EFFECTS OF TECHNOLOGICAL INNOVATION ON BANK PERFORMANCE: A CASE OF COMMERCIAL BANK OF AFRICA IN NAIROBI COUNTY

BY

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UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

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A Project Report Submitted to the Chandaria School of Business in Partial Fulfillment of the Requirement for the Degree of Masters in Business Administration (MBA)

UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

SPRING 2019
STUDENT'S DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for academic credit.

Signed: ______________________          Date: ______________________

Nelly O. Yamo (ID 636119)

This project report has been presented for examination with my approval as the appointed supervisor.

Signed: ______________________          Date: ______________________

Dr. Juliana Namada

Signed: ______________________          Date: ______________________

Dean, Chandaria School of Business
ABSTRACT

The general objective of the study was to determine the effects of technological disruptions on bank performance of commercial banks in Kenya. The study was guided by the following four specific objectives: To assess the effects of cloud application platforms on internal processes in the banks. To determine how e-learning platforms affect Learning and Growth in the banks. To establish the effect of mobile application on customer retention in the banks. To assess how teller less branches affect the bank's financial position.

The study utilized a descriptive research design and incorporated both quantitative and qualitative research to gain a better knowledge and in-depth understanding of the results. The target population for this study was 430 Senior Managers, Mid-Level Managers and Senior Officers who oversee the performance in the bank. The study used stratified random sampling technique and a sample of 151 respondents was used. Primary data was collected by administering open and close-ended questionnaire to the respondents. The questionnaire was sent via mail to the respondents. The descriptive statistical tool, Statistical Package for Social Sciences (SPSS) aided the researcher describe the data and determine the extent used and this was through descriptive analysis and inferential statistics.

Analysis of the first objective revealed that majority agreed that the bank encourages the use of cloud applications to support business processes, and cloud applications are aligned to the mission of the bank. It was also established that cloud applications support additional peer learning among employees and cloud application make employees accountable for their own learning. An analysis of the means of the second objective revealed that majority agreed that the number of resource material has increased since the introduction of e-learning platforms. It was also agreed that through e-learning cataloguing of material has been simplified. Majority also agreed that they can access most necessary organization material, conveniently using the e-learning platform. Analysis of the means of the last objective indicated that majority agreed that use of mobile applications has increased efficiency in service delivery, mobile applications have improved the performance of the bank, and mobile applications have resulted into timeless banking that is accessible all the time from any locality. The results also show that mobile applications provide better collaboration with customers and mobile applications reduce the orientation and training effort, at the same time mobile applications provide real-time data access with lower risks and mobile applications at CBA have helped to safeguard the customer data.
It was concluded that as a bank CBA encourages the use of cloud applications to support business processes, and cloud applications are aligned to the mission of the bank. This has thus led to improved service delivery and growth of the firm. After a review of the e-learning process, it was concluded that the number of resource material has increased since the introduction of e-learning platforms, and offer the best storage for the organization’s reference documents. There has also been increased efficiency because of the ease of finding the information from the platform, and the e-learning platforms have features that are easy to use. This study concluded that mobile applications has increased efficiency in service delivery through timeless banking that is accessible all the time from any locality. In addition, it has created a positive impression of the application towards the bank. Customers are now also able to resolve issues from the comfort of their homes and helped in the processing of financial transactions for customers.

It was recommended that as a bank CBA should encourage all its stake holders to utilize cloud applications as it has the capability to simplify the assessment of organization objectives. Employees should also be empowered to utilize cloud computing for easier cooperation/information exchange with other organizations. The study recommends that CBA employees should be encouraged to use the e-learning platform more often in order to improve their productivity. For improved performance, there should be increased resource material towards the full functionality of the e-learning platform. The study recommends that CBA should champion for mobile application as it has the capacity to provide real-time data access with lower risks, more sensitization campaigns should also be held to educate the users on the safeguard the customer data.
ACKNOWLEDGEMENT

I thank the almighty God for His guidance, strength and mercy for the successful completion of this research proposal. I also thank my instructor, Dr. Juliana Namada for her input and guidance and to my husband Ernest, for his support in the successful completion of this project report.
DEDICATION

To my parents, husband and daughter. Thank you for your encouragement, love and care during this involving time.
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# ABBREVIATIONS AND ACRONYMS

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<tbody>
<tr>
<td>ATM</td>
<td>Automated Teller Machine</td>
</tr>
<tr>
<td>CBA</td>
<td>Commercial Bank of Africa</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
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<td>ICT</td>
<td>Information Communication Technology</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>PC</td>
<td>Personal Computer</td>
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<td>RAM</td>
<td>Random Access Memory</td>
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<td>SLA</td>
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CHAPTER ONE

1.0. INTRODUCTION

1.1 Background of the Study

Today's business environment is very dynamic and undergoes rapid changes as a result of technological innovation, increased awareness and demands from customers. Business organizations, especially the banking industry of the 21st century operates in a complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate. Technology is at the center of this global change curve, Akerlof and Girardone (2015) found out that managers cannot ignore Information Systems because they play a critical role in contemporary organization. They point out that the entire cash flow of most fortune 500 companies is linked to Information System.

Electronic banking can be termed as the automated, smooth and efficient delivery of modern and traditional banking services through electronic and communicative channels (Fu-Qiang & Sajid, 2014). It includes but not limited to the systems that customers use to access accounts, transact businesses and obtain information through networks, including the internet. These networks could be either private or public. Electronic banking can generally be used as a term describing the whole process of performing such transactions without the need to physically visit the financial institution. personal computer (PC) banking, online banking, home banking, mobile banking and virtual banking are terms which refer to different forms of electronic banking (Ogbuji, 2012).

Technology has outdone the role of support services or only electronic data processing; its fields of applications are slightly global and unlimited. Its devices especially the Internet and modern computer email facilities have further strengthened early modernizations like the telephone and fax. Other technological devices include data recognition equipment, factory automation hardware and services, tele- computing and teleconferences using real time and online system (Adeoti, 2015). The concepts of both learning and knowledge creation are mostly used to describe a technological process: Companies embrace technology through a constant learning process through which they generate new technological knowledge (Aduda & Kingoo, 2012). Furthermore, it has been recognized that the innovation process in companies basically consists of the development of new routines, since the conversion of an organization's activity into a routine constitutes the main form of storage of that organization's specific operational knowledge (Wetherbe,
The innovation process has also been associated with the creation of core competencies and with the development of dynamic capabilities.

Financial performance is a subjective measure of how well an organization can use assets from its primary mode of business and generate revenues (Giannakoudi, 2015). This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firm's across the same industry or to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregation.

Fu-Qiang and Sajid (2014) showed in their study that most previous studies concerning company performance evaluation focus merely on operational efficiency and operational effectiveness which might directly influence the survival of a company. By using an innovative two-stage data envelopment analysis model in their study, the empirical result of this study is that a company with better efficiency does not always mean that it has better effectiveness. A paper in the title of efficiency, customer service and financing performance among Australian financial institutions (Giannakoudi, 2015) showed that all financial performance measures as interest margin, return on assets, and capital adequacy are positively correlated with customer service quality scores.

As a result of post-democracy banking reforms in Nigeria which triggered unprecedented application of technology in banking sub-sector. Adeoti (2015) investigates the role of Technology on enhancing the operations of Nigerian banks using primary data which was analyzed with cross-tabulations and regression technique to reveals significant impacts of Technology on banking operations. Technology driven bank performance hypothesis was tested in the study by Hicks and Niehans (2014), the study used primary data sourced through a structured questionnaire administered to selected banks in south-west Nigeria and the Ordinary Least Square approach econometric techniques was applied to detect the relationship that exist between banks profitability and the adoption of Technology. The results showed that there exist a correlation between Technology and six banks profitability in Nigeria.

Commercial bank of Africa-Kenya, have developed new technological innovations that have influenced their financial performance. This includes mobile banking technologies, electronic money transfer, internet banking transactions, ATM deposits and withdrawals, online account opening among others (Juma, 2012). All these technological innovations
contribute heavily in building customer base, capital base as well as enhancing their profitability which results to influence on their financial performance. According to Muyoka (2014), computer illiteracy among majority of the population is still significantly high especially in Africa due to poor and/or lack of technological infrastructure and reliable power supply, lack of proper legislation governing e-transactions, Preference to paper money, as opposed to “virtual” cash in transactions.

Akerlof and Girardone (2015) argued that a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies are always used to measure the financial performance of banks and other financial institutions. The common assumption, which underpins much of the financial performance research and discussion, is that increasing financial performance led 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 (Giannakoudi, 2015).

According to Fu-Qiang and Sajid (2014), the introduction of technology in banking sector has both merits and demerits. Just to mention a few, It has simplified life for some people to whom it’s a better way to bank while to others it might appear to be a complex and intimidating process. Advantages of electronic banking include; convenience due to 24-hour reliability as might be compared to traditional banks that run approximately on daytime 5.5 days a week, transactions speed and effectiveness. Musyoka (2014) adds that many banks that use electronic banking as their innovation now offer sophisticated tools, including account aggregation, stock quotes, rate alerts and portfolio managing programs to help people manage all their assets more effectively. Musyoka (2014) expounds that the disadvantages of electronic banking include security; Majority of customers shy away from banking services due to security concerns, human face: According to some analysts, customers still value personalized and responsive services from their bankers, ignorance: “on average 30% of bank customers do not know whether their banks provide online services” (Musyoka, 2014).

This explosion in Internet and mobile use means that traditional bank relics are falling by the wayside. John Cryan, Executive Officer of Deutsche Bank AG, has forecasted the disappearance of tangible cash within a decade (Moor, Choudhury, & Martinuzzi, 2016),
while Norwegian banks have attracted considerable media coverage for their closing down of branch offices (Nikel, 2016). At the same time, banks are racing to catch up with technological developments and stay relevant. CEO Brian Moynihan of Bank of America asserts that the bank spends more than $3 billion a year on coding (Moor, Choundhury & Martinuzzi., 2016).

Commercial Bank of Africa (CBA) is a financial services provider headquartered in Nairobi, Kenya, and the largest economy in the East African Community. CBA is licensed by the Central Bank of Kenya, the central bank and national banking regulator. As of December 2015, the bank was one of the largest commercial banks in Kenya with assets of approximately US$2.166 billion (KES: 215.6 billion), with shareholders' equity of approximately US$217.83 million (KES: 21.68 billion). It is the largest privately owned commercial bank in Kenya.

The bank was founded in 1962 in Dar es Salaam, Tanzania. Soon, branches were opened in Nairobi and Mombasa, Kenya and in Kampala, Uganda. When Tanzania nationalized private banks in 1967, the bank moved its headquarters to Nairobi. Following political changes in Uganda in 1971, the bank sold its assets in that country (CBA, 2018).

At the beginning, CBA was owned by a consortium of financial institutions known as Société Financière pour les Pays d'Outre-Mer (SFOM), based in Switzerland. Original members of the consortium included Banque Nationale de Paris, Bank Bruxelles Lambert, Commerzbank, and Bank of America. In 1980, Bank of America acquired 84% shareholding, effectively buying out all the other SFOM partners. Sixteen per cent shareholding in CBA remained in the hands of Kenyan investors. During the 1980s Bank of America divested from the bank, putting 100% shareholding in CBA in the hands of Kenyan nationals (CBA, 2018).

1.2 Statement of the Problem

A major presumption of the greater part of the current in researches in technological change and activities learning has been that technological advancement has an immediate bearing on execution upgrades (Juma, 2012). Key administration in the saving money segment requires that banks ought to have powerful frameworks set up to counter flighty occasions that can maintain their tasks and limit the dangers required through mechanical innovations (Ombati, Magutu, Nyamwenga & Nyaoga, 2011). As a result, only those associations that
can adjust to the changing condition and receive new thoughts and methods for working together that can be ensured any desire for survival (Musyoka, 2014). Aduda and Kingoo (2012) investigated the relationship between information and communication technology investments and small firms’ performance. The study revealed that firms using ICT performed better compared to firm’s that were reluctant to adopt ICT.

In their study conducted to examine technological progress and its effects in the banking industry using relevant data, Ombati et al. (2011) found that Technology investment leads to reduction in costs. This led to improved productivity which was attributable to improved quality and variety of banking services. These studies laid more emphasis on the link between technology and cost reduction, productivity and improved quality of services. Previous studies by Musyoka (2014) examined the relationship between mobile banking on the financial performance of commercial banks in Kenya. It was found that there existed a statistically significant relationship between mobile banking and profitability of commercial banks in Kenya. This was attributable to increased deposits through mobile transactions and reduced costs. Although commercial bank of Africa wasn’t among the banks under study.

A study by Juma (2012) investigated the relationship between the impacts of technology adoption on growth of commercial banks in Kenya. The study concluded that there was a positive correlation between technology and growth of commercial banks thus the need to do a similar study at commercial bank of Africa. Recent studies have shown that e-learning implementation is not simply a technological solution, but also a process of many different factors such as social factors (Tarhini et al., 2015), and individual factors (Liaw & Huang, 2011), organizational such as facilitating conditions in addition to behavioral and cultural factors (Masoumi, 2012). The findings reveal that such major factors play an important role in how an information technology is developed and used although the study did not cover the banking sector.

Kenya banking sector has witnessed many changes since the beginning of e-banking. Today, customers of banks have efficient, fast and convenient banking services. In line with rendering qualities and acceptable services, most banks in Kenya are investing large sum of money in information and communication Technology (Aduda & Kingoo, 2012). While the rapid development of information technology has made some banking tasks more efficient and cheaper, technological investments are taking a larger share of bank’s
resources. Despite this, it is usually difficult to define whether or not an innovative technology in fact, become a disruptive technology. The main focus of this study is to determine the impact of disruptive technology in the ICT environment and how new technologies in a secured architecture framework of organizations in the banking sector may influence performance.

1.3 General Objective

The general objective of the study was to determine the effects of technological innovation on bank performance of commercial banks in Kenya.

1.4 Specific Objectives

The study was guided by the following three specific objectives:

1.4.1. To assess the effects of cloud application platforms on internal processes in the banks.

1.4.2. To determine how e-learning platforms affect Learning and Growth in the banks.

1.4.3. To establish the effect of mobile application on customer retention in the banks.

1.5 Significance of the Study

The benefits that accrue from this study are numerous and affect the following:

1.5.1. Banks

Banks are able to provide quality services to its customers and even encourage more people to invest in it, and other financial institutions. The banking organizations in Kenya have a benchmark for measuring their electronic banking services and their financial performance.

