency and cost reductions in the banking sector is paramount to the successful and profitable service delivery in the sector. Kenyan commercial banks have continued to use huge investments in technology based innovations and training of manpower to handle new technologies. None of the available studies had focused on the effects of technological innovation on the performance of Kenyan banking industry and Equity Bank of Kenya in particular. The main objective of this study therefore was to investigate the effects of technological innovations on the financial performance of the commercial banks in Kenya where the focus was on Equity Bank of Kenya. This study used a descriptive research design. The specific objectives of the study were to determine the effects of mobile banking and internet banking transactions on the financial performance of commercial banks in Kenya. This research problem was studied through the use of a descriptive research design. The target population included the 240 staffs from the Equity Bank of Kenya in the NCBD and its environs of the west, east and south as well as in the Head Office. A sample of 20% (48 respondents) was selected using stratified random sampling from within each group in proportions. The study made use of a survey questionnaire which was self-administered through drop and pick later method. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means, standard deviations and frequencies. The information was displayed by use of bar charts, graphs and pie charts and in prose-form. From the findings, the study concludes that adoption of technological innovations by banks affect their financial performance. Balance enquiry, automatic advices to clients on credits and airtime purchase, money transfer as well as mini-statement affects the financial performance in the Bank. Competition, minimum bank reserves, operational costs, operational risk, capital requirements, customer base/reach, regulatory requirements, customer relation, profitability and customer trust on internet banking affect the financial performance. The study recommends that for banks to be highly competitive, they need to employ modern technological innovations such as internet based banking services. The critical role of technological innovation in the development of a company and its contribution on the economic growth of firms has been widely documented.

**Key Words: Technology, Innovations, Commercial Banks**

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## **INTRODUCTION**

An organization which is competing in fast changing markets with fast changing technology must make things happen, it must innovate. If it does not innovate it risks being overtaken by competitors. Sometimes a business underestimates the competitive challenges it faces. The risk of this happening is high when competitors react to potential challenges in much the same way (Abernathy and Utterback, 2005). In today's global and dynamic competitive environment, product innovation is becoming more and more relevant, mainly as a result of three major trends: intense international competition, fragmented and demanding markets, and diverse and rapidly changing technologies (Wilkinson, 2003).

Technological innovation is used to refer to the process through which technological advances are produced (Goh, 2002). The innovation process includes a set of activities that contribute to increase in the capacity to produce new goods and services (product innovations) or to implement new forms of production (process innovations). Therefore, the concept of technological innovation is associated with the idea of a flow – generation, application, dissemination – of technologies.

Technology push is not stable because rapid technological changes create many alternatives from which firms choose their technology strategy. Nor does demand pull provide a complete explanation in circumstances where customers lack the necessary foresight of possibilities in a world with radically new products or systems. To put it differently, Hamel (2002) suggests that innovations come to be seen as a result of collaboration for integration of skills and capabilities when competing for the future market. One important driver of

organizational learning is experience with process technology.

The financial performance of banks and other financial institutions is usually measured using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Barley, 2000). The common assumption, which underpins much of the financial performance research and discussion, is that increasing financial performance will lead to improved functions and activities of the organizations. The subject of financial performance and research into its measurement is well advanced within finance and management fields. It can be argued that there are three principal factors to improve financial performance for financial institutions; the institution size, its asset management, and the operational efficiency (Bijker, 2007).

### **Statement of the problem**

The role of technological innovations on efficiency and cost reductions in the banking sector is paramount to the successful and profitable service delivery in the sector. According to Yasuharu (2003) technological innovations play a significant role in improving the efficiency of the banking sector as well as reducing the costs of banking transactions for customers. The banking sector has, for the past decade, witnessed various improvements and new technologies with the main purpose of improving the service delivery of the banking sector. A fundamental assumption of much recent research in operations improvement and operations learning has been that technological innovation has a direct bearing on performance improvements (Bijker et al, 2007). Strategic management in the banking sector demand that banks should have effective systems in place to counter unpredictable events that can sustain

their operations and minimize the risks involved through technological innovations. Only those organisations that are able to adapt to the changing environment and adopt new ideas and ways of doing business can be guaranteed hope of survival.

Some of the forces of change that have greatly influenced the performance of commercial banks include mainly technological advancement. According to Goh, (2002) there are numerous barriers to innovation in developing nations. The developing countries with low literacy rates and weak higher educational systems often face a great deal of difficulties assimilating new technologies for innovation development as they lack the essential human capital to leverage on technological developments, scientific knowledge and technical skills. There is also inadequate intellectual property rights protection often which creates a disincentive for banks to engage in innovation development through research and development (R&D), as the economic spin-offs associated with their innovation efforts are diminished very quickly once made available in the public domain. The innovation projects often involve high risks, long gestation periods and therefore require huge amounts of financial resources to share risks and costs, and hence restrictive ownership policies on direct investments often hamper private sector or foreign participation in technological innovation projects (Roehm and Sternthall, 2001).

