THE EFFECT OF TECHNOLOGICAL ADVANCEMNT IN BUSINESS.

A CASE STUDY OF CENTENARY BANK – MAPEERA BRANCH

BY

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To Mrs. Nsubuga Judith Nagujja.

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LIST OF ABBREVIATIONS

ACH - Automated Clearing House

ATMs– Automated Teller Machines

CRDT – Centenary Rural Development Trust

EFTs – Electronic Funds Transfers

EFTPOS- Electronic Funds Transfer at Point of Sale

E-Banking – Electronic Banking

E-Payment – Electronic Payments

GMF– General Manager Finance (Division)

N– Number of respondents

Min– Minimum

Max– Maximum

Std Deviation – Standard Deviation.

SPSS – Statistical Package for Social Sciences.

ABSTRACT

The effect of technological advancement in operations with specific reference to Centenary bank – Mapeera branch. The general objective of the study was to assess the effect of technological advancement in operations with its specific objectives being; to draw the relationship between internet banking and operations, explore the role of electronic payment technology within an organization and establish the contribution of Mobile banking technology to operations within an organization.

The study was carried out using a case study of Centenary bank – Mapeera branch and cross sectional research design for qualitative and quantitative analysis on a sample of 63 respondents. Data was collected by use of mainly questionnaires, a few interview questions and later analyzed quantitatively and qualitatively using the Statistical Package for Social Scientist 16.0 (SPSS). Descriptive statistics, frequency percentages, tables and figures formed the basis for the analysis of quantitative data whereas qualitative data was interpreted by composing explanations and substantiating those using open responses from respondents.

Study investigations established that the various technologies employed in banking operations highly enhanced service delivery because of their unlimited access; highly enhanced the volume of output not only because of their unlimited access but as well as their wide scope of coverage and they enhanced efficiency because of their speed in addition to being secure.

The conclusions of the study are; technological advancement enhance service delivery, volume of output and efficiency of operations in the bank. It is thus recommended that banks should appreciate these technologies by devising means of acquiring them and maintaining them cheaply, sensitizing the stakeholders on how to use these technologies, having strong network boosters as well as involving Interpol to help curb cyber fraud.

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

Technological advancements within business operations have been globally appreciated by many business managers and integrated with in the systems of business operations. With the expanding market needs more so in the banking sector more so in areas of communications, service delivery among other services, Banks have identified the need to extend their services in order to meet the increasing needs of their clients and to maintain the expanding clientele who consume the bank operations. Technological advancements in banks are sought to improve on portfolio management, modern credit sourcing and evaluate credit applications as banks carry out financial roles which include; regular cash deposits, credit services and payment services to its clients and the economy as a whole.

This is chapter set to define the research and it will include; the background to the study, problem statement, research objectives and the questions, the significance, justification to the study, conceptual frame work and the definition of key terms as used in the study.

1.1 Background to the study

In this modern era of high technological development, technological advancement will take the lead towards improved and efficient business operations for better products and services along with service delivery within the banking sector because it brings about change in the original policies and strategy in those institutions.

Globally, in many organizations, challenges that manifest within business operations are mostly brought about increased competition and bad systems or the technology used along with the human resources (Imran, 2014). Advancement in technology in business operations

has been reflected in improved revenue scale efficiencies in many financial institutions. This has been seen often when the advancement in technology brings about new services and improved service quality that bring about increase business revenue. In addition to this, the technological advancement further improves the risk expected return frontier and financial institutions take some of the benefits at increased rate of returns. A study from the United States (U.S) bank revenue scale of efficiency had slight scale efficiencies on the order of 1% to 4% of revenues in 1984 which were later dissipated by 1990. Researcher that responded to this study in the U S examined aspects of profit efficiency, which included both costs and revenues. The effects of advancements in technology on bank profit efficiency were said to be ambiguous, with profit efficiency sometimes being highest for both large and small banks and sometimes about equal for large and small banks (Berger, 2003).

In Africa, the use of information technology has also become a key element towards the development knowledge based economies as regards to business operations, improved service delivery and production of services. The increased usage of information technology in financial institutions within developing countries has imposed a great challenge with perfectly fitting technological advancements within business operations because they are highly priced when it get to their acquisition (Oluwatolani et al, 2011).

Growing evidence proves that technological advancements have become a strong factor in the performance of financial institutions within their operations in various nations which has been exhibited through increased competitiveness and market share. Organizations advancing within their technologies more so with the banking sector have benefited substantially of which internet banking (E-Banking) from the many information technology application that is widely used as a tool to strengthen the competitiveness of an organization (Oluwatolani et al, 2011).

Internet banking has been strongly embraced and widely employed within the banking industry of Nigeria. Oluwatolani et al, (2011) has it that Nigeria's banking industry has fundamentally brought about fundamental change in the entire African continent and banking as a whole within Nigeria as a country because of the many banks that have various subsidiaries all over Africa that have taken Information Technology to reengineer their business operations.