1.5.2. Governments

The study provide the necessary data to the government to help them in policy formulation and also enable them to be able to control its finances efficiently hence be efficient regulators.

1.5.3 Scholars

The study help scholars understand the various forms of electronic banking and its effects on the financial performance of Kenyan banks. They are able to know the evolution of
electronic banking in Kenya and what has been the change experienced due to introduction of electronic banking in Kenya. The channels used by various banks to carry out electronic banking are also highlighted in the study.

1.5.4. Customers

Bank customers are able to carry out their transactions from the comfort of their homes or workplace hence saving on time and resources; they also gain a better understanding of how to carry out bank services using electronic banking.

1.5.5. Researchers

Researchers are able to add to their research work about electronic banking and gain a better understanding on this field. The findings can also be used in future as reference material.

1.6. Scope of the Study

The study was carried out in Kenya at the commercial bank of Africa (CBA) branches. The target groups of the study are 151 bank managers. The study took place between May and July 2018, and utilized a descriptive research design where both quantitative and qualitative research was used to gain a better understanding of the results. The primary population of study selected for this research, the scope included 148 employees in the bank. Primary data was collected by administering open and close-ended questionnaire to the respondents. The descriptive statistical tool, Statistical Package for Social Sciences (SPSS) and excel applications was utilized to undertake descriptive analysis by use of means, standard deviations and frequencies.

1.7. Definition of Terms

This study encompassed the following terms:

1.7.1. Brick and Click Bank

Brick and Click Bank are banks that offer some form of online banking for example Internet banking, PC banking as well as home banking (Aduda, & Kingoo, 2012).
1.7.2. Brick and Mortar

It is a traditional “street-side” business that deals with its customers face to face in an office or store that the business owns or rents. This is banks that have yet to offer online banking. (Akerlof & Girardone, 2015)

1.7.3. Click and Mortar

Its a business model that includes both online and offline operations, which typically includes a website and a physical store (Adeoti, 2015).

1.7.4. Direct Deposit

Direct deposit is a banking term used to refer to a banking option that allows for the transfer of funds without the hassle associated with paper checks (Aduda & Kingoo, 2012).

1.7.5. E-banking (Electronic banking)

Electronic banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and mortar institution. The following terms all refer to one form or another of electronic banking: personal computer (PC) banking, internet banking, virtual banking, online banking, home banking and mobile bank (Juma, 2012).

1.7.6. Virtual Bank.

Virtual banks are banks that do not have physical branches or tellers whatsoever (Musyoka, 2014).

1.8 Chapter Summary

The chapter outlines the background and statement of the problem. It provides a clear and brief statement representing the purpose of the study and states the objectives of the study in research questions format that are to guide the study. The significance and scope of study are also described in this chapter as well as key terms to be applied are also defined. Chapter two presents the Literature Review and it provides insights into what other researchers have done in the field of social media and customer satisfaction. Chapter three is on the research
methodology and it highlights the various methods and procedures that the researcher used in conducting this research.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

The aim of this chapter is to outline a review of literature based on the effects of technological disruptions on bank performance of commercial banks in Kenya. It is structured according to the research questions outlined in chapter one to ensure relevance of the research problem. The first research question to be addressed was the effects cloud application platforms on internal processes in the banks. Secondly, to determine how e-learning platforms affect Learning and Growth in the banks. Thirdly, establish the effect of mobile application on customer retention in the banks. Finally, to assess how teller less branches affect the bank's financial position.

2.2. Cloud Application Platforms and Internal Processes

Cloud computing entails the application of basic technology that is used to access different services on the Internet using the cloud. The implementation of this strategy demonstrates the utilization of a technology model in which any and all resources application software, processing power, data storage, backup facilities, development tools literally, everything is delivered as a set of services via the Internet (Tambe & Hitt, 2013). Therefore, the cloud computing strategy then introduces an approach to move the Banks from the current state of a duplicative, cumbersome, and costly set of application silos to end to end state which is agile, secure, and cost effective service environment that can rapidly respond to changing IT needs. This helps the organizations creates competitive advantage by giving companies new ways to outperform their rivals (Chin-Nung, I-Liang, & Yan-Kai, 2011).

2.2.1. Cloud Computing and Internal Processes

Horrigan (2013) did a study to look at the fundamental advantages of cloud computing methodology. The examination uncovered that there are six primary advantages, the first is bring down costs: cloud computing system can pool the majority of the computing assets that can be disseminated to applications as required, improving the utilization of the aggregate of the computing assets and conveying better proficiency and usage of the whole shared framework. The second advantage is diminished capital use: regardless of whether an association picks an open cloud system or outsourced private cloud computing
methodology alternative, cloud computing conveys a superior income by killing the capital cost related with building the server foundation (Wang, von Laszewski & Younge, 2012).

The third advantage is that cloud computing system execution empowers speedier sending of tasks; this is on the grounds that servers can be raised and conveyed in a matter of minutes guaranteeing that an opportunity to send another application drops significantly with cloud computing procedure. Instead of introducing and systems administration another equipment server, the new server can be dialed up and imaged in through a self-serve control support (Youseff, Butrico & Da Silva, 2013)

The fourth advantage of cloud computing technique usage is the capacity to scale as needed. As applications grow, an association can include capacity, RAM and CPU limit as required, implying that they can purchase simply enough and scale as the application requests develop. The fifth advantage gathering from cloud computing methodology is bringing down support costs. This is driven by two components; less equipment and outsourced, shared data innovation staff. Cloud computing technique involves the utilization of less physical assets, along these lines there is less equipment to control and keep up. With an outsourced cloud, the association doesn't have to keep server, stockpiling, system, and virtualization specialists on staff full time. The last advantage is that cloud computing offers flexibility and excess. This is on account of in cloud computing there is programmed failover between equipment stages and fiasco recuperation administrations to raise servers set up in a different server farm should the essential server farm encounter a blackout (Wang, von Laszewski & Younge, 2012).

In order to proof the benefits of cloud computing strategy implementation, provider Mathur and Nishchal (2012) did a study on the same. The study demonstrated an example of an organization that has moved business applications to cloud computing strategy is the largest casino operator in the world, Harrah's Entertainment, which has moved applications such as reservations and their extensive customer loyalty database to a cloud strategy. This cloud computing transition has both advantages and disadvantages. A benefit that is mentioned for Harrah’s cloud computing strategy applications is localized innovation, while one disadvantage is that these applications are provider-specific and would be difficult to migrate to another provider's platform. Another cloud computing strategy implementation, the Qatar Cloud Computing strategy Initiative, was spearheaded by three universities,
namely Carnegie Mellon University in Qatar, Qatar University, and Texas A & M University at Qatar (Aymerich, Fenu & Surcis, 2013). These universities are joining forces to address local business and industrial computing needs. Some areas of special interest include seismic modeling, gas exploration, and production operations support for the petroleum industry. This initiative also addresses compute intensive and parallel computing applications such as an Arabic language search engine, testing and migrating applications to enable parallel computing using Map Reduce programming, and support of secure computing research.

2.2.2. Factors Influencing Cloud Computing on Internal Processes

Cost is a very important factor for consideration in the process of implementation of cloud computing strategy. "Cost advantages are the strongest driver affecting IT executives' perceptions of SaaS opportunities. Feuerlicht (2012) stated that companies need to spend a big part of their balance on the IT infrastructure, while less than 10 % of their servers can be really utilized, resulting in a big waste of money. In addition, these servers need to be replaced almost every three years and need to be maintained and administrated, increasing the total cost of IT operations radically. Therefore, Cloud Computing as a strategy being implemented by banks can reduce these costs remarkably. Economies of scale for datacenters cost savings can lead to a five to seven-time reduction in the total cost of computing activities.

Also, cloud computing implementers need to consider its mix with different administrations. Organizations need to embrace diverse sorts of uses from various cloud suppliers and these applications may need to interface with each other. In the meantime, a few organizations may receive a cross breed methodology of Cloud Solutions as open clouds have distinctive attributes from that of private clouds. Subsequently, the mix between the information from these distinctive applications should be accomplished and this issue postures numerous specialized and business challenges for cloud suppliers and adopters. Then again, Mashups can be a genuine open door in cloud arrangements. Mashups are a web benefit giving information or usefulness depending on various outside sources (Feuerlicht, 2012).

Further, Scalability is an essential factor that ought to be considered as far as execution. As the necessities of the cloud computing implementers increment, the cloud supplier ought to
have the capacity to scale up their assets and framework to fulfill the implementer's new
prerequisites of capacity, preparing, and association transfer speed. Then again,
adaptability in Cloud Computing is one of the primary quality focuses and constitutes an
essential open door for organizations. As these organizations' necessities change, their
foundation scaled up or down powerfully giving an abnormal state of vital adaptability
(PRWEB, 2012).

Also, unwavering quality ought to be enormously considered in cloud computing
methodology usage. A blackout is the nonappearance of the cloud benefit. A blackout is
unavoidable and clients should consider before executing such a key arrangement. It may
occur for a short or quite a while, a couple or commonly. Indeed, even expansive
organizations, for example, Google and Amazon experienced numerous comparable cases
before and they had numerous more later on. To put it plainly, 100 % accessibility of the
administration is unthinkable (Aljabri & Sohail, 2012).

The greater part of the applications facilitated in the cloud methodology are as of now non-
basic, for example, move down and programming testing. In addition, clients executing
cloud computing methodology should make a point to have reinforcement of their
information in different spots. These days, the suppliers of cloud computing system are
attempting to stay away from blackout and guarantee an abnormal state of accessibility in
the Service-Level Agreement (SLA) and endeavor to repay their clients on account of a
blackout of the administration. This factor speaks to a hazard and it is one of the viable
factors in cloud computing procedure usage. It decides the sort of uses that can be utilized
as a part of the cloud computing technique alongside its usage (Arvidson, 2014).

Likewise, the execution issues identifying with the usage of cloud computing technique
should be considered. The fundamental wellspring of execution issues originate from the
association quality between the client and the cloud computing server (Arvidson, 2014).
For the most part when more clients are interfacing in the meantime and a lot of information
is exchanged between the end client and the cloud server. These outcomes in a log jam in
the cloud benefit. The execution issue is an essential factor which organizations need to
consider while actualizing cloud computing. Organizations should quantify their
conceivable present and future data transfer capacity and preparing prerequisites before
they choose to receive cloud arrangements. Execution is viewed as one of the fundamental
dangers, and a vital open door in the meantime (Goutas, Sutanto, & Aldarbesti, 2016).
2.2.3. Challenges Facing Cloud Computing on Internal Processes

Most organizations have worries around the potential security dangers postured by cloud computing methodology usage in organizations. As indicated by Melvin and Greer (2009), the main factor preventing Information Technology pioneers from taking advantage of the cloud technique immediately is security stresses. Undertaking data is imperative in a data sharing world and the loss of customers ‘private data, for example, Visa points of interest can be hindering to an organization. The security of such information particularly when put away by an outsider is a noteworthy worry to organizations considering actualizing cloud computing.

Absence of security is another test frustrating cloud computing technique execution. At the point when an association utilizes the cloud computing technique, information is put away on the supplier's server and not in their own particular equipment, and consequently, the client loses some control over the information. Notwithstanding the above, Africa is looked by a one of a kind arrangement of difficulties. Web availability is as yet not accessible in substantial parts of the landmass (Wang, von Laszewski & Younge, 2012). Cloud computing technique depends on constant server collaborations with low inertness, high transfer speed and a steady association that are to a great extent ailing in most of Africa. This issue is aggravated with the absence of shabby computing gadgets and low computing education levels where most individuals on the mainland can't play out the most essential capacities (Dzogbenku, 2013).

Enterprises need to consider the benefits, drawbacks and the effects of cloud computing strategy on their organizations and usage practices, to make decision about the implementation and use. In the enterprise, the implementation of cloud computing strategy is as much dependent on the maturity of organizational structure and culture, including legislative processes (Fellowes, 2013).

Many companies have implemented the cloud computing strategy by building their public clouds, which include Amazon, Google and Microsoft. These companies are often releasing new features and updates of their services. For instance Amazon Web Services (AWS) released a security and Economics center on their website to have academic and community advice regarding these issues (Khajeh-Hosseini, Sommerville & Siram, 2012). This shows
that there are still lots of doubts about the costs and security for enterprises to implement the cloud computing strategy. Hence, the issues of economics and security in cloud computing strategy for enterprises must be researched.

2.3. E-Learning Platforms and Learning and Growth

2.3.1. The e-learning Platform and Growth

E-learning refers to the use of computer system technology, fundamentally through the internet to communicate and relay data to people (Ley, Lindstaedt & Albert, 2005). These days, e-learning is developing as a typical methodology for preparing and development in associations because of its flexibility and accessibility (Rosenberg, 2005). He goes on to further state that regardless of this emerging trend of utilizing e-learning in the work place; nearly 50% of these applications inhibit employees from learning. This is because when it comes to e-learning, considerable holes exist between the needs of the learner and those of the association.

As indicated by Yambesi (2012), it has been argued that while specific knowledge can be acquired by participating in e-learning initiatives, more frequently e-learning is viewed as not helpful given that the knowledge learned isn't significant enough to support undertaking performance. Evidently all things considered e-learning is designed by associations without achieving their vision and mission. What's more, Yambesi (2012) note that the existing progression of e-learning is inclined towards devising technological concerns and disregarding instructive and managerial issues which are essential for efficient projects in e-learning. Further they call attention to that that the ascendancy of technology-oriented approaches has made the performance of e-learning to become ineffective in achieving objectives thereby alleged to be poor in quality and design. One of the biggest challenges in talking about e-learning comes from different understandings of this point.

As indicated by Siemens (2004), this is realized by when a great many people connect their everyday experiences and career to their conversations, offering a decent image of e-learning that replicates what they have encountered. Therefore, for a teaching educator e-learning often means designing courses or learning materials focused on achieving the set objectives inside the larger scope of program implementation (Siemens, 2004). Isaacs and Hollow (2012) note that, in Africa seeking approaches to break into the globalizing world, it needs to utilize the means necessary to steer its own particular development. Therefore,
this social, customary and recorded data is essential and ought to be accorded top need in the education system to enable citizens acquire the identity they need to organize and establish their lives in this 21st century.