Locally, Gitonga (2003) did a study on innovation processes and the perceived role of the CEO in the banking industry while Kihumba (2008), conducted a study on the determinants of financial innovation and its effects on banks performance in Kenya. Kihumba's study focused on financial innovation as a strategy and thus

did not cover the effects of technological innovations on the financial performance of the commercial banks in Kenya. None of these studies had focused on the effects of technological innovation on the performance of Kenyan banking industry. This study therefore sought to fill this lacuna in knowledge by investigating the effect of technological innovations on financial performance of commercial banks in Kenya.

### **Objectives of the Study**

The main objective of this study was to investigate the effect of technological innovations on financial performance of commercial banks in Kenya. The specific objectives were to determine the effects of mobile banking and internet banking transactions on the financial performance of Commercial Banks in Kenya

### **Research Questions**

The study was guided by the following research questions;

- i. What are the effects of mobile banking technologies on the financial performance of Commercial Banks in Kenya?
- ii. How does use of internet banking transactions affect the financial performance of Commercial Banks in Kenya?

### **Scope of the Study**

The conceptual scope of this study lay on the effects of technological innovations on financial performance of commercial banks in Kenya. The specific context of the study was on the effects of technological innovations on financial performance of Commercial Banks in Kenya. The aspects of technological innovations that affect the financial performance of commercial banks considered in this study include mobile banking technologies and internet banking. The

researcher considered the management staff currently involved in day to day running of the organization. These staff formed the respondents of the study. This was relevant in collecting the data required as finances and distances were the limiting factors that inhibit collecting the data from all the commercial banks across the country.

## **LITERATURE REVIEW**

### **Theoretical Framework**

A theory is a contemplative and rational type of abstract or generalizing thinking, or the results of such thinking. It is a coherent group of tested general propositions, commonly regarded as correct, that can be used as principles of explanation and prediction for a class of phenomena (Wacker, 1998). A theory is a proposed explanation whose status is still conjectural and subject to experimentation, in contrast to well-established propositions that are regarded as reporting matters of actual fact. A theory is based upon a hypothesis and backed by evidence. A theory presents a concept or idea that is testable. Depending on the context, the results might for example include generalized explanations of how nature works, or even how divine or metaphysical matters are thought to work.

A theoretical framework is a collection of interrelated concepts, like a theory but not necessarily so well worked-out. Theoretical frameworks are obviously critical in deductive, theory-testing sorts of studies. A theoretical framework is used by scientists when performing research studies to formulate a theory. The theoretical framework is a foundation for the parameters, or boundaries, of a study. This study is grounded on Rogers' Diffusion of Innovation Theory, Theory of Planned Behaviour and implicit person theory.

### **Rogers Innovation Diffusion Theory**

Rogers' Diffusion of Innovation Theory (Rogers, 1995) seeks to explain how new ideas or innovations are adopted, and this theory proposes that there are five attributes of an innovation that effect adoption: relative advantage, compatibility, complexity, trialability and observability. Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes. Rogers' theory suggests that innovations that have a clear, unambiguous advantage over the previous approach will be more easily adopted and implemented. Current research evidence indicates that if a potential user sees no relative advantage in using the innovation, it will not be adopted (Greenhalgh et al, 2004). Compatibility is the degree to which an innovation fits with the existing values, past experiences, and needs of potential adopters. There is strong direct research evidence suggesting that the more compatible the innovation is, the greater the likelihood of adoption (Greenhalgh et al, 2004). Complexity is the degree to which an innovation is perceived as difficult to understand and use.

Furthermore, Rogers suggested that new innovations may be categorized on a complexity-simplicity continuum with a qualification that the meaning (and therefore the relevance) of the innovation may not be clearly understood by potential adopters. When key players perceive innovations as being simple to use the innovations will be more easily adopted (Greenhalgh et al, 2004). Trialability is the degree to which an innovation may be experimented with on a limited basis. Because new innovations require investing time, energy and resources, innovations that can be tried before being fully implemented are more readily adopted. Finally, observability is the degree to which the results of an innovation are visible to the adopters. If there are observable

positive outcomes from the implementation of the innovation then the innovation is more adoptable.

### Theory of Planned Behaviour

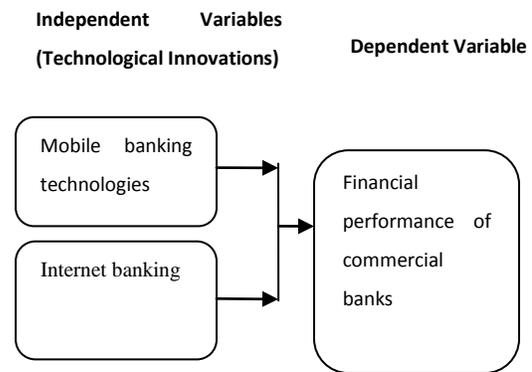
Theory of Planned Behaviour (TPB) proposes that a person's intention to perform behaviour is the central determinant of that behaviour because it reflects the level of motivation a person is willing to exert to perform the behaviour (Ajzen, 1991). The TPB has been largely used by researchers to understand a variety of health-related behaviours in various population groups. Eccles and colleagues (Forman, 2005) suggest that there is a predictable link between health care professionals' intention to engage in behaviour and their subsequent behaviour.

A fundamental tenet of socio-technical systems thinking is that a technology on its own (in the form of its technical capability) has little meaning for purposes of organizational analysis, being truly comprehensible only in terms of the context in which it is embedded and, by extension, the organizational goals or transformations that it serves or enables. Moving beyond a concern with one user and an interface, socio-technical systems theory argues that a network of social relationships surround all working practices (cooperation among workers over the course of a task, supervisory relationships, and general social interaction). The gainful employment of any technology hinges on the ability and willingness of users to employ it for worthwhile tasks (those deemed central to the organization's goals). Accordingly, any technology cannot be analyzed or understood in isolation of the goal-oriented organization it is intended to support. In order to jointly optimize both the social and technical attributes of any organization, allowance must be taken at the engineering level of the social

dynamics of any organization or sub-unit within it (Chern, 1994).

Socio-technical systems theory has given birth to a framework for technology design that emphasizes holistic job satisfaction (rather than just task performance) and user participation throughout the development process. Thus, socio-technical theorists recommend the analysis of all stakeholders, not just the direct users of an innovation, the formation of planning groups to oversee the design, the performance of prototyping exercises, and the analysis of the likely impact the technology will have on the organization (Rogers, 1995). The intention of such a design process is to avoid unpleasant side effects in working practices and to ensure as much a social solution as a technical solution to the computing needs of an organization.

### Conceptual Framework



**Figure 1 Conceptual framework**

### Empirical Review

Technological innovation and the appropriate implementation of new technologies are a fundamental part of development process of all nations. The literature evidence reveals that successful technologies in each nation are those which rooted in their own indigenization efforts. Indigenous technological innovation can

originate just as much from a re-invention of historical techniques or an adaptation of local technology as from advanced industrialized countries. Research on technological innovation, broadly defined, forms a huge body of research focused on problems of technology-based change in organizational and social settings (Rogers, 1995). The popularity of the technological innovation approach in IS research testifies to its usefulness.

### **Mobile Banking Technologies**

The importance of continuously monitoring and adapting to marketing environment changes by companies which have recognized that businesses are constantly spinning out new opportunities and threats comes as a consequence of spotting the need for customer care techniques and services (Ivatury, 2008). This calls for embracing of an outward – inward organization's view of their performances. Financial services delivery and consumption has experienced major changes during the last years. Technological development has reshaped the business environment. The banking industry is among the leading sectors in adopting and utilizing the internet and mobile technology on consumer markets and consequently its service delivery has undergone changes unprecedented in its history. The development of electronic banking services via multiple electronic channels has made it possible to provide new kinds of added value for customers. Applying the internet with solely focusing on cost reduction may lead to high supply chain effectiveness while potential customer value opportunities may be ignored (Donner, 2007). Therefore, understanding service user behaviour and value perceptions is one of the fundamental requisites of service development.

Banking services using mobile phones (M-banking) have been available in developing as

well as developed countries for several years, but it is not until recently that new modalities of applying M-banking started diffusing rapidly to previously unbanked people. The main driver for the rapid development is the new M-banking services that are less expensive and have a geographical footprint defined by the reach of mobile networks in contrast to services offered by traditional retail bank branches, which are out of reach for many people in rural areas from both an economic and geographical perspective. The main benefits to rural users are affordable, fast and secure transactions. M-banking access amongst previously unbanked groups is believed to have a direct, positive effect on users, since it has brought about a transition from informal to formal transactions and hence alleviated poverty and caused economic development.

According to Coelho and Easingwood (2003) mobile banking business models range from a bank providing additional mobile services to existing customers, to banks utilizing a network of banking and mobile agents in lieu of branches to reduce delivery costs, to telecommunication companies providing payment services without bank participation. The potential of mobile banking to provide access to financial services is compounded by the exponential growth that mobile penetration rates have displayed in recent years across Africa. In the continent, four out of ten people have access to a mobile phone – double the number of Africans with access to finance. While uncertainties remain over some of the implications of using mobile banking services – ranging from regulatory approaches, security concerns, the lack of human interfaces, to the difficulty of complying with Know Your Customer (KYC) rules – the retail network, speed of service, and affordability of mobile banking transactions

holds a tremendous potential to expanding access to the formally financially excluded.