As indicated by Kylli (2005), intellectual development in these areas, altogether science and technology must be pursued and strengthened. The examination highlighted that the core problem e-learning research emanated from its establishment on prescribed modules in learning organizations. Then again, since learning in associations and educational establishments is particular, the limit working in workplaces must be founded on deliverables with the intention of achieving authoritative objectives. This is because contextually, viable application in workplaces is based on learning set in motion.

2.3.2. Adoption of E-learning and Growth

Understanding the e-learning effectiveness in workplaces is a necessary, but contentious task (Abbad, 2011). The transfer of knowledge about e-learning from higher education to workplace situations has resulted in discursive tensions between expectations and practice. Additionally, to improve understanding of the factors influencing effectiveness of e-learning, especially in dispersed and large workplaces a developed model base has to be in place (Abbad, 2011). Thus highly skilled and qualified people are to be involved in effectively using less expensive ways to effect success in the knowledge economy. This requires quick, operational and cost effective education and training.

Aymerich et al., (2013) calls attention to that developing measure for the effectiveness of e-learning and defining the elements that influence them must be understood extensively by implementers thereby implementing the proper understanding of what e-learning means. It is from the understanding of the entire learning system that dynamism is experienced through time and accordingly responds to the changing needs of associations, goals of people in the work market and contributions from the education system.

Jawadi (2006) acknowledges that e-learning has noteworthy money related, social and hierarchical advantages. However, e-learning use among professional workplaces still remains limited compared to customary teaching methods. This is in view of the present globalized society where internet-based learning systems are being used in numerous associations yet their selection requires an exhaustive understanding of the user's capabilities. As per Buchmann (2012), it is essential that associations advocate for
employees to have a decent knowledge and understanding of different technologies and software inside e-learning processes.

Carriedo and Beltran (2015) concludes that acceptance of technology among staff in a workplace requires an association to take a gander at the technology selection theories developed in data system researches which provide a conceptual framework to apprehend this key factor that influence employees' inspiration to embrace e-learning practices. It is likewise imperative for employees to value and have the perception of usefulness of e-learning programs as this easened their use of computer programs which are key determinants of e-learning acceptance. He further clarifies that e-learning systems that are presently been adopted in numerous associations and universities requires a careful understanding, knowledge and acceptance of the user acceptance processes which have been used to test the acceptance of different technologies and software inside an e-learning context.

E-learning promises to change the workplace setting by enhancing efficiency, effectiveness and accessibility of services inside an association. Despite having one of the most advanced telecommunications infrastructures in the world, appropriation of e-learning in most multinational organizations has fallen far below expectations (Jawadi, 2006). It is essential that associations initially understand these attitudes with the goal that projects are designed to meet the needs of employees and the needs of the association.

As per Jan, Lu and Chou (2012), this thusly enable employees to appreciate the usefulness and ease of use that e-learning programs present. From the associations' view, the feedback from employees can be used to create a group of e-learners and hence help with creating realistic expectations (Khera, 2006). This likewise helps in identifying what type of e-learning initiatives it needs to invest in to enhance employee knowledge and aptitudes in delivering on the association's mandate. Moreover, managers can likewise help employees' morale by giving success stories of e-learning experiences from prominent employees to promote the appropriation of e-learning (Kim & Wattanapongsakorn, 2015).

2.3.3. Challenges Faced in Adoption and Use of E-learning on Growth

Wang, Ran, Liao and Yang (2012) bring up that, there has been low performance in employees' inspiration in spite of the use of e-learning in this way not achieving the point of the utilizations of technology in the workplace. Therefore developing systems that run
as an inseparable unit with association's needs are too strategized in order to address the problem. As per Maglajlic, Helic and Trattner (2012), investigating the problem by identifying the fundamental elements of the workplace learning environment containing the learning material, the association, the learner, the social context and their relationships can result to the discovery that workplace e-learning ought to adjust individual and hierarchical learning requirements that connect work performance and learning while supporting social interaction among people.

Therefore to accomplish this Cook, VanSant, Stewart and Adrian (2011) suggested that associations have to use the performance-oriented approach which takes a gander at key performance pointers using the chance to elucidate authoritative objectives, thereby comprehending work context and requests on work performance. It is in the interest of the associations that these help employees set up balanced learning objectives and enhance their learning process. Rennie and Morrison (2012) recognize utilizing an archetype system approach is one manner by which experimental demonstrations are used to effective examine the approaches.

Reviewed literature on e-learning practices feature a typical agreement on the importance of data and correspondence technology in the present learning environment (Lytras, Pouloudi & Poulmenakou, 2002). Most associations have understood that e-learning must be integrated as a major aspect of day by day undertakings for employees and managers, hence not to be seen as a separate apparatus or technique for learning and preparing. Therefore, e-learning needs to become a strategic advantage that participates in the realization of the hierarchical strategic arrangement (Kizza, 2015).

There has been much written about e-learning practice however little attention has been given to e-learning theory. Nichols (2003) argues that an absence of established theory hinders further development in e-learning. He emphasizes that there are certain underlying principles that apply to e-learning in all circumstances. Nichols (2003) suggests that the establishment of this theory could serve as a premise against which decisions at political, money related, educational and social levels can be implemented authoritatively. Unless attention is given to e-learning theory, e-learning practice can't completely develop.

Nichols (2003) further recommends that for e-learning to have an effective future beyond a great part of the current literature, it is significant that its theoretical establishments be made explicit and available for critique. Indeed, as society continues to practice e-learning,
it is essential that associations reflect on transferable principles of the practice that is of
great benefit to others. Presently in Kenya, Buchmann (2012) depicts that plainly the state
is handicapped as it experiences failure to control demand for education to its populace.
Actually, this has created two contemporary problems: the extremely competitive nature of
the educational system and the serious imbalance between education and the work market.

As indicated by Mills, Pyrch and Sawchuk (2003), the current educational structures have
marginalized workplace learning because the employees taking an interest in formal
workplace learning programs are those more likely to have had less fulfilling school
experiences and feel as less able learners and are more motivated by extrinsic rewards like
credit, capabilities and advancements than natural pleasure in learning. By and large,
workplace learning or preparing programs, has served to understated the idea of learning
with the goal that these people are not further alienated.

Lee (2006) explains that theoretical perspectives coupled with down to earth bits of
knowledge offer a conceptualization of adaptive educational environments as creative
further clarifies that educational systems might be useful for advancing some types of
learning; however, it may not be ideal for advancing certain intellectual abilities linked to
advancement and creativity.

2.4. Mobile Application on Customer Retention

2.4.1. Mobile-banking Service Quality and Customer Retention

Service quality is one of the most imperative measures for mobile users (Kim & Hwang,
2012). This is for the most part because service quality determines the levels of service
received by a user from a specific application. Zhao, Zhang and Chau (2012) bring up that
service quality is an essential determinant of customer fulfillment in mobile value-added
services. This result from the way that in order for a customer to be satisfied when utilizing
the application, they should be assured of the application provides the highest level of
service possible. This means the application ought to be providing top notch services to the
user when he or she needs to complete a specific exchange. High service quality has played
a vital role in enhancing the appropriation of mobile saving money (Al-Jabri & Sohail,
2012). Mobile-saving money application service quality, helps pull in more customers,
therefore, and increasing its appropriation (Al-Jabri & Sohail, 2012).
A mobile saving money application is meant to provide managing an account services on the mobile device of a user the application interact with the bank's servers (Bildosola, Rio, Cilleruelo & Garechana, 2015). It is therefore very critical for the application to possess the ACID properties of a system. Vogels (2012) calls attention to that this acronym remains for Atomicity, Consistency, Isolation, and Durability. These characteristics are basic for any computer system to work efficiently, and also, provide customers with large amounts of service. Any exchanges carried out utilizing the mobile managing an account application ought to be the same as though the user really visited the bank. This is basic in ensuring consistency (Vogels, 2012).

To achieve customer fulfillment, Dzogbenuku (2013) states that the banks should make a deliberate effort to help their customers in dealing with their finances. Since the fundamental interest for the customers and the bank is money and its security, the banks ought to go an extra mile to helping their customers understand exchanges and their budgetary progress and conditions. Chen (2013) keeps up that a decent method to do this is developing an application that has an in constructed capacity to perform budgetary examination. Customers are known to pick up fulfillment from managing an account services that illuminate them about the trends in their record. This gives them feelings of concern from the organization and in this manner need to continue purchasing their services. Fulfillment from the availed assistance in finance management additionally results from the way that customers are always reminded of the opportunities that are available for them (De Meijer & Brown, 2014). The finance investigation application ought to likewise have appealing features, for example, diagrams and graphs.

Furthermore, Kim and Wattanapongsakorn (2015) write that all the mobile saving money applications should rely on hardware and the physical infrastructure of the network. It is therefore very critical to ensure hardware consideration when discussing security. For example, an association may have implemented its mobile managing an account application five years back. Amid this time, pioneers have made advancements in software technology resulting in more secure applications and projects. However, they are most efficient in modern hardware that backings the technology. For example, numerous servers today would not be able to run outdated and insecure server software from the nineties. Dean (2012) proposes that if an organization has physical hardware from this time, it is critical to upgrade them to ensure continued help. The design of the mobile application and the supporting system is additionally very essential in security (Kizza, 2015).
2.4.2. Technology Proficiency and Customer Retention

Technology proficiency is the capacity of a person to use technology. Evidence indicates that there is an advanced divide between the younger generation and the older generation (Dziembek & Badjor, 2015). This may suggest that senior citizens are technologically challenged and are in this way more likely to abstain from utilizing mobile saving money platforms. Senior citizens are not actively involved in online activities as compared to the younger generation. Numerous reasons have been given by different researchers to explain the divide.

The main factor that can be attributed to this divide is that senior citizens are intimidated by technology. Terrorizing implies that they fear or are not interested in utilizing technology due to the perceived trouble of use. The second factor is that technology is inaccessible to senior citizens (Eagly & Chaiken, 2013). The third factor is that senior citizens have reservations and challenges when it comes to utilizing computers and especially the Internet. Zeps and Ribickis (2015) presents security issues, while Slegers, Van Boxtel, and Jolles (2009) present poor cognitive aptitudes as a barrier to the capacity of an elderly citizen to use a computer while Bob, Yiwei and Lynne (2011) present intrapersonal, interpersonal, auxiliary, and useful issues. Such issues have led to senior citizens being unable to use technology. Such challenges have led to senior citizens being unable to use essential everyday devices, for example, mobile phones and ATMs.

Studies by Wang, Lockee, Burton, (2012) indicated that senior citizens were positive when it came to learning new technology and utilizing new technology. This reality was contradicted by (Smith, 2012) who indicated in his investigation that numerous senior citizens feel intimidated by technology and advancements in technology and subsequently don't prefer to use them. Rajarshi, Claire, and Raghav (2013) likewise presented negating data showing that senior citizens were not positive about utilizing web-based social networking and long range interpersonal communication websites. A typical purpose of agreement in this present researcher's arguments is that: senior citizens despite their attitudes and level of exposure still stand the chance of being trained successfully. Assertions by Wang, Lockee, Burton, (2012) are founded on a comparable perspective, that is, senior citizens with a positive attitude can be assisted to learn the nuts and bolts of computer technology, and more specifically how to engage in self learning at the solace of their homes or amid work free time.
Technology proficiency in mobile saving money is additionally a key determinant for success since it determines how easy and efficient exchanges can be accomplished, backs (Mulwa & Ndati, 2013). Banks that provide seamless exchange services to their customers are likely to achieve a great deal of customer fulfillment, and therefore compete more positively with equal banks since it can retain its customers (Raja et al., 2013). To counter the problems that result from poor technology proficiency, the managing an account foundations could likely develop a wide range of mobile applications from the most sophisticated to the least, this helps provide M-keeping money services to every the proficient by utilizing less complicated applications. Nikel (2016) recommends that the more sophisticated applications are in this case left for customers who are exceedingly proficient in new technologies. This ensures all customers are well taken care of by giving them an equal access to M-managing an account services.

2.4.3. Consumer Attitudes on Mobile Banking and Customer retention

Consumers assume a key role in mobile saving money because without a large measure of consumers this venture would be an economic failure. The success of mobile keeping money interfaces like Mpesa is primarily because Kenyan consumers adopted it in large numbers. This made it so well known that these services rapidly spread around the nation. As per Chen (2013) it has become a noteworthy success putting Kenya ahead as an advancement center. This level of success would not be achieved in the event that it was not for the positive attitudes consumers had toward embracing the use of mobile keeping money.

To place this in perspective, Dzogbenuku (2013) brings up that the number of Mpesa outlets grew from 1,200 to 27,500 between 2009 and 2012. Consumers who used mobile managing an account before their friends played a very critical role in explaining the possible outcomes. They were very essential in the assignment of demonstrating to the wary potential consumers this new mode of saving money was as reliable as customary managing an account. This was likewise how the vast majority of these potential consumers learnt firsthand about the benefits associated with mobile managing an account. This essentially changed attitudes about mobile saving money. Most skeptics saw the benefits thusly and started altering their feelings about receiving the use of mobile managing an account themselves. Advertising likewise played a noteworthy role in enhancing consumer awareness of the item (Garrison, 2011).
Consumers have dependably been mindful of regard to security of mobile managing an account when it is compared to security levels in conventional keeping money (Chen, 2013). Most consumers who had ledgers before the presentation of this advancement were already comfortable with the services offered by banks. Embracing a new mode of managing an account for its conveniences was likewise complicated by the way that money is a very sensitive issue. A great many people would prefer to adhere to their tried and tested managing an account system other than experiment with something they know very little about (Arvidsson, 2014). Chen (2013) conducted an investigation in which potential consumers were divided into two gatherings, people who were eager to experiment with this modern advancement believing that it was safe, and people who did not think mobile saving money was as safe as their tried and tested customary banks. The second gathering has a consumer attitude problem that can affect the selection of mobile keeping money negatively (Chen, 2013).