### **Internet Banking Transactions**

Wang et al. (2003) claim that in the 1990s Internet banking technology was under-utilized as business organizations used it only to market their products and services. Thornton and White (2001), who examined customer orientations and usage of financial distribution channels in the Australian financial industry, found that more recently most financial institutions, faced with competitive pressure after the introduction of deregulation in 1983, have rethought their strategies to take full advantage of Internet technology. Tan and Teo (2000) note that the challenge to expand and maintain banking market share has influenced many banks to invest more in making better use of the Internet. The emergence of Internet banking had made many banks rethink their Information Technology (IT) strategies in competitive markets.

It is suggested that the banks that fail to respond to the emergence of Internet banking in the market are likely to lose customers and that the cost of offering Internet banking services is less than the cost of keeping branch banking. This notion was also confirmed in a study conducted by Jasimuddin (2004) who examined the role of Internet banking in Saudi Arabia (a neighbour of Oman). Jasimuddin indicated that the majority of Saudi banks had taken advantage of Internet technology to establish web sites but few offered Internet banking services. He suggested that if the Saudi Arabian banking industry wished to be successful in the global economy it would need to integrate Internet technology into its banking strategy. If Internet technology could improve performance then the bank would be able to gain advantage in a competitive environment.

Many authors (Tidd et al, 2001) do indeed believe that IT has the potential to affect organizational performance. Bhuian (1997) examined the relationship between market orientation and banks' performance in Saudi Arabia. He argued that unlike most developed countries, developing countries are experiencing rapid growth in markets and that this growth would probably continue until markets mature and become competitive.

The Internet could play a major role in transforming the workplace to enhance productivity by reducing operational cost and improving employee relationships through improved service delivery. The investigators noted that as the transformation progressed in the workplace the level of sophisticated services also increased. Bresenahan et al. (2002) examined the effect of IT on the organizational workplace by analyzing 300 responses and showed that IT has the potential to affect process and hence skill levels. This implies that the adoption of Internet technology has implications for how a business organization communicates internally and with its customers and suppliers as well as how it responds to its customers.

From the point of view of a bank manager, customer trust in the electronic channel for delivering banking services relates to the customer's willingness to accept the risk by putting themselves into a vulnerable position. In order to extend electronic customer/business relationships organizations need to address the issue of customer trust in this relationship. Hamel (2002) examined customer trust in electronic retailing (e-retailing) and argued that issues of security and reliability of businesses on the web were an important factor. In their study they identified three types of web assurances: privacy assurance – to assure that merchants

disclose and comply with privacy policies, process assurance – to assure that merchants comply with business processes, and technology assurance – to assure that merchants employ secure and reliable technologies. Sathye (1999) studied the adoption of Internet technology in the banking industry from the perspective of the Australian consumer. His study looked at factors that could influence the adoption of the Internet banking service in Australia and identified six key constructs: security of transactions; ease of use; awareness of Internet services and benefits; cost of services; resistance to change and accessibility of the Internet.

Jabnoun and Al-Tamimi (2003) examined perceived services quality in the commercial banks in the United Arab Emirates, emphasizing the importance of service quality to maintain market share. From an analysis of 462 responses to a survey of bank customers they concluded that customers value human skills the most in service quality. Other authors (Kotler, 2000; McKenzie, 2001) emphasized the importance of quality of service in customer satisfaction. Kotler (2000) highlighted the fact that timely service delivery is important when considering quality of service.

### **Critique of the Literature**

Technological innovation is a tool of management for change in financial performance, as it provides a way of how to create the conditions that make proactive change a natural way of business operations. It aims at developing a change adept organization that anticipates, creates and responds effectively to change in the external and internal environments to increase profit potential of an organization (Wang et al, 2003). As the importance of technological innovation in developing countries increases, so does the

need for research on the subject. Evidence from the literature reviewed above shows that existing discourse on diffusion of IT innovation in banking sector has failed to focus much attention on rapid changes in IT development and its corresponding effect on service provision in developing countries like Kenya. The information and communication technologies are revolutionizing the banking sector over the years.

The rapid development and commercialization of Information and Communication Technologies (ICTs) banking industry has prompted banks to increasingly adopt these technologies. This is based on the expectation that the new ICT based technologies and processes would lead to an improvement in their operating efficiencies and customer service levels. Bank of Africa since its merger in October 2006, a number of investments have been instituted and implemented to improve service delivery. That is to say, the bank's asset footing increased by 21% to Kshs 102 billion (BOA Annual report, 2007). Despite these investments, there are no research studies investigating the impact of these developments particularly IT investments on service delivery. This study therefore closes this gap by presenting the effect of technological innovations on financial performance of commercial banks in Kenya.

### **Research Gaps**

Measuring financial performance accurately is critical for accounting purposes and remains a central concern for most organizations. Performance measurement systems provide the foundation to develop strategic plans, assess an organization's completion of objectives, and remunerate managers. Although assessment of performance in the marketing literature is still very important, it is also complicated, Forman

(2005). While consensual measurement of performance promotes scholarly investigations and can clarify managerial decisions, marketers have not been able to find clear, current and reliable measures of performance on which marketing merit could be judged. Two approaches have been adopted in the literature to measure financial performance.

Long term performance has been chosen for two reasons: firstly because that is what the customers of "retail" products such as unit trusts might be expected to be looking at, particularly in view of the charging arrangements which make shorter term investment unwise. Secondly, one of the attractions of looking at "real" products rather than theoretical studies is the question of how administrative costs contribute to the results. In principle, such costs might appear in either front-end or regular annual management charges (Yasuharu, 2003). Using five-year offer-to-bid figures should capture such effects regardless of the choices of individual firms as to how to split costs between the two types of charges.

Lim et al. (2004) conducted a meta-analysis study on the relationship between IT investment and organizational performance, noting that previous studies examining IT investments return have shown inconclusive results. From an analysis of 3,883 subjects obtained from prior studies, they found strong support for return on IT investments. Examining the relationship between the e-commerce adoption and organizational performance, another study (Scupola, 2002) found that cost is not an important factor in the e-commerce adoption decision. A study by Anandarjan et al. (2000) highlighted that business organizations focus on IT in order to improve performance, and argued that business organizations are not

getting what they expect from IT investments. Moreover, they added that IT projects carry risks which usually appear later and that in a competitive environment the risk is even higher. These findings suggest that decision makers in the banking industry may be concerned about tangible benefits/costs when they decide to adopt Internet technology.

Locally, Gitonga (2003) did a study on innovation processes and the perceived role of the CEO in the banking industry. His study suggests that banks should focus on norms that support creativity and implementation in order to build on innovative processes. Kihumba (2008) conducted a study on the determinants of financial innovation and its effects on banks' performance in Kenya. This study concluded that technological innovations influence the structural aspects of banks in Kenya particularly on financial innovation as a strategy. Use of various aspects of technological innovations is thus expected to have great effects on the financial performance of an organization.

As such, technological innovations have been widely adopted in the commercial banks. There is, however, need to investigate the specific effects of these technological innovations on the commercial banks with specific reference to Equity Bank. The research gap exists as no study has been done to investigate the effects of technological innovations on performance of Commercial banks in Kenya.

## **RESEARCH METHODOLOGY**

### **Research Design**

This research problem was studied through the use of a descriptive research design. According to Cooper and Schindler (2003), a descriptive study is concerned with finding out the what, where and how of a phenomenon. This study therefore was able to generalize the findings to

all the commercial banks. The main focus of this study was quantitative. However some qualitative approach was used in order to gain a better understanding and possibly enable a better and more insightful interpretation of the results from the quantitative study.

### Target Population

Target population in statistics is the specific population about which information is desired. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. The population can be divided into sets, population or strata and which are mutually exclusive. The target population composed of all the staff employed at Equity Bank branches of Kenya in the Head office in Nairobi and the Nairobi's CBD Equity Bank Branches. The target respondents included the 240 staffs from the Equity Bank of Kenya branches in Nairobi CBD as well as in the Equity Bank Head Office in Nairobi. Mugenda and Mugenda (2003) explain that the target population should have some observable characteristics, to which the study intends to generalize the results of the study. This definition assumes that the population is not homogeneous.

**Table 1: Target Population**

Sections	Population (Frequency)	Percentage %
Top management	26	11
Middle level management	91	38
Low level management	122	51
<b>Total</b>	<b>240</b>	<b>100</b>

### Sampling Procedure

Sampling techniques provide a range of methods that facilitate to reduce the amount of data need to collect by considering only data

from a sub-group rather than all possible cases or elements. At the time of conducting research, it is often impossible, impractical, or too expensive to collect data from all the potential units of analysis included in the research problem. A smaller number of units, a sample, are often chosen in order to represent the relevant attributes of the whole set of units, the population.

Since the samples are not perfectly representative of the population from which they are drawn, the study cannot be confident that the conclusions would generalize the entire population (Shahidul and Sheikh, 2006). Ngechu (2004) emphasizes the importance of selecting a representative sample through making a sampling frame. A population frame is a systematic list of subjects, elements, traits, firms or objects to be studied. From the population frame the required number of subjects, respondents, elements, firms are selected in order to make a sample.

### Sample Size

From the above population of two hundred and forty, a sample of 20% was selected from within each group in proportions that each group bears to the study population. This sample was appropriate because the population is not homogeneous and the units are not uniformly distributed. Furthermore, owing to the big number of target population and given the time and resource constraints, the sampling at least 30 elements is recommended by Mugenda and Mugenda (1999). This generated a sample of 48 respondents which the study sought information from. This made it easier to get adequate and accurate information necessary for the research. The selection was as follows.