On the off chance that this negative attitude toward the safety isn't dealt with, it might even change the attitudes of people who adopted the use of mobile managing an account with no data (Arvidsson, 2014). Very numerous people embrace the use of mobile keeping money to straighten something up or pure love for technology. These means they are already energetic about mobile saving money yet the main source of data about mobile keeping money is their interaction with their records and service providers (Chen, 2013). When they do their initial few mobile money exchanges, these experiences gradually teach them a considerable measure about the mobile interfaces, level of security, accessibility of the services and numerous other imperative details about mobile saving money (Chen, 2013).

In the event that the prevailing consumer attitudes discourage the appropriation of mobile keeping money over conventional managing an account, these consumers cease to take mobile saving money seriously. This means they gradually desert their records leading to add up to failure of the reception of mobile keeping money (Gubala, 2011). Negative attitudes directly affect mark dedication. Brand faithfulness is buyer's commitment to repurchase the brand and is normally seen when a buyers repeatedly purchases the same brand (Chen, 2013). Organization image is people in general's apperception of the organization often influenced by what the organization remains for. Repeat obtaining is where a customer purchases an item with a brand name like that purchased.
Rego et al. (2014) interprets the customer's perception regarding the usefulness of an application depicts their attitude towards the application. This attitude could likewise be translated into the comparable perceptions for every one of the services associated with the bank that possesses the specific application. As Salvendy (2012) echoes, to cultivate a positive attitude about the mobile managing an account services the bank provides, the bank would need to provide items that the customers can trust. This calls for efforts to coordinate the customer's perceived usefulness to the fulfillment provided by the bank's items and services. Considerable researches conducted to identify the elements that influence a customer's attitude towards mobile managing account applications have revealed that: the ease of use of the user-mobile interface influences their attitude towards it. In an investigation conducted by Shuya and Maryalice (2012), customers were found to have a negative attitude towards applications and mobile saving money services providers who; gave ease back responses to queries and requests for help; did not provide customers with a stage for help bolster request; did not make efforts to improve the ease of route while utilizing the application.

Customers who are technologically proficient are more likely to discover mobile managing an account services more useful, and therefore develop a positive attitude towards them. However, customers who have a problem in utilizing modern-technology-laced devices and gadgets are likely to discover mobile application and wireless interfaces including and hard to use. Torres and Kline (2013) state that high customer fulfillment may therefore be correlated to positive customer attitudes. Therefore, it is reasonable enough to conclude that mobile keeping money service providers who keep up a positive attitude inside their customers are able to retain more of their customers due to customer fulfillment (Yang et al., 2013).

2.5 Chapter Summary

The chapter reviews literature related to effects of technological disruptions on bank performance of commercial banks in Kenya. The literature is guided by the following four specific objectives: To assess the effects of cloud application platforms on internal processes in the banks. To determine how e-learning platforms affect Learning and Growth in the banks. To establish the effect of mobile application on customer retention in the banks. The next chapter is chapter three that outlines the research design and methodology of the study.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology, approaches and design methods that have been chosen for the study. It discusses the population of the study, sample and sampling procedures; methods for data collection, research instruments as well as data analysis and data presentation methods to be used in the study. Further, procedures to be used for testing the research instrument reliability and validity are discussed. For each item chosen, a discussion of the rationale is done to explain the reason behind those actions and making specific design choices.

3.2 Research Design

The research design is defined as a blue print for a researcher to get information, measure results and analyze data from respondents (Lewis, 2015). The study considered quantitative methods. Descriptive statistics features predominantly in the collection and analysis of data. Creswell (2013) states that the use of both quantitative and qualitative techniques enriches any study and is important. Descriptive statistics addresses the research questions through empirical assessments that involve numerical measurements and statistical analysis. The variables have been identified in the research topic, which has organization performance as the dependent variable and technological disruptions as independent variables. The study sets out to establish the relationship between the chosen variables and to what extent each variable affects the performance of Commercial Bank of Africa.

3.3 Population and Sampling Design

3.3.1 Population

A population refers to an entire group of individuals, events or objects having common observable characteristics (Mugenda & Mugenda, 2003). Target population is defined as a computed set of individuals, cases or objects with some common observable characteristics of a particular nature distinct from other population. According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. This definition ensures that population of interest is homogeneous.
3.3.2 Sampling Design

Sampling is the procedure a researcher uses to gather people, places or things to study, (Kombo & Tromp, 2006). A sample is a small group obtained from accessible population. It is the process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of characteristics found in the entire group, (Or thro & Kombo, 2002). According to Kotler (2001), large samples give more reliable results than small samples. The study sampled 35% of the target population. For descriptive studies, the sample size should be at least 30% of the total population (Mugenda & Mugenda, 2008). The study obtained a sample of managers and officers of CBA Bank to represent the population.

3.3.2.1 Sampling Frame

A sampling frame is the source material or device from which a sample is drawn. It is a list of all those within a population who can be sampled, and may include individuals, households or institutions (Saunders, Lewis & Thornhill, 2009). Saunders et al., (2009) also adds that in a probability sample was a list of all cases from which a sample can be obtained. It is a list of target population from which the sample is selected which consists of a finite population for descriptive survey designs (Lav rakas, 2008). The term sampling frame can also be defined as a list that contains the names of all elements in the universe (Mugenda & Mugenda, 2003). In this study, the sampling frame was a list of all staff members in CBA Bank.

3.3.2.2 Sampling Technique

Sampling technique refers to the part of the research plan that indicates how cases are to be selected for analysis. Collins and Hussey (2006) defines a sampling technique is the method of selecting elements from the population that represents the population. The sampling technique chosen for this study is stratified random sampling technique, which involves including elements from mutually exclusive sub populations or strata. It involves generating data for comparison and analysis across the various strata in the sampling frame. Stratified random sampling is the subdivision of the population into mutually exclusive sub populations into significant and relevant categories based on attributes that are distinct to the population elements in that population (Saunders et al., 2009). Cooper et al (2000) also defined stratified random sampling as the segregation of a population into mutually
exclusive categories called strata, which have matching characteristics that differentiate them from other segments within the same population.

The stratification of this study was done by categorizing senior management who have a better view of the organization’s strategic plan, middle level managers and officers, who have a better view of the effectiveness of business strategies based on customer feedback. This sampling technique was chosen as it provides adequate data for analyzing various sub populations increases the samples statistical efficiency and representation and helps in the application of different research methods and procedures to be used on different strata.

### 3.3.2.3 Sample Size

According to Collin and Hussey (2009), sample size is the number of observations that constitute the statistical sample. Having considered the nature of this study, its homogeneity and experiences from other researchers, the study used a sample of 151 respondents, approximately 35% of the target population. For descriptive studies, the sample size should be at least 30% of the total population (Mugenda & Mugenda, 2008). Lavrakas (2010) also stated that this percentage allows the researcher to collect data from the respondents. The distribution of the sample size is shown below.

**Table 3.1 Sample Size**

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
<th>Multiplier</th>
<th>Sample size</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Managers</td>
<td>30</td>
<td>0.35</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Mid-Level Managers</td>
<td>100</td>
<td>0.35</td>
<td>35</td>
<td>23</td>
</tr>
<tr>
<td>Senior Officers</td>
<td>300</td>
<td>0.35</td>
<td>105</td>
<td>70</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>430</strong></td>
<td><strong>151</strong></td>
<td></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### 3.4 Data Collection Methods

Data collection refers to the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant research questions and evaluate outcomes. Data is details presented by respondents to a study in a research environment to help authenticate the relationship between the research
variables in a study (Cooper & Schindlier, 2003). Data collection is the process of gathering together relevant data to direct the process of answering the study’s research questions. Primary data collection method was used in this study. A structured questionnaire has been formulated using the research questions in the study and was self-administered and sent to CBA constituents through email and drop and pick hard copies method. In a bid to increase the response rate, personal visits, email reminders and phone calls was used for follow up.

For an effective data collection, the questionnaire is designed with four sections, first section being for background information and the other three sections are covering the three research questions. Both closed and open-ended questions were used and a five point likert scale style ranging from strongly agree and strongly disagree applied. The likert scale is designed with the intention to arouse respondent’s interest in the study; closed ended questions prepare and stimulate the respondent’s confidence levels in the study and open ended questions provide freedom for the respondent to articulate their honest and true opinion.

3.5 Research Procedures
A research procedure is a detailed description of the steps taken in the conduct of research provided for the purposes of replicability. The questionnaire was pre-tested with 10 respondents who was briefed on the objective of pre-testing which includes checking possible mistakes, ability of the questionnaire to lead the respondents in providing the required feedback, ease of understanding and the time taken to complete the questionnaire. Findings from the pre-testing was used to revise the questionnaire to improve on its quality and efficiency.

During the actual data collection, the refined questionnaire was administered to the target sample using email and drop-and-pick methods depending on the respondent’s preferences. Quality control was put in place to ensure response and data accuracy and assure the respondents of confidentiality and anonymity. To improve response rate, there was intensive follow up to meet deadlines, and the questionnaire is short and precise.

3.6 Data Analysis Methods
Nabintu (2013), argues that data analysis could mean a process of inspecting, then cleaning, followed by transforming and finally modeling of data with the goal of discovering useful information to support decision making. The study used both descriptive and inferential
statistics. McDanile and Gates (2001) defined descriptive statistics as the process of transforming a mass of raw data into tables, charts, with frequency distribution and percentages, which are a vital part of making sense of the data. In this study, the descriptive statistics such as percentages and frequency distribution was used to analyze the demographic profile of the participants. In order to describe the data, the study used means of each variable and correlation analysis between the independent and the dependent variable.

3.7 Chapter Summary

This chapter describes the methodology to be used in undertaking the study on the relationship between technological disruptions and performance of Commercial bank of Africa. It also describes the population of the study and the use of stratified sampling technique and a sample size of 148 has been computed. Questionnaire was selected as the data collection method with pretesting and actual administration to be done using emails and drop-and-pick methods. SPSS statistical tool was used to analyze data into descriptive statistics and inferential statistics. Finally, the analysis presented in the form of charts, graphs and tables. The next chapter outlined the results and findings of the study, based on the research questions and provide answers to these questions.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the research findings on how corporate culture influences employee performance in the banking industry. The study conducted at Commercial Bank of Africa and the results are analyzed and presented in the following section.

4.2 Response Rate

The research issued a total of 151 questionnaires and a total of 120 were filled and returned giving a response rate of 79.5% and this was considered sufficient for the study as indicated in table 4.1

Table 4.1: Response Rate

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filled and returned</td>
<td>120</td>
<td>79.5</td>
</tr>
<tr>
<td>Non-response</td>
<td>31</td>
<td>20.5</td>
</tr>
<tr>
<td>Total</td>
<td>151</td>
<td>100</td>
</tr>
</tbody>
</table>

4.3 General Information

4.3.1 Respondents Gender

Analysis of the respondents gender revealed that male respondents accounted for 42.5% while the female represented 57.5% as indicated in Figure 4.1, this implies that the bank maintains a gender balance.

Figure 4.1: Respondents Gender
4.3.2 Respondents Age

Analysis of the respondents ages revealed that respondents with 21 years and below were 5%, while those of 22-29 years accounted for 35.8%. It was also revealed that individuals of 30-37 years were the majority and accounted for 48.3%. It was also noted that employees of 38-46 years were 7.5% and those of Over 46 years were 3.3%. As indicated in Figure 4.2, this implies that the bank has a diverse age group and majority are young thus able to serve the bank for a long time.

![Figure 4.2: Respondents Age](image)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 and Below</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>22-29</td>
<td>43</td>
<td>35.8</td>
</tr>
<tr>
<td>30-37</td>
<td>58</td>
<td>48.3</td>
</tr>
<tr>
<td>38-46</td>
<td>9</td>
<td>7.5</td>
</tr>
<tr>
<td>Over 46</td>
<td>4</td>
<td>3.3</td>
</tr>
</tbody>
</table>

4.3.3 Respondents Education

Analysis of the respondents education levels revealed that Diploma holders accounted for 10%, Bachelor degree holders were the majority accounting for 45%, while Masters holders were 43.3%, however Doctorate degree holders were 1.7% as indicated in Figure 4.3. This implies that the bank has employees with right education to ensure prosperity of the bank.

![Figure 4.3: Respondents Education](image)

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma/Certificate</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Bachelors degree</td>
<td>54</td>
<td>45</td>
</tr>
<tr>
<td>Post graduate degree</td>
<td>52</td>
<td>43.3</td>
</tr>
<tr>
<td>PhD/Doctorate degree</td>
<td>2</td>
<td>1.7</td>
</tr>
</tbody>
</table>
4.3.4 Respondents Work Experience

Analysis of the the years worked in the bank revealed that those who had 0-5 years experience accounted for 75%, those who have worked for 6-10 years experience were 23.3%, on the other hand respondents who have worked for over 10 years represented 1.7%. This implies that respondents had enough knowledge of the industry.

![Bar chart showing work experience distribution](chart1.png)

**Figure 4.4: Respondents Work Experience**

4.3.4 Department

Analysis of the the departments respondents worked for in the bank revealed that Credit departments had 10% representation, finance had 8.3%, operations 30.8%, fraud prevention 12.5%, general banking 16.7%, and other Support Services 21.7%.

![Bar chart showing department distribution](chart2.png)

**Figure 4.5: Department**

4.3.5 Management Level

Analysis of the the respondents position in the bank revealed that senior staff accounted for 9.2%, while mid level managers accounted for 19.2%, while on the other hand, senior
officers accounted for 33.3%, while officers were the majority and represented 38.3%. This implies that all the cadres were represented in the study and therefore minimised bias.

Figure 4.6: Management Level

4.4 Cloud Application Platforms and Internal Processes

The first objective sought to determine the effects of cloud application platforms on internal processes. Respondents were required to indicate their level of agreement with the presented statements based on a five point likert scale with 5 being strongly agree, while 1 was strongly disagreed. The values were analysed using means and standard deviations and the results are indicated as follows.

4.4.1 Descriptive Statistics of Cloud Application Platforms and Internal Processes

An analysis of the means revealed that majority agreed that the bank encourages the use of cloud applications to support business processes (M=4.31), and cloud applications are aligned to the mission of the bank (M=4.26). Findings also show that cloud applications have improved service delivery (M=4.23) at the same time, cloud computing has allowed the firm to grow and shrink IT capacity on demand (M=4.14). The study also showed that through adoption of cloud computing the company has been able to undertake better data processing (M=4.08) and there is easier cooperation /information exchange with other organizations (M=4.03).