**Table 2: Sample Size**

Sections	Sample Size	Percentage
Top management	5	0.2
Middle level management	18	0.2
Low level management	24	0.2
Total	48	0.2

### **Data Collection Instrument**

The study used a survey questionnaire administered to each member of the sample population. The questionnaire had both open and close-ended questions. The close-ended questions provided more structured responses to facilitate tangible recommendations. The closed ended questions were used to test the rating of various attributes and this helps in reducing the number of related responses in order to obtain more varied responses. The open-ended questions provided additional information that may not have been captured in the close-ended questions. The questionnaire was carefully designed and tested with a few members of the population for further improvements. This was done in order to enhance its validity and accuracy of data collected for the study.

Secondary data was also collected for this study. This data was useful for generating additional information for the study from already documented data or available reports. Cooper and Schindler (2003) further explain that secondary data is a useful quantitative technique for evaluating historical or contemporary confidential or public records, reports, government documents and opinions. Mugenda and Mugenda (2003) add that, numerical records can also be considered a sub category of documents and that such records include figures, reports and budgets. This

basically implies the incorporation of valuable statistical data in the study.

### **Data Processing and Analysis**

Before processing the data completed questionnaires were edited for completeness and consistency. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS and presented through percentages, means, standard deviations and frequencies. The information was displayed by use of tables and in prose-form. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of SPSS. Content analysis was used to test data that is qualitative in nature or aspect of the data collected from the open ended questions. According to Baulcomb, (2003), content analysis uses a set of categorization for making valid and replicable inferences from data to their context. This offered a quantitative and qualitative description of the objectives of the study.

## **FINDINGS AND DISCUSIONS**

### **Response Rate**

The study sampled 48 respondents from the target population in collecting data with regard to the effects of technological innovations on the financial performance of the commercial banks in Kenya with a special focus on Equity Bank Limited.

From the study, 42 out of 48 target respondents filled in and returned the questionnaire contributing to 88%.

### **Gender of the Respondents**

The research sought to find out the gender distribution of the respondents. In this study the respondents sampled were expected to comprise both male and female staffs. An

analysis of the gender ratings on the returned questionnaires were that majority (61%) of the respondents were male while 39% were female. This shows that both male and female respondents' feelings and opinions were collected.

**Age of the Respondents**

This study sought to investigate the composition of the respondents in terms of age brackets to understand their familiarity with the effects of technological innovations on the financial performance of the Bank. The findings were that majority (29%) of the respondents showed that their ages fell between 35 and 40 years, 21% of them indicated that they were aged between 31 and 34 years, 17% of the respondents were aged between 41 and 44 years, 13% of them were aged 25 to 30 years and 45 to 50 years in each case, while 8% of the respondents were over 51 years of age. This shows that respondents were well distributed in terms of age and that they are active in technological advancements, productivity and hence could contribute constructively in this study.

**Length of Working in the Company**

The length of service/working in an organization determines the extent to which one is aware of the issues sought by the study. The respondents were required to indicate the length of time they had worked in Equity Bank Limited. The study found that majority of the respondents as shown by 50% had worked in the Company for 10 to 15 years, 25% of them had been working in the company for 5 to 10 years, 20.8% indicated that they had worked in the company for 0 to 5 years and 25% of the respondents indicated that they had been in the Company for more than 15 years. This shows that majority of the respondents had enough experience on the issue of the relationship

between technological innovation and financial performance of the company to give credible information.

**Level of Education**

Financial institutions employ staffs in different work stations hence different academic qualifications. This difference might contribute to differences in the responses given by the respondents. The study therefore sought to investigate the education level achieved by the respondents. The study found that majority of the respondents as shown by 66.7% had attained Bachelor's degree as their highest level of education, 16.7% of them had attained diploma level of education, those who had masters degrees were shown by 12.5%, while 4.2% of them had attained certificate level of education. This information shows that the respondents were knowledgeable enough to contribute positively in this study.

**Mobile Banking and Financial Performance**

The second specific objective of the study was to determine the effects of mobile banking on the financial performance of commercial banks in Kenya. As such the respondents were required to indicate the extent to which mobile banking affect the financial performance of the Bank.

**Table 4 Extent to which Mobile Banking affect the Financial Performance**

Extent	Frequency	Percent
To a very great extent	1	1
To a great extent	25	60
To a moderate extent	7	18
To a little extent	9	21
<b>Total</b>	<b>42</b>	<b>100</b>

From the study, 60% of the respondents indicated that mobile banking affect the financial performance of the Bank to a great extent, 21% of the respondents indicated that mobile banking affect the financial performance of the Bank to a little extent, 18% of the respondents indicated that mobile banking affect the financial performance of the Bank to a moderate extent, while 1% of the respondents indicated to a very great extent.

The respondents were further requested to rate the extent to which various services offered through mobile phones affect the financial performance in the Bank.

**Table 5: Banking Services offered through Mobile Phones**

Banking Services offered through Mobile Phones	No extent	Little extent	Moderate Extent	Great extent	Very great extent	Mean	Std. Dev.
Balance enquiry	3.8	5.3	27.8	18	45.1	3.9549	1.13394
Money transfer	12.5	12.5	18.8	18.8	37.5	3.3750	1.20416
Mini-statement	6.3	18.8	25	43.8	6.3	2.7500	1.12546
Automatic advices to clients on credits and airtime purchase	18.8	18.8	18.8	18.8	25	3.6875	1.35247

From the study results shown in table 4.9, 45.1% of the respondents indicated that balance enquiry affects the financial performance in the Bank to a very great extent and 25% of them indicated that automatic advices to clients on credits and airtime purchase affects the financial performance in the Bank to a very great extent. Another 37.5% of them indicated that money transfer affects the financial performance in the Bank to a very great extent while 43.8% of the respondents indicated mini-statement to a very great extent.

The study sought to establish the extent to which an access to finance services affect financial performance in the bank in the various aspects provided. The findings are as shown in table 6.

**Table 6: Access to finance services**

Access to finance services	No extent	Little extent	Moderate Extent	Great extent	Very great extent	Mean
Increase the physical footprint of banks	11.3	0	18.8	20.3	49.6	3.969
Transform the basic economics of low-balance savings	7.5	0	13.5	34.6	44.4	4.157
Increases access to finance for the under-banked	0	0	12.3	26.7	61.2	4.496

Majority of the respondents indicated that mobile banking increases access to finance for the under-banked to a great extent as shown by a mean of 4.4962, it transforms the basic economics of low-balance savings to a great extent as shown by a mean of 4.1579 and increases the physical footprint of banks to a great extent as shown by a mean of 3.9699.

The respondents were required to rate the extent to which various aspects of cost of service delivery affect financial performance in the bank. The results were presented in table 7 below.

### Internet Banking and Financial Performance

The second objective of the study was to assess the effects of internet banking transactions on the financial performance of commercial banks in Kenya. Accordingly, Table 7 shows the results of the study with regard to the effects of internet banking on the financial performance of cooperative Bank.

**Table 7: Extent to which Internet Banking has affected the Financial Performance**

Extent	Frequency	Percent
To a very great extent	2	4.9
To a great extent	12	29.4
To a moderate extent	24	56.9
To a little extent	4	8.8
<b>Total</b>	<b>42</b>	<b>100.0</b>

As shown in Table 4.11, 56.9% of the respondents indicated that internet banking has affected the financial performance of the Bank to a moderate extent, 29.4% of the respondents indicated that internet banking has affected the financial performance of the Bank to a great extent, 8.8% of them indicated to a little extent, while 4.9% of the respondents indicated that internet banking has affected the financial performance of the Bank to a very great extent.

The respondents were also required to rate the extent to which the adoption of internet-banking in various aspects affect the financial performance of the Bank. These results are as presented in table 8 below.

**Table 8 Aspects of Internet Banking**

Aspects of Internet Banking	No extent	Little extent	Moderate Extent	Great extent	Very great extent	Mean
<b>Capital requirements</b>	11.3	0	18.8	20.3	49.6	<b>3.9699</b>
<b>Operational costs</b>	7.5	0	13.5	34.6	44.4	<b>4.1579</b>
<b>Competition</b>	0	0	12	26.3	61.7	<b>4.4962</b>
<b>Operational risk</b>	3.8	15.8	4.5	13.5	62.4	<b>4.1504</b>
<b>Regulatory requirements</b>	6.3	12.5	18.8	31.3	31.3	<b>3.6875</b>
<b>Profitability</b>	2.3	27.1	6.8	41.4	22.6	<b>3.5489</b>
<b>Minimum bank reserves</b>	2.3	0	9.8	43.6	44.4	<b>4.2782</b>
<b>Customer base/reach</b>	3.8	7.5	13.5	45.1	30.1	<b>3.9023</b>
<b>Customer relation</b>	0	12.5	18.8	43.8	25	<b>3.6875</b>

From the study 61.7% of the respondents indicated that competition aspect affect the financial performance of the Bank to a very great extent, 44.4% of them indicated minimum bank reserves aspect affect the financial performance of the Bank to a very great extent, operational costs aspect affect the financial performance of the Bank to a great extent as shown by 61.7% of the respondents, operational risk affect the financial performance of the Bank to a great extent as shown by a mean score of 4.1504, capital requirements affect the financial performance of the Bank to a great extent as shown by a mean of 3.9699, customer base/reach aspect affect the financial performance of the Bank to a great extent as shown by a mean score of 3.9023, regulatory requirements aspect affect the financial performance of the Bank to a great extent as shown by a mean score of 3.6875, customer relation affects the financial performance of the Bank to a great extent as shown by a mean score of 3.6875 and that profitability to a great extent as shown by a mean score of 3.5489.