The findings also established that the benefits of cloud applications justify the amount of investment (M=3.97), and cloud application rubrics allows the organization to monitor progress (M=3.97). At the same time cloud computing has facilitated better data security (M=3.94) and cloud applications have simplified assessment of organization objectives (M=3.93). It was also established that cloud applications support additional peer learning.
among employees (M=3.91) and cloud application make employees accountable for their own learning (M=3.91). At the same time, cloud applications allow staff to extend conversations out of the office (M=3.89), make it easy to track organization objectives (M=3.82) and improved customer retention (M=3.55).

**Table 4.2: Descriptive Statistics of Cloud Application Platforms and Internal Processes**

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud applications are aligned to the mission of the bank.</td>
<td>120</td>
<td>4.26</td>
<td>.628</td>
</tr>
<tr>
<td>Use of cloud applications to support business processes.</td>
<td>120</td>
<td>4.31</td>
<td>.683</td>
</tr>
<tr>
<td>The benefits of cloud applications justify the amount of investment.</td>
<td>120</td>
<td>3.97</td>
<td>.579</td>
</tr>
<tr>
<td>Cloud applications make it easy to track organization objectives.</td>
<td>120</td>
<td>3.82</td>
<td>.550</td>
</tr>
<tr>
<td>Cloud applications have improved service delivery.</td>
<td>120</td>
<td>4.23</td>
<td>.921</td>
</tr>
<tr>
<td>Cloud applications have improved customer retention.</td>
<td>120</td>
<td>3.55</td>
<td>.743</td>
</tr>
<tr>
<td>Cloud applications support additional peer learning among employees.</td>
<td>120</td>
<td>3.91</td>
<td>.840</td>
</tr>
<tr>
<td>Cloud applications allow extend conversations out of the office.</td>
<td>120</td>
<td>3.89</td>
<td>1.060</td>
</tr>
<tr>
<td>Cloud applications simplified assessment of organization objectives.</td>
<td>120</td>
<td>3.93</td>
<td>.890</td>
</tr>
<tr>
<td>Cloud application rubrics allows monitor progress</td>
<td>120</td>
<td>3.97</td>
<td>.579</td>
</tr>
<tr>
<td>Cloud application make employees accountable for their own learning.</td>
<td>120</td>
<td>3.91</td>
<td>.799</td>
</tr>
<tr>
<td>Cloud computing has facilitated better data security.</td>
<td>120</td>
<td>3.94</td>
<td>.990</td>
</tr>
<tr>
<td>Through cloud computing there is easier cooperation /information exchange with other organizations</td>
<td>120</td>
<td>4.03</td>
<td>.685</td>
</tr>
<tr>
<td>Through adoption of cloud computing the company has been able to undertake better data processing.</td>
<td>120</td>
<td>4.08</td>
<td>.816</td>
</tr>
<tr>
<td>Cloud computing has allowed the firm to grow and shrink IT capacity on demand</td>
<td>120</td>
<td>4.14</td>
<td>.584</td>
</tr>
</tbody>
</table>

A review of the standard deviation revealed that cloud applications allow staff to extend conversations out of the office had the highest variance (SD=1.060). Cloud computing has facilitated better data security (SD=0.990) and cloud applications have improved service delivery (SD=0.921). Cloud applications have simplified assessment of organization...
objectives (SD=890), support additional peer learning among employees (SD=840). Through adoption of cloud computing the company has been able to undertake better data processing (SD=816) and cloud application make employees accountable for their own learning (SD=.799) and has improved customer retention (SD=.743).

Review of the Standard deviation also established that through cloud computing there is easier cooperation/information exchange with other organizations (SD=.685) and the bank encourages the use of cloud applications to support business processes (SD=.683). Cloud applications are aligned to the mission of the bank (SD=.628), cloud computing has allowed the firm to grow and shrink IT capacity on demand (SD=.584). It was also revealed that benefits of cloud applications justify the amount of investment and cloud application rubrics allows the organization to monitor progress had a variance of (SD=.579) respectively. Cloud applications make it easy to track organization objectives has the least variances (SD=.550).

4.4.2 Effects of Cloud Application Platforms on Organization Performance

Table 4.3: Model Summary of Cloud Application Platforms

<table>
<thead>
<tr>
<th>Mode</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.989a</td>
<td>.978</td>
<td>.975</td>
<td>.07035</td>
<td>.978 430.766</td>
<td>15 104</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), cloud application platform
Dependent Variable organization performance

A regression analysis was done between cloud application platform and organization performance as shown in table 4.3. On analysis, the R square value was 0.978 and a p-value of (0.000) was considered significant. Therefore, implied that 97.8% of the variation in organization performance was caused by variables of cloud computing while 2.2 % were caused by other factors not considered in this study.
Table 4.4: ANOVA of Cloud Application Platforms on Organization Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>23.457</td>
<td>15</td>
<td>1.564</td>
<td>306.979</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>.530</td>
<td>104</td>
<td>.005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.987</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: performance  
b. Predictors: (Constant), cloud application platform

The Anova analysis between cloud application platform and organization performance revealed that the F value 306.979 was significant (0.000) this implies that there was a linear relationship between cloud application platform and organization as indicated in Table 4.4

4.4.3 Coefficients of Cloud Application Platforms on Organization Performance

The results of the regression coefficients, t-statistics, standard errors of the estimates and p values are shown in Table 4.5 as follows. When organization performance (dependent variable) was regressed against other factors of cloud application platform (Constant p value=0.000). It was revealed that organizational performance tend to have a positive and significant increase when cloud applications make it easy to track organization objectives (Beta= .554, p value =.000), cloud application make employees accountable for their own learning (Beta=.731, p value =.000), cloud computing has facilitated better data security (Beta= .947, p value =.000), through cloud computing there is easier cooperation /information exchange with other organizations (Beta=2.143, p value =.000).

There was a positive but insignificant change in organizational performance when the firm use cloud applications to support business processes (Beta=.005, p value =.866), cloud applications simplified assessment of organization objectives (Beta= .009, p value =.769), through adoption of cloud computing the company has been able to undertake better data processing (Beta=.089, p value =.143).
Table 4.5: Coefficients of Cloud Application Platforms on Performance

<table>
<thead>
<tr>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>Unstandized Coefficients</td>
</tr>
<tr>
<td>Model</td>
</tr>
<tr>
<td>Cloud applications are aligned to the mission of the bank.</td>
</tr>
<tr>
<td>Use of cloud applications to support business processes.</td>
</tr>
<tr>
<td>Cloud applications justify the amount of investment.</td>
</tr>
<tr>
<td>Cloud applications make it easy to track organization objectives.</td>
</tr>
<tr>
<td>Cloud applications improved service delivery.</td>
</tr>
<tr>
<td>Cloud applications improved customer retention.</td>
</tr>
<tr>
<td>Cloud applications support additional peer learning among employees.</td>
</tr>
<tr>
<td>Cloud applications allow extend conversations out of the office.</td>
</tr>
<tr>
<td>Cloud applications simplified assessment of organization objectives.</td>
</tr>
<tr>
<td>Cloud application allows monitor progress</td>
</tr>
<tr>
<td>Cloud application make employees accountable for their own learning.</td>
</tr>
<tr>
<td>Cloud computing has facilitated better data security.</td>
</tr>
<tr>
<td>Through cloud computing easier cooperation</td>
</tr>
<tr>
<td>Cloud computing better data processing.</td>
</tr>
<tr>
<td>Cloud computing has allowed growth and shrink IT capacity on demand</td>
</tr>
</tbody>
</table>

37
The finding as shown in Table 4.5 also indicated that there was a negative and significant change in organization performance when cloud applications have improved service delivery (Beta=-1.120, p value =.000), cloud computing has allowed the firm to grow and shrink IT capacity on demand (Beta=-.790, p value =.000), and cloud applications allow extend conversations out of the office (Beta=-1.124 , p value =.000), cloud application rubrics allows monitor progress (Beta=-.550, p value =.000), cloud applications support additional peer learning among employees (Beta=-.282, p value =.000). There was however a negative and insignificant change in organization performance when cloud applications are aligned to the mission of the bank (Beta=-.003, p value =.963). The benefits of cloud applications justify the amount of investment (Beta=-.017, p value =.450), and cloud applications have improved customer retention (Beta=-.013, p value =.554).

4.5 E-Learning Platforms on Learning and Growth

The second objective sought to determine the effects of e-learning platforms on learning and growth. Respondents were required to indicate their level of agreement with the presented statements based on a five point likert scale with 5 being strongly agree, while 1 was strongly disagreed. The values were analysed using means and standard deviations and the results are indicated as follows.

4.5.1 Descriptive Statistics of E-Learning Platforms on Learning and Growth

An analysis of the means revealed that majority agreed that the number of resource material has increased since the introduction of e-learning platforms (M=4.31), online systems have contributed to my induction at the organization (M=4.49), e-learning platform provides the best storage for the organization’s reference documents (M=4.48), and e-learning platform has simplified retrieval of material (M=4.45). It was also agreed that through e-learning cataloguing of material has been simplified (M=4.39). Majority also agreed that they can access most necessary organization material, conveniently using the e-learning platform (M=4.38).

E learning has empowered employees to Share information within the learning group in the platform (M=4.24), there has been Increased efficiency because of the ease of finding the information from the platform (M=4.23), and the e-learning platforms have features that are easy to use (M=4.22) at the same time the e-learning platform at CBA is scalable
(M=4.08) and users have gained the capability to apply knowledge learned from the platform (M=4.03).

Table 4.6: Descriptive Statistics of E-Learning Platforms on Learning and Growth

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource material has increased since the introduction of e-learning platforms.</td>
<td>120</td>
<td>4.31</td>
<td>.605</td>
</tr>
<tr>
<td>The e-learning platform has allowed me to be more productive</td>
<td>120</td>
<td>3.78</td>
<td>.568</td>
</tr>
<tr>
<td>I can access most necessary organization material, conveniently using the e-learning platform.</td>
<td>120</td>
<td>4.38</td>
<td>.674</td>
</tr>
<tr>
<td>The e-learning platforms have features that are easy to use.</td>
<td>120</td>
<td>4.22</td>
<td>.624</td>
</tr>
<tr>
<td>Online systems have contributed to my induction at the organization.</td>
<td>120</td>
<td>4.49</td>
<td>.686</td>
</tr>
<tr>
<td>E-learning platform provides the best storage for the organization’s reference documents.</td>
<td>120</td>
<td>4.48</td>
<td>.686</td>
</tr>
<tr>
<td>CBA’s e-learning can be conveniently accessed both on and off work.</td>
<td>120</td>
<td>3.98</td>
<td>.921</td>
</tr>
<tr>
<td>The bank’s digital repository has improved the bank’s research ranking on the world wide web.</td>
<td>120</td>
<td>3.58</td>
<td>1.010</td>
</tr>
<tr>
<td>The e-learning platform at CBA is scalable.</td>
<td>120</td>
<td>4.08</td>
<td>.717</td>
</tr>
<tr>
<td>E-learning platform has simplified retrieval of material.</td>
<td>120</td>
<td>4.45</td>
<td>.684</td>
</tr>
<tr>
<td>Users have gained the capability to apply knowledge learned</td>
<td>120</td>
<td>4.03</td>
<td>.788</td>
</tr>
<tr>
<td>Through e-learning, users are now able to explore new issues from the learning process.</td>
<td>120</td>
<td>3.93</td>
<td>.604</td>
</tr>
<tr>
<td>E-learning has empowered employees to Share information within the learning group in the platform.</td>
<td>120</td>
<td>4.24</td>
<td>.635</td>
</tr>
<tr>
<td>There has been Increased efficiency because of the ease of finding the information from the platform.</td>
<td>120</td>
<td>4.23</td>
<td>.419</td>
</tr>
<tr>
<td>Through e-learning cataloguing of material has been simplified.</td>
<td>120</td>
<td>4.39</td>
<td>.677</td>
</tr>
</tbody>
</table>

It was also agreed that CBA’s e-learning can be conveniently accessed both on and off work (M=3.98), through e-learning, users are now able to explore new issues from the learning process (M=3.93), the e-learning platform has allowed me to be more productive.
(M=3.78). The bank’s digital repository has improved the university’s research ranking on the world wide web (M=3.58).

A review of the means indicated that the bank’s digital repository has improved the banks research ranking on the world wide web had the highest variance (SD=1.01). CBA’s e-learning can be conveniently accessed both on and off work follows with (SD=0.921). Users have gained the capability to apply knowledge learned (SD=0.788), the e-learning platform at CBA is scalable (SD=0.717). Online systems have contributed to my induction at the organization (SD=0.686) and e-learning platform provides the best storage for the organization’s reference documents (SD=0.686). E-learning platform has simplified retrieval of material (SD=0.684), through e-learning cataloging of material has been simplified (SD=0.677), access most necessary organization material, conveniently using the e-learning platform (SD=0.674) and e-learning has empowered employees to Share information within the learning group in the platform (SD=0.635).

The e-learning platforms have features that are easy to use (SD=0.624), resource material has increased since the introduction of e-learning platforms (SD=0.605), through e-learning, users are now able to explore new issues from the learning process (SD=0.604) and e-learning platform has allowed me to be more productive (SD=0.568) while there has been increased efficiency because of the ease of finding the information from the platform (SD=0.419).

4.5.2 Effects of E learning Platforms on Organization Performance

Table 4.7: Model Summary of E learning Platforms

<table>
<thead>
<tr>
<th>Model</th>
<th>R Square</th>
<th>R</th>
<th>Adjusted R Square</th>
<th>Std. Error</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R Square</td>
</tr>
<tr>
<td>1</td>
<td>.985a</td>
<td>.969</td>
<td>.965</td>
<td>.08377</td>
<td>.969</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>236.676</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>df1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>df2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sig. F</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), E learning Platform

A regression analysis was done between e learning platform and organization performance as shown in table 4.7. On analysis, the R square value was 0.969 and a p-value of (0.000) was considered significant. Therefore, implied that 96.9% of the variation in organization
performance was caused by variables of e learning while 3.1 % were caused by other factors not considered in this study.