The study posited a statement that customer trust in the electronic channel for delivering banking services relates to customer willingness to accept the risk by putting themselves into a vulnerable position. In the light of this statement the respondents were required to rate the extent to which customer trust on internet banking affect the financial performance of the bank.

**Table 9 Extent to which Customer Trust on Internet Banking affect Performance**

Extent	Frequency	Percent
To a very great extent	2	4.2
To a great extent	19	45.8
To a moderate extent	14	33.3
To a little extent	3	8.3
To no extent	3	8.3
<b>Total</b>	<b>42</b>	<b>100.0</b>

Majority of the respondents (45.8%) indicated that customer trust on internet banking affect the financial performance of the bank to a great extent, as compared to 33.3% of them who indicated to a moderate extent, 8.3% of them indicated to a little extent as well as 8.3% of them who indicated to no extent, while 4.2% of the respondents indicated that customer trust on internet banking affect the financial performance of the bank to a very great extent.

**SUMMARY OF THE FINDINGS**

The study found that technological innovations adopted by the bank affected its financial performance to a moderate extent as shown by 56.9% of the respondents. As such technological innovation is considered as a process which is science, technology and system based. Majority of the respondents indicated that technological learning ability forms the bank’s technological

system to a great extent as shown by a mean score of 4.4962, as well as others like networking shown by a mean score of 4.1579, environmental factors shown by a mean score of 4.1504 and internal capabilities shown by a mean score of 3.9699.

**Conclusions**

The study concludes that adoption of technological innovations by banks affect their financial performance. This is because technological innovation is considered as a process which is science, technology and system based. Networking, environmental factors, internal capabilities and technological learning ability form the bank’s technological system.

The study also concludes that mobile banking affect the financial performance of the Bank. Balance enquiry, automatic advices to clients on credits and airtime purchase, money transfer as well as mini-statement affects the financial performance in the Bank. Mobile banking increases access to finance for the under-banked, it transforms the basic economics of low-balance savings and increases the physical footprint of banks. M- Banking has a positive impact on transfers, payments, deposits and withdrawals in financial transactions of small businesses, mobile banking is a cost effective, reliable and simple way of conducting business and reduces the instances of human error, Mobile banking provides increased value for customers' banking transactions and lowers the costs of serving low-income customers which affect financial performance.

The study further concludes that banks realize a significant financial performance in comparing the financial performance before and after the adoption of internet banking. Therefore, internet banking has affected the financial performance of the Bank. From the study,

competition, minimum bank reserves, operational costs, operational risk, capital requirements, customer base/reach, regulatory requirements, customer relation, profitability and customer trust on internet banking affect the financial performance.

#### **5.4 Recommendations**

Looking forward towards the realization of the economic pillar of Kenya's Vision 2030 demands that organizations embrace technological advancements and the benefits that come with it. As such the following recommendations are proposed:

From the findings and conclusions, it was clear that adoption of technological innovations by bank affect its financial performance. The study recommends that for the bank to be highly competitive, they need to employ modern technological innovations such as internet based banking services. Technology is one of the key elements that define a society or civilization. The critical role of technological innovation in the development of a company and its contribution on the economic growth of firms has been widely documented

The study established that mobile banking and internet banking have significant effects on the financial performance of the bank. The study therefore recommends that the banking sector should be able to determine the technical background of the majority of its customers before endeavoring into the use of advanced technologies. This entails assessing the literacy level of its major customers, the specific needs of its target customers and the potential benefits accruing to customers through the use of current technologies. This can be achieved through carrying a customer research.

Mobile phones and internet have been found to have a major influence in delivering technology

driven banking services. It is recommended that commercial banks continue to create sustainable business linkages and collaborations with mobile phone service providers as well as the internet service providers. Findings revealed that mobile phones had a higher moderating effect than internet service and this can be attributed to the level of penetration and ease of access of mobile phones to the public. Banks should leverage on mobile phones in order to grow their business and customer base. The Government should continue to offer more incentives for technologies that use mobile phones as their delivery platforms.

The study finally recommends that the Bank should determine the technical background of the majority of its customers before endeavoring into the use of advanced technologies. This entails assessing the literacy level of its major customers, the specific needs of its target customers and the potential benefits accruing to customers through the use of current technologies. This can be achieved through carrying a customer competence and satisfaction survey.

#### **5.5 Suggestions for Further Research**

The study has assessed the effects of technological innovations on the financial performance of the commercial banks in Kenya where the focus was on Equity Bank Limited and established that mobile banking technologies and internet banking transactions are the main technological innovations affecting the financial performance of Equity bank Limited in Kenya. The commercial banking sector in Kenya however consists of various other commercial banks which differ in their way of management and have different settings all together. This warrants the need for another study which would ensure generalization of the study findings for all the commercial banks in Kenya

and hence pave way for new policies. The study therefore recommends another study be done with an aim to investigate the effects of

technological innovations on the financial performance of the commercial banks in Kenya.

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