Table 4.8: ANOVA of E learning Platforms on Organization Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>23.250</td>
<td>14</td>
<td>1.661</td>
<td>236.676</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>.737</td>
<td>105</td>
<td>.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.987</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: performance  
b. Predictors: (Constant), E learning Platform

The Anova analysis between e learning platform and organization performance revealed that the F value 236.676 was significant (0.000) this implies that there was a linear relationship between e learning platform and organization as indicated in Table 4.8

4.5.3 Coefficient of E learning Platforms on Organization Performance

The results of the regression coefficients, t-statistics, standard errors of the estimates and p values are shown in Table 4.9 as follows. When organization performance (dependent variable) was regressed against other factors of e learning platform (Constant p value=0.000). It was revealed that organizational performance tend to have a positive and significant increase when resource material increased (Beta=1.220, pvalue=.000), individuals can access most necessary organization material, conveniently using the e-learning platform. (Beta=.305, pvalue=.000), CBA’s e-learning can be conveniently accessed both on and off work (Beta=.516, pvalue= .000), users have gained the capability to apply knowledge learned (Beta=.109, pvalue=.000), the e-learning platform at CBA is scalable (Beta=1.565, pvalue=.000).Resource material has increased with e-learning platforms (Beta=1.220, p value=.000).

It was also revealed that organizational performance tend to have a positive and insignificant change when Online systems have contributed to my induction at the organization (Beta=.031, p value=.288), through e-learning, users are now able to explore new issues from the learning process (Beta=.045, p value=.080), and through e-learning cataloging of material has been simplified (Beta=-.035, p value=.170).
<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>1.023</td>
<td>.229</td>
</tr>
<tr>
<td>Resource material has increased with e-learning platforms.</td>
<td>.905</td>
<td>.059</td>
</tr>
<tr>
<td>The e-learning platform has allowed me to be more productive</td>
<td>-.009</td>
<td>.014</td>
</tr>
<tr>
<td>I can access material, conveniently using the e-learning platform.</td>
<td>.203</td>
<td>.032</td>
</tr>
<tr>
<td>The e-learning platforms have features that are easy to use.</td>
<td>-.222</td>
<td>.038</td>
</tr>
<tr>
<td>Online systems have contributed to my induction at the organization.</td>
<td>.020</td>
<td>.019</td>
</tr>
<tr>
<td>E-learning platform offer storage for the organization’s reference documents.</td>
<td>-.084</td>
<td>.034</td>
</tr>
<tr>
<td>CBA’s e-learning can be conveniently accessed both on and off work.</td>
<td>.251</td>
<td>.017</td>
</tr>
<tr>
<td>The bank’s digital repository has improved the research ranking on the world wide web.</td>
<td>-.631</td>
<td>.057</td>
</tr>
<tr>
<td>The e-learning platform at CBA is scalable.</td>
<td>.980</td>
<td>.049</td>
</tr>
<tr>
<td>E-learning platform has simplified retrieval of material.</td>
<td>-.641</td>
<td>.032</td>
</tr>
<tr>
<td>Users have gained the capability to apply knowledge learned</td>
<td>.061</td>
<td>.017</td>
</tr>
<tr>
<td>Through e-learning, users are now able to explore new issues from the learning process.</td>
<td>.029</td>
<td>.017</td>
</tr>
<tr>
<td>E-learning has empowered employees to share information within the learning group in the platform</td>
<td>-.083</td>
<td>.025</td>
</tr>
<tr>
<td>There has been increased efficiency because of the ease of finding the information from the platform.</td>
<td>-.029</td>
<td>.013</td>
</tr>
<tr>
<td>E-learning cataloging of material has been simplified.</td>
<td>-.021</td>
<td>.015</td>
</tr>
</tbody>
</table>
The findings also show that the organizational performance tend to have a negative and significant change when the e-learning platforms have features that are easy to use (Beta=-.309, p value= .000), e-learning platform offer storage for the organization’s reference documents (Beta=-.129, p value= .014), the bank’s digital repository has improved the research ranking on the world wide web (Beta=-1.418, p value=.000), e-learning platform has simplified retrieval of material (Beta=-.976, p value=.000), e learning has empowered employees to Share information within the learning group in the platform (Beta=-.121, p value=.001), and there has been Increased efficiency because of the ease of finding the information from the platform (Beta=-.046, p value=.035). There was a negative and insignificant change in organixation performance when e-learning platform has allowed me to be more productive (Beta=-.014, p value=.552).

4.6 Mobile Application on Customer Retention

The third objective sought to determine the effects of mobile application on customer retention. Respondents were required to indicate their level of agreement with the presented statements based on a five point likert scale with 5 being strongly agree, while 1 was strongly disagreed. The values were analysed using means and standard deviations and the results are indicated as follows.

4.6.1 Descriptive Statistics of Mobile Application on Customer Retention

Analysis of the means as shown in Table 4.10 indicated that majority agreed that use of mobile applications has increased efficiency in service delivery (M=4.93), mobile applications have improved the performance of the bank (M=4.85), mobile applications have resulted into timeless banking that is accessible all the time from any locality (M=4.82) and mobile applications have created a positive impression of the application towards the bank (M=4.72). Finding also show that mobile applications allow customers to resolve issues from the comfort of their homes (M= 4.63) and mobile applications have helped in processing financial transactions for customers (M=4.59).

Study also show that mobile applications allow customers to work at the comfort of their homes (M=4.57) and mobile applications have contributed to a reduction in labor costs due to streamlined operations (M=4.53) and enabled specialized know-how of customers (M=4.46), data collected by mobile applications has led to better decision making
mobile applications allows implementation of counter measures for critical processes (M=4.17).

Table 4.10: Descriptive Statistics of Mobile Application on Customer Retention

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile applications have helped in processing financial transactions for customers.</td>
<td>120</td>
<td>4.59</td>
<td>.494</td>
</tr>
<tr>
<td>Mobile applications have contributed to a reduction in labor costs due to streamlined operations.</td>
<td>120</td>
<td>4.53</td>
<td>.501</td>
</tr>
<tr>
<td>Data collected by mobile applications has led to better decision making.</td>
<td>120</td>
<td>4.35</td>
<td>.669</td>
</tr>
<tr>
<td>Mobile applications reduce the orientation and training effort</td>
<td>120</td>
<td>4.04</td>
<td>.640</td>
</tr>
<tr>
<td>Mobile applications allow customers to work at the comfort of their homes</td>
<td>120</td>
<td>4.57</td>
<td>.827</td>
</tr>
<tr>
<td>Mobile applications allows implementation of counter measures for critical processes.</td>
<td>120</td>
<td>4.17</td>
<td>.714</td>
</tr>
<tr>
<td>Mobile applications provide better collaboration with customers.</td>
<td>120</td>
<td>4.08</td>
<td>.717</td>
</tr>
<tr>
<td>Mobile applications provide real-time data access with lower risks.</td>
<td>120</td>
<td>3.63</td>
<td>.952</td>
</tr>
<tr>
<td>Mobile applications at CBA have helped to safeguard the customer data.</td>
<td>120</td>
<td>3.61</td>
<td>1.239</td>
</tr>
<tr>
<td>Mobile applications have improved the performance of the bank.</td>
<td>120</td>
<td>4.85</td>
<td>.359</td>
</tr>
<tr>
<td>Mobile applications have created a positive impression of the application towards the bank.</td>
<td>120</td>
<td>4.72</td>
<td>.453</td>
</tr>
</tbody>
</table>

The results also show that mobile applications provide better collaboration with customers (M=4.08) and mobile applications reduce the orientation and training effort (M=4.04), at
the same time mobile applications provide real-time data access with lower risks (M=3.63) and mobile applications at CBA have helped to safeguard the customer data (M=3.61).

Review of the standard deviations indicated that the highest deviation was attained for the variable mobile applications at CBA have helped to safeguard the customer data (SD=1.239), mobile applications provide real-time data access with lower risks (SD=0.952), mobile applications allow customers to work at the comfort of their homes (SD=0.827), mobile applications provide better collaboration with customers (SD=0.717), mobile applications allows implementation of counter measures for critical processes (SD=0.714). Data collected by mobile applications has led to better decision making (SD=0.669), mobile applications reduce the orientation and training effort (SD=0.64) and mobile applications allow customers to resolve issues from the comfort of their homes (SD=0.621). At the same time, mobile applications have contributed to a reduction in labor costs due to streamlined operations (SD=0.501).

Findings also show that mobile has enabled specialized know-how of customers (SD=0.5), mobile applications have helped in processing financial transactions for customers (SD=0.494). Mobile applications have created a positive impression of the application towards the bank (SD= 0.453), this has resulted into timeless banking that is accessible all the time from any locality (SD=0.389). Mobile applications have improved the performance of the bank (SD= 0.359) and use of mobile applications has increased efficiency in service delivery (SD=0.264).

4.6.2 Effects of Mobile Application on Organization Performance

<table>
<thead>
<tr>
<th>Table 4.11: Model Summary of Mobile Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>a. Predictors: (Constant), Mobile Application</td>
</tr>
</tbody>
</table>

A regression analysis was done between mobile application and organization performance as shown in table 4.11. On analysis, the R square value was 0.904 and a p-value of (0.000) was considered significant. Therefore, implied that 90.4% of the variation in organization performance was caused by variables of mobile application while 9.6 % were caused by other factors not considered in this study.
Table 4.12: ANOVA of Mobile Application on Organization Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>21.673</td>
<td>15</td>
<td>1.445</td>
<td>64.946</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>2.314</td>
<td>104</td>
<td>.022</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>23.987</td>
<td>119</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: performance
b. Predictors: (Constant), Mobile Application

The Anova analysis between e learning platform and organization performance revealed that the F value 64.946 was significant (0.000) this implies that there was a linear relationship between mobile application and organization performance as indicated in Table 4.12.

4.6.3 Coefficient of Mobile Application on Organization Performance

The results of the regression coefficients, t-statistics, standard errors of the estimates and p values are shown in Table 4.13 as follows. When organization performance (dependent variable) was regressed against other factors of mobile application (Constant p value=0.000). It was revealed that organizational performance tend to have a positive and significant increase when mobile applications reduce the orientation and training effort (Beta=.669, pvalue=.000), mobile applications at CBA have helped to safeguard the customer data (Beta=.850, pvalue=.000), mobile applications have improved the performance of the bank (Beta=.443, pvalue=.000), mobile applications provide better collaboration with customers (Beta=.288, pvalue=.046). Mobile applications allows implementation of counter measures for critical processes (Beta=.226, pvalue=.024), mobile applications have created a positive impression of the application towards the bank (Beta=.268, pvalue=.000).
Table 4.13: Coefficient of Mobile Application on Organization Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>-1.669</td>
<td>.325</td>
</tr>
<tr>
<td>Mobile applications aid in processing financial transactions for customers.</td>
<td>.026</td>
<td>.037</td>
</tr>
<tr>
<td>Mobile applications have reduction in labor costs due to streamlined operations.</td>
<td>-.069</td>
<td>.043</td>
</tr>
<tr>
<td>Data collected by mobile applications has led to better decision making.</td>
<td>-.068</td>
<td>.043</td>
</tr>
<tr>
<td>Mobile applications reduce the orientation and training effort</td>
<td>.469</td>
<td>.071</td>
</tr>
<tr>
<td>Mobile applications allow customers to work at the comfort of their homes</td>
<td>-.060</td>
<td>.047</td>
</tr>
<tr>
<td>Mobile applications aids implementation of counter measures.</td>
<td>.156</td>
<td>.068</td>
</tr>
<tr>
<td>Mobile applications provide better collaboration with customers.</td>
<td>.180</td>
<td>.089</td>
</tr>
<tr>
<td>Mobile applications provide real-time data access with lower risks.</td>
<td>-.480</td>
<td>.081</td>
</tr>
<tr>
<td>Mobile applications have helped to safeguard the customer data.</td>
<td>.308</td>
<td>.054</td>
</tr>
<tr>
<td>Mobile applications have improved the performance of the bank.</td>
<td>.555</td>
<td>.070</td>
</tr>
<tr>
<td>Mobile has enabled specialized know-how of customers.</td>
<td>-.007</td>
<td>.048</td>
</tr>
<tr>
<td>Mobile applications allow customers to resolve issues from the comfort of their homes</td>
<td>.027</td>
<td>.021</td>
</tr>
<tr>
<td>Use of mobile applications has increased efficiency in service delivery</td>
<td>-.026</td>
<td>.023</td>
</tr>
<tr>
<td>Mobile applications lead to timeless banking that is accessible all the time from any locality</td>
<td>.021</td>
<td>.024</td>
</tr>
<tr>
<td>Mobile applications create positive impression of the application</td>
<td>.266</td>
<td>.054</td>
</tr>
</tbody>
</table>
It was also revealed that organizational performance tend to have a positive and insignificant increase when mobile applications allow customers to resolve issues from the comfort of their homes \( (\text{Beta} = .052, \ p\text{-value} = .192) \), mobile applications have helped in processing financial transactions for customers \( (\text{Beta} = .045, \ p\text{-value} = .477) \), mobile applications have resulted into timeless banking that is accessible all the time from any locality \( (\text{Beta} = .031, \ p\text{-value} = .385) \).

It was revealed that organizational performance tend to have a negative and significant change when mobile applications provide real-time data access with lower risks \( (\text{Beta} = -1.019, \ p\text{-value} = .000) \). It was revealed that organizational performance tend to have a negative and insignificant change when mobile applications have contributed to a reduction in labor costs due to streamlined operations \( (\text{Beta} = -.077, \ p\text{-value} = .107) \), data collected by mobile applications has led to better decision making \( (\text{Beta} = -.110, \ p\text{-value} = .114) \).

4.7 Joint Influence of Cloud Application, E-Learning Platform and Mobile Application on Organization Performance

Table 4.14: Model Summary of Organization Performance and Co factors

<table>
<thead>
<tr>
<th>Model</th>
<th>( \hat{R} )</th>
<th>( R^2 )</th>
<th>Adjusted ( R^2 )</th>
<th>Std. Error of the Estimate</th>
<th>( R^2 \text{ Change} )</th>
<th>( F )</th>
<th>( \text{df1} )</th>
<th>( \text{df2} )</th>
<th>( \text{Sig.} \ F )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.825(^a)</td>
<td>.680</td>
<td>.672</td>
<td>.25713</td>
<td>.680</td>
<td>82.262</td>
<td>3</td>
<td>116</td>
<td>.000</td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (Constant), mobile application, cloud application, e-learning

A multiple regression analysis was done between cloud application, e-learning platform and mobile application on organization performance as shown in table 4.14. On analysis, the \( R^2 \) value was 0.680 and a \( p\text{-value} \) of (0.000) was significant. Therefore, 68% of the variation in organization performance was caused by variables of cloud application, e-learning platform and mobile application while 32% were caused by other factors not considered in this study.
Table 4.15: Anova of Cloud Application, E-Learning Platform and Mobile Application on Organization Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>16.317</td>
<td>3</td>
<td>5.439</td>
<td>82.262</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>7.670</td>
<td>116</td>
<td>.066</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>23.987</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: performance
b. Predictors: (Constant), mobile application, cloud application, e-learning

The Anova analysis of cloud application, e-learning platform and mobile application on organization performance revealed that the F value 82.262 was significant (0.000) this implies that there was a linear relationship between cloud application, e-learning platform and mobile application on organization performance as indicated in Table 4.15

4.7.1 Coefficient of Cloud Application, E-Learning Platform and Mobile Application on Organization Performance

As per Table 4.16, the equation \( Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \) becomes:

\[ Y = .308 + 258X_1 - 0.208X_2 + 0.887X_3 + \text{error term (.25713)} \]

Where \( Y \) is the dependent variable organization performance

\( X_1 \) – Cloud application

\( X_2 \) – e learning

\( X_3 \) – Mobile application

Table 4.16: Coefficients of Organization Performance and Co factors

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.308</td>
<td>.263</td>
<td>1.168</td>
<td>.245</td>
</tr>
<tr>
<td>Cloud</td>
<td>.258</td>
<td>.084</td>
<td>.285</td>
<td>3.083</td>
</tr>
<tr>
<td>application</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e-learning</td>
<td>-.208</td>
<td>.090</td>
<td>-.218</td>
<td>-2.307</td>
</tr>
<tr>
<td>mobile</td>
<td>.887</td>
<td>.106</td>
<td>.758</td>
<td>8.343</td>
</tr>
<tr>
<td>application</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The regression equation illustrated in Table 4.16 has established that taking all factors into account (cloud application, e-learning platform and mobile application) all other factors held constant organization increase by 0.308. The findings presented showed that with all other variables held at zero, a unit change in cloud application would lead to a 0.258 increase in organization performance, and a unit change in e learning would lead to 0.208 decline in organization performance. Moreover, the study also showed that a unit change in mobile application would result in 0.887 increase in organization performance. All the variables were significant (p<0.05), therefore we conclude that cloud application, e-learning platform and mobile application are significant in determining on organization performance.

4.8 Chapter Summary

This chapter has highlighted results and findings. The first section offered the findings in line with the demographic data of the respondents, the second section dealt with data on cloud application the third section looked at the data on e learning platform, and the fourth section covered issues of mobile application. In chapter five this results were discussed and relevant conclusions and recommendations made with regard to organization performance at CBA.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction
This section gives summary of findings, discussions, conclusion, recommendation and suggestions for further study. The discussion was done based on research questions under study which sought to determine the effects of technological innovation on bank performance of commercial banks in Kenya.

5.2 Chapter Summary
The general objective of the study was to determine the effects of technological innovation on bank performance of commercial banks in Kenya. The study was guided by three specific objectives: To assess the effects of cloud application platforms on internal processes in the banks, to determine how e-learning platforms affect Learning and Growth in the banks and to establish the effect of mobile application on customer retention in the banks.

This study used the descriptive research design. The design was suitable for this study because the factors are quantitative in nature. The study adopted a quantitative approach to analyze organization performance as the dependent variable and technological disruptions as independent variables. The study sets out to establish the relationship between the chosen variables and to what extent each variable affects the performance of Commercial Bank of Africa. The population for this study was 430 employees of Bank of Africa in Nairobi. Stratified sampling was used to divide the population into strata and a sample of 151 respondents was drawn. The demographic profiles of the respondents were analyzed using frequencies and percentages. Descriptive statistics was used to establish the means and standard deviation of the variables, inferential statistics was used to test for the relationship between the independent and dependent variables using regression analysis.

Analysis of the first objective revealed that majority agreed that the bank encourages the use of cloud applications to support business processes (M=4.31, SD=.683) and cloud applications are aligned to the mission of the bank (M=4.26, SD=.628). Findings also show that cloud applications have improved service delivery (M=4.23, SD=.921) at the same time, cloud computing has allowed the firm to grow and shrink IT capacity on demand (M=4.14, SD=.584). The study also showed that through adoption of cloud computing the
company has been able to undertake better data processing (M=4.08, SD=.816) and there is easier cooperation/information exchange with other organizations (M=4.03, SD=.685). The findings also established that the benefits of cloud applications justify the amount of investment and cloud application rubrics allows the organization to monitor progress (M=3.97, SD=.579). At the same time cloud computing has facilitated better data security (M=3.94, SD=.990) and cloud applications have simplified assessment of organization objectives (M=3.93, SD=.890). It was also established that cloud applications support additional peer learning among employees (M=3.91, SD=.840) and cloud application make employees accountable for their own learning (M=3.91, SD=.799). At the same time, cloud applications allow staff to extend conversations out of the office (M=3.89, SD=1.060), make it easy to track organization objectives and improved customer retention (M=3.55, SD=.743).

An analysis of the means of the second objective revealed that majority agreed that the number of resource material has increased since the introduction of e-learning platforms (M=4.31, SD=.605), online systems have contributed to my induction at the organization (M=4.49, SD=.686), e-learning platform provides the best storage for the organization’s reference documents (M=4.48, SD=.686), and e-learning platform has simplified retrieval of material (M=4.45, SD=.684). It was also agreed that through e-learning cataloging of material has been simplified (M=4.39, SD=.677). Majority also agreed that they can access most necessary organization material, conveniently using the e-learning platform (M=4.38, SD=.674). E learning has empowered employees to share information within the learning group in the platform (M=4.24, SD=.635), there has been increased efficiency because of the ease of finding the information from the platform M=4.23, SD=.419), and the e-learning platforms have features that are easy to use (M=4.22, SD=.624) at the same time the e-learning platform at CBA is scalable and users have gained the capability to apply knowledge learned from the platform (M=4.08, SD=.717). It was also agreed that CBA’s e-learning can be conveniently accessed both on and off work (M=4.03, SD=.788), through e-learning, users are now able to explore new issues from the learning process (M=3.98, SD=.921), e-learning platform has allowed me to be more productive (M=3.93, SD=.604). The bank’s digital repository has improved the university’s research ranking on the World Wide Web (M=3.78, SD=.568).

Analysis of the means of the last objective indicated that majority agreed that use of mobile applications has increased efficiency in service delivery (M=4.93, SD=.264), mobile
applications have improved the performance of the bank (M=4.85, SD=.359), mobile applications have resulted into timeless banking that is accessible all the time from any locality (M=4.82, SD=.389) and mobile applications have created a positive impression of the application towards the bank (M=4.72, SD=.453). Finding also show that mobile applications allow customers to resolve issues from the comfort of their homes (M=4.63, SD=.621), and mobile applications have helped in processing financial transactions for customers (M=4.57, SD=.827). Study also show that mobile applications allow customers to work at the comfort of their homes (M=4.59, SD=.494), and mobile applications have contributed to a reduction in labor costs due to streamlined operations and enabled specialized know-how of customers (M=4.53, SD=.501), data collected by mobile applications has led to better decision making (M=4.46, SD=.500), mobile applications allows implementation of counter measures for critical processes (M=4.35, SD=.669). The results also show that mobile applications provide better collaboration with customers (M=4.17, SD=.714) and mobile applications reduce the orientation and training effort (M=4.08, SD=.717), at the same time mobile applications provide real-time data access with lower risks (M=4.04, SD=.640) and mobile applications at CBA have helped to safeguard the customer data (M=3.63, SD=.952).

5.3 Discussion

5.3.1 Cloud Application Platforms on Internal Processes in the Banks

The study showed that majority agreed that the bank encourages the use of cloud applications to support business processes. Youseff, Butrico and Da Silva (2013) also noted that cloud computing system execution empowers speedier sending of tasks; this is on the grounds that servers can be raised and conveyed in a matter of minutes guaranteeing that an opportunity to send another application drops significantly with cloud computing procedure. Instead of introducing and systems administration another equipment server, the new server can be dialed up and imaged in through a self-serve control support.

The study revealed that cloud applications are aligned to the mission of the bank. Wang, von Laszewski and Younge (2012) in their study also established that cloud computing technique involves the utilization of less physical assets, along these lines there is less equipment to control and keep up. With an outsourced cloud, the association doesn't have to keep server, stockpiling, system, and virtualization specialists on staff full time. The last advantage is that cloud computing offers flexibility and excess. This is on account of in
cloud computing there is programmed failover between equipment stages and fiasco recuperation administrations to raise servers set up in a different server farm should the essential server farm encounter a blackout.

The study established that cloud applications have improved service delivery, this concurs with Horrigan (2013) study which sought to look at the fundamental advantages of cloud computing methodology. The examination uncovered that there are six primary advantages, the first is bring down costs: cloud computing system can pool the majority of the computing assets that can be disseminated to applications as required, improving the utilization of the aggregate of the computing assets and conveying better proficiency and usage of the whole shared framework. The second advantage is diminished capital use: regardless of whether an association picks an open cloud system or outsourced private cloud computing methodology alternative, cloud computing conveys a superior income by killing the capital cost related with building the server foundation (Wang, von Laszewski & Younge, 2012).

The study revealed that cloud computing has allowed the firm to grow and shrink IT capacity on demand. This concurs with Feuerlicht (2012) who stated that companies need to spend a big part of their balance on the IT infrastructure, while less than 10 % of their servers can be really utilized, resulting in a big waste of money. In addition, these servers need to be replaced almost every three years and need to be maintained and administrated, increasing the total cost of IT operations radically. Therefore, Cloud Computing as a strategy being implemented by banks can reduce these costs remarkably. Economies of scale for datacenters cost savings can lead to a five to seven-time reduction in the total cost of computing activities.

Through adoption of cloud computing the company has been able to undertake better data processing and there is easier cooperation /information exchange with other organizations. Most organizations have worries around the potential security dangers postured by cloud computing methodology usage in organizations. As indicated by Melvin and Greer (2009), the main factor preventing Information Technology pioneers from taking advantage of the cloud technique immediately is security stresses. Undertaking data is imperative in a data sharing world and the loss of customers'private data, for example, Visa points of interest can be hindering to an organization. The security of such information particularly when put
away by an outsider is a noteworthy worry to organizations considering actualizing cloud computing.

It was also revealed that cloud computing has facilitated better data security. Wang, von Laszewski and Younge (2012) notes that the absence of security is another test frustrating cloud computing technique execution. At the point when an association utilizes the cloud computing technique, information is put away on the supplier's server and not in their own particular equipment, and consequently, the client lose some control over the information. Goutas, Sutanto, and Aldarbesti (2016) notes that notwithstanding the above, Africa is looked by a one of a kind arrangement of difficulties. Web availability is as yet not accessible in substantial parts of the landmass Cloud computing technique depends on constant server collaborations with low inertness, high transfer speed, and a steady association that are to a great extent ailing in most of Africa. This issue is aggravated with the absence of shabby computing gadgets and low computing education levels where most individuals on the mainland can't play out the most essential capacities.

5.3.2 E-Learning Platforms on Learning and Growth in the Banks

The findings revealed that online systems have contributed to my induction at the organization. Abbad (2011) concurs and calls attention to that developing measure for the effectiveness of e-learning and defining the elements that influence them must be understood extensively by implementers thereby implementing the proper understanding of what e-learning means. It is from the understanding of the entire learning system that dynamism is experienced through time and accordingly responds to the changing needs of associations, goals of people in the work market and contributions from the education system.

There has been increased efficiency because of the ease of finding the information from the platform. This however contradicts Wang (2012) who noted that there has been low performance in employees' inspiration in spite of the use of e-learning in this way not achieving the point of the utilizations of technology in the workplace. Therefore developing systems that run as an inseparable unit with association's needs are too strategized in order to address the problem. As per Maglajlic (2012), investigating the problem by identifying the fundamental elements of the workplace learning environment containing the learning material, the association, the learner, the social context and their relationships can result to the discovery that workplace e-learning ought to adjust individual and hierarchical learning
requirements that connect work performance and learning while supporting social interaction among people.

The findings established that through e-learning, users are now able to explore new issues from the learning process. Jawadi (2006) acknowledges that e-learning has noteworthy money related, social and hierarchical advantages. However, e-learning use among professional workplaces still remains limited compared to customary teaching methods. This is in view of the present globalized society where internet-based learning systems are being used in numerous associations yet their selection requires an exhaustive understanding of the user's capabilities. As per Abbad (2011), it is essential that associations advocate for employees to have a decent knowledge and understanding of different technologies and software inside e-learning processes.

The study established that e-learning platform has allowed users to be more productive. Jawadi (2006) agrees that e-learning promises to change the workplace setting by enhancing efficiency, effectiveness and accessibility of services inside an association. Despite having one of the most advanced telecommunications infrastructures in the world, appropriation of e-learning in most multinational organizations has fallen far below expectations (Jawadi, 2006). It is essential that associations initially understand these attitudes with the goal that projects are designed to meet the needs of employees and the needs of the association.

As indicated by Mills, Pyrch and Sawchuk (2003), the current educational structures have marginalized workplace learning because the employees taking an interest in formal workplace learning programs are those more likely to have had less fulfilling school experiences and feel as less able learners and are more motivated by extrinsic rewards like credit, capabilities and advancements than natural pleasure in learning. By and large, workplace learning or preparing programs, has served to understate the idea of learning with the goal that these people are not further alienated.

The study also show that e-learning platform at CBA is scalable and users have gained the capability to apply knowledge learned from the platform. Reviewed literature on e-learning practices feature a typical agreement on the importance of data and correspondence technology in the present learning environment (Lytras, Pouloudi & Poulymenakou, 2002). Most associations have understood that e-learning must be integrated as a major aspect of day by day undertakings for employees and managers, hence not to be seen as a separate
apparatus or technique for learning and preparing. Therefore, e-learning needs to become a strategic advantage that participates in the realization of the hierarchical strategic arrangement (Magalhaes, 2004).

5.3.3 Mobile Application on Customer Retention in the Banks

From the analysis, it was established that use of mobile applications has increased efficiency in service delivery. Service quality is one of the most imperative measures for mobile users (Kim and Hwang, 2012). This is for the most part because service quality determines the levels of service received by a user from a specific application. Zhao, Zhang and Chau (2012) bring up that service quality is an essential determinant of customer fulfillment in mobile value-added services. This result from the way that in order for a customer to be satisfied when utilizing the application, they should be assured of the application provides the highest level of service possible. This means the application ought to be provide top notch services to the user when he or she needs to complete a specific exchange. High service quality has played a vital role in enhancing the appropriation of mobile saving money (Al-Jabri and Sohail, 2012). Mobile-saving money application service quality, helps pull in more customers, hence, increasing its appropriation (Al-Jabri and Sohail, 2012).

The findings indicated that mobile applications have improved the performance of the bank. Dzogbenuku (2013) agrees that the banks should make a deliberate effort to help their customers in dealing with their finances. Since the fundamental interest for the customers and the bank is money and its security, the banks ought to go an extra mile to helping their customers understand exchanges and their budgetary progress and conditions. Eshet-Alkalai and Chajut (2012) keeps up that a decent method to do this is develop an application that has an in constructed capacity to perform budgetary examination. Customers are known to pick up fulfillment from managing an account services that illuminate them about the trends in their record. This gives them feelings of concern from the organization and in this manner need to continue purchasing their services (Hilton et al., 2014).

The study established that mobile applications have resulted into timeless banking that is accessible all the time from any locality. Technology proficiency in mobile saving money is additionally a key determinant for success since it determines how easy and efficient exchanges can be accomplishe (Mulwa & Ndati, 2013). Banks that provide seamless exchange services to their customers are likely to achieve a great deal of customer
fulfillment, and therefore compete more positively with equal banks since it can retain its customers (Raja et al., 2013).

The study established that mobile applications have created a positive impression of the application towards the bank. Very many people embrace the use of mobile keeping money to straighten something up or pure love for technology. These means they are already energetic about mobile saving money yet the main source of data about mobile keeping money is their interaction with their records and service providers (Chen, 2013). When they do their initial few mobile money exchanges, these experiences gradually teach them a considerable measure about the mobile interfaces, level of security, accessibility of the services and numerous other imperative details about mobile saving money (Chen, 2013).

The study established that mobile applications at CBA have helped to safeguard the customer data. Rego et al. (2014) interprets the customer's perception regarding the usefulness of an application depicts their attitude towards the application. This attitude could likewise be translated into the comparable perceptions for every one of the services associated with the bank that possesses the specific application. As Salvendy (2012) echoes, to cultivate a positive attitude about the mobile managing an account services the bank provides, the bank would need to provide items that the customers can trust. This calls for efforts to coordinate the customer's perceived usefulness to the fulfillment provided by the bank's items and services. Torres and Kline (2013) state that high customer fulfillment may therefore be correlated to positive customer attitudes. Therefore, it is reasonable enough to conclude that mobile keeping money service providers who keep up a positive attitude inside their customers are able to retain more of their customers due to customer fulfillment (Yang et al., 2013).

5.4 Conclusion

5.4.1 Cloud Application Platforms on Internal Processes in the Banks

It was concluded that as a bank CBA encourages the use of cloud applications to support business processes, and cloud applications are aligned to the mission of the bank. This has thus led to improved service delivery and growth of the firm. The study also showed that through adoption of cloud computing the company has been able to undertake better data processing and there is easier cooperation/information exchange with other organizations, monitor progress and facilitated data security. Cloud applications has help CBA in
supporting additional peer learning among employees also make it easy to track organization objectives and improved customer retention.

5.4.2 E-Learning Platforms on Learning and Growth in the Banks

After a review of the e-learning process, it was concluded that the number of resource material has increased since the introduction of e-learning platforms, and offer the best storage for the organization’s reference documents. Finding also show that through e-learning cataloguing of material has been simplified and has also empowered employees to share information within the learning group in the platform, there has also been increased efficiency because of the ease of finding the information from the platform, and the e-learning platforms have features that are easy to use. It was also concluded that CBA’s e-learning can be conveniently accessed both on and off work.

5.4.3 Mobile Application on Customer Retention in the Banks

This study concluded that mobile applications has increased efficiency in service delivery through timeless banking that is accessible all the time from any locality. In addition, it has created a positive impression of the application towards the bank. Customers are now also able to resolve issues from the comfort of their homes and helped in the processing of financial transactions for customers. This has resulted into the reduction in labor costs due to streamlined operations. The results also show that mobile applications provide better collaboration with customers and reduce the orientation and training effort.

5.5 Recommendation

5.5.1 Recommendation for improvement

5.5.1.1 Cloud Application Platforms on Internal Processes in the Banks

As a bank CBA should encourage all its stake holders to utilize cloud applications as it has the capability to simplify the assessment of organization objectives. This shoud be effected to guarantee support for peer learning among employees. In order to maintain a positive performance trajectory, cloud applications should be utilized fully for easy tracking of the organization objectives, better data security. Employees should also be empowered to utilize cloud computing for easier cooperation /information exchange with other organizations.
5.5.1.2 E-Learning Platforms on Learning and Growth in the Banks

The study recommends that CBA employees should be encouraged to use the e-learning platform more often in order to improve their productivity. For improved performance, there should be increased resource material towards the full functionality of the e-learning platform. The CBA’s e-learning platform should also be developed in a way that encouraged employees to access conveniently both on and off work. Evaluation also need incorporate a tool to measure how users have gained the capability to apply knowledge learned.

5.5.1.3 Mobile Application on Customer Retention in the Banks

The study recommends that CBA should champion for mobile application as it has the capacity to provide real-time data access with lower risks, more sensitization campaigns should also be held to educate the users on the safeguard the customer data. For better financial performance, mobile applications should be fully utilized to reduce the orientation and training effort, safeguard the customer data and offer better collaboration with customers.

5.5.2 Recommendation for Further Studies

The current study focussed on determining the effects of technological innovation on bank performance at Commercial Bank of Africa. Similar study should be done to determine effects of technological innovation in other banks, in addition the study would also focus on other financial organizations apart from banks.
REFERENCES


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PRWEB (2012). *Garner predicts cloud computing spending to increase by 100 percent In 2016, Apps Care.Reach to Rural India.*


APPENDICES

Appendix A: Introduction Letter

Nelly Ocholla Yamo

United States International University - Africa,

P.O. Box 14634, 00800,

November 26, 2018

To whom it may concern,

RE: Effects of Technological Innovation on Bank Performance

I am a graduate student at United States International University–Africa (USIU), undertaking a research to examine the relationship between technological innovation and organization performance in Commercial Bank of Africa. This is in partial fulfillment of the degree program requirement of the Master of Business Administration at USIU-Africa.

You have been randomly selected to participate in this study. It is estimated that it takes between ten to twenty minutes to complete the questionnaire. Please respond as objectively and candid as possible. Your participation was highly appreciated and is essential for the accomplishment of this study.

I guarantee that the information provided shall be handled with utmost confidentiality and was used only for academic purposes where confidentiality is strictly emphasized. Kindly spare some time to complete the questionnaire attached.

Thank you.

Yours faithfully,

Nelly Yamo

0735 873475
Appendix B: Questionnaire

Please answer all questions

SECTION A: Background Information

1. Your gender: Male [ ] Female [ ]
2. You age bracket (Tick whichever appropriate)
   21 and Below [ ]
   22 -29 years [ ]
   30 - 37 years [ ]
   38 - 46 Years [ ]
   Over- 46 years [ ]
3. What is your highest level of education? (Tick as applicable)
   Diploma/Certificate [ ] Bachelors’ degree [ ]
   Postgraduate degree [ ] PhD/ Doctorate [ ]
4. Working experience in the Organization
   0 – 5 years [ ] 5– 10 years [ ]
   Over 10 years [ ]
5. Department that you work
   Credit [ ] Finance [ ]
   Operations [ ] Fraud Prevention [ ]
   General Banking [ ] Other Support Services [ ]
6. Level of Management
   Senior Manager [ ] Mid-level Managers [ ]
   Senior Officer [ ] Officer [ ]
### SECTION B: CLOUD APPLICATIONS

State by ticking the appropriate box, your level of agreement with the following statements on a scale of 1 to 5, Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree)

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<tbody>
<tr>
<td>B1</td>
<td>Cloud applications are aligned to the mission of the bank.</td>
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<td>B2</td>
<td>The bank encourages the use of cloud applications to support business processes.</td>
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<td>B3</td>
<td>The benefits of cloud applications justify the amount of investment.</td>
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<td>B4</td>
<td>Cloud applications make it easy to track organization objectives.</td>
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<td>B5</td>
<td>Cloud applications have improved service delivery.</td>
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<td>B6</td>
<td>Cloud applications have improved customer retention.</td>
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<td>B7</td>
<td>Cloud applications support additional peer learning among employees.</td>
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<td>B8</td>
<td>Cloud applications allow staff to extend conversations out of the office.</td>
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<td>B9</td>
<td>Cloud applications have simplified assessment of organization objectives.</td>
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<td>B10</td>
<td>Cloud application rubrics allows the organization to monitor progress</td>
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<td>B11</td>
<td>Cloud applications make employees accountable for their own learning.</td>
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<td>B12</td>
<td>Cloud computing has facilitated better data security.</td>
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<td>B13</td>
<td>Through cloud computing there is easier cooperation/information exchange with other organizations</td>
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<td>B14</td>
<td>Through adoption of cloud computing the company has been able to undertake better data processing.</td>
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<td>B15</td>
<td>Cloud computing has allowed the firm to grow and shrink IT capacity on demand</td>
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</table>
B16. Do you think there are other ways in which cloud applications have improved internal processes?

________________________________________________________________________
________________________________________________________________________

SECTION C: E-LEARNING PLATFORMS AND GROWTH

State by ticking the appropriate box, your level of agreement with the following statements on a scale of 1 to 5, Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree)

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<tr>
<td>C1</td>
<td>The number of resource material has increased since the introduction of e-learning platforms.</td>
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<td>C2</td>
<td>The e-learning platform has allowed me to be more productive</td>
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<td>C3</td>
<td>I can access most necessary organization material, conveniently using the e-learning platform.</td>
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<td>C4</td>
<td>The e-learning platforms have features that are easy to use.</td>
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<td>C5</td>
<td>Online systems have contributed to my induction at the organization.</td>
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<td>C6</td>
<td>E-learning platform provides the best storage for the organization’s reference documents.</td>
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<td>C7</td>
<td>CBA’s e-learning can be conveniently accessed both on and off work.</td>
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<td>C8</td>
<td>The bank’s digital repository has improved the university’s research ranking on the world wide web.</td>
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<td>C9</td>
<td>The e-learning platform at CBA is scalable.</td>
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<td>C10</td>
<td>E-learning platform has simplified retrieval of material.</td>
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<td>C11</td>
<td>Users have gained the capability to apply knowledge learned from the platform.</td>
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<td>C12</td>
<td>Through e-learning, users are now able to explore new issues from the learning process.</td>
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<td>C13</td>
<td>E learning has empowered employees to Share information within the learning group in the platform</td>
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</table>
There has been Increased efficiency because of the ease of finding the information from the platform.

Through e-learning cataloguing of material has been simplified.

C16. Are there other ways in which e-learning platforms have improved the performance of the organization? Please give details

______________________________________

SECTION D: MOBILE APPLICATIONS

State by ticking the appropriate box, your level of agreement with the following statements on a scale of 1 to 5, Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree)

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<tr>
<td>B1 Mobile applications have helped in processing financial transactions for customers.</td>
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<td>D2 Mobile applications have contributed to a reduction in labour costs due to streamlined operations.</td>
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<td>D3 Data collected by mobile applications has led to better decision making.</td>
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<td>D4 Mobile applications reduce the orientation and training effort</td>
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<td>D5 Mobile applications allow customers to work at the comfort of their homes</td>
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<td>D6 Mobile applications allow implementation of counter measures for critical processes.</td>
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<td>D7 Mobile applications provide better collaboration with customers.</td>
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<tr>
<td>D8 Mobile applications provide real-time data access with lower risks.</td>
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</tbody>
</table>
D9 Mobile applications at CBA have helped to safeguard the customer data.
D10 Mobile applications have improved the performance of the bank.
D11 Mobile has enabled specialized know-how of customers.
D12 Mobile applications allow customers to resolve issues from the comfort of their homes.
D13 Use of mobile applications has increased efficiency in service delivery.
D14 Mobile applications have resulted into timeless banking that is accessible all the time from any locality.
D15 Mobile applications have created a positive impression of the application towards the bank.

D16. Are there other ways in which mobile applications have contributed to customer retention? Please give details

________________________________________________________________________
________________________________________________________________________

SECTION E: ORGANIZATION PERFORMANCE
State by ticking the appropriate box, your level of agreement with the following statements on a scale of 1 to 5, Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree)

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<tr>
<td>E1 Employees support the use of technology to streamline processes.</td>
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<td>E2 Regular system security patches ensure employee workstations work optimally to reduce turnaround time.</td>
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<td>E3 Offsite backup of critical information guarantees business continuity in case of disaster.</td>
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<td>E4 Cloud applications has minimised the firm’s recruitment costs.</td>
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</table>
E5. Use of cloud applications to support business processes has increased the firm's efficiency.

E6. The returns made on cloud applications justify the amount of investment.

E7. Mobile applications have helped minimise operation costs at the bank.

E8. Mobile applications have led to high customer retention.

E9. Data collected by mobile applications has led to better decision making.

E10. Implementation of technological innovation has helped the bank withstand competitive pressure.

E11. Are there other ways in which technological disruptions have improved the bank’s performance? Please give details.

THANK YOU