Uganda as a country has embraced the revolution of information technology more so through the mushrooming financial institutions. Currently, banks are increasingly taking on these knowledge based economies within their business operations as an upward shift to increase efficiency. With technological advancements, banks in Uganda have gone on to increase on the number of ATMs which have done a great deal towards improved service delivery to their clientele with reduced delays for transactions (Kyompaire, 2011).

In Uganda, advancements in technology through internet banking is also on the rise with the increased rate in business growth where many people are transacting lots of businesses overseas dealing in a number of imports and exports. Mobile money has also been incorporated within banking systems along with communication technologies and these have remarkably been viewed as reforms within the financial sector through the banking industry. These technological developments have greatly helped the banking sector in Uganda to meet and beat the expectations of their clientele along with their demands (Kyompaire, 2011).

1.2 Background to the case study

Centenary Bank as the case study is one of the strongest financial institutions as per the study carried out by a household entity under the name MyTopDozen, within the country that employs high levels of information technology and knowledge based economies (Caster, 2012). The bank through its main branch called Mapeera branch situated on Mapeera House

along Kampala Road in Kampala District will be the exact branch to generate the study seeking to explore the impact of technological advancements on operations.

Centenary bank was founded in 1983 as a Credit Trust under the name "Centenary Rural Development Trust" (CRDT) before it was made Centenary Rural Development Bank. As a trust, the peoples' bank was primarily involved in promoting development activities through providing simple group and individual loans o rural farmers, processors of agricultural produce, small scale manufacturers, traders, importers and exporters of various commodities more so produce (Caster, 2012).

The bank has a significant position of its portfolio in the Micro Finance arena with a prime goal to meet the needs of its increasing clientele including both institutions and individuals. With 9.01% of all banking assets in the country, the bank was considered the 4th largest commercial institution in the country (Annual Report, 2013).

Currently the bank has taken on information technology as a tool to serve its clientele with many ATMs on all the bank branches, the bank has also incorporated Mobile Money services within its services, e-payments and electronic funds transfer services to help the big business clientele dealing with overseas and local transactions (Annual Report, 2013).

1.3 Statement of the problem

Within the banking sector in Uganda currently, there is an increasing adoption of knowledge based technologies/ systems with in business operations that has been noted as a move to enhance performance standards and to strengthen the business clientele as a whole (Mulira 2005).

In centenary bank however, regardless of the advancements in the technology being used by the organizations in the finance sector, the business clientele has gone ahead to present various forms of dissatisfaction ranging from customer care systems in place, in ability to

retrieve their financial data and the unstable operations of the Automated Teller Machines that are placed out there by banks to help their clients with transactions.

Centenary bank has been singled out as one of the banks with the biggest clientele in Uganda and ranked the 4th amongst the many banks which implies that as a bank it has to have and employ a high level of technological advancement within its operations as it serves its clientele in terms offering the best banking needs and information flow along with eased payments.

The relationship between the different kinds of technological advancement and operations in the bank has been an eye catching subject to many. The point of focus has been centered on whether the different kinds of technology employed in banks either positively or negatively affects the operations in the bank, which is the subject of the study.

Common observation in the banking sector shows that different technologies employed therein could perhaps have serious repercussions on the efficiency, levels of output and service delivery. It is thus against this background that this study will attempt to establish the effect of technological advancement in Operations at Centenary bank -Mapeera branch.

1.4 Objectives of the study

1.4.1 General Objective

To assess the effect of technological advancement in operations of Centenary bank-Mapeera Branch.

1.4.2 Specific Objectives

i. To draw the relationship between Internet Banking and Operations of an organization.

ii. To explore the role of electronic payment technologies within operations of an organization.

iii. To establish the contribution of Mobile phone transactions within operations of an organization.

1.5 Research questions

i. What is the relationship between Internet banking within operations of an organization?

ii. What is the role of electronic payment technologies within operations of an organization?

iii. What is the contribution of Mobile phone transactions within operations of an organization?

1.6 Scope of the study

1.6.1 Geographical Scope

The study was covered from Centenary bank Uganda- Mapeera Branch. The branch in question is located along Kampala road just opposite Kampala City Square in Uganda.

1.6.2 Time Scope

The study focused on the effect of technological advancement in Operations for a period of three years that is from 2012 – 2015. This is because the banking sector has put a lot of effort towards improving service provision to its clients with the introduction of new technologies to facilitate its operations.

1.6.3 Content Scope

The study closely monitored the impact of technological advancement on operations within centenary bank – Mapeera Branch. The interplay of the independent, dependent and intervening variables was explained in the conceptual framework section since it is the core upon which this study is based.

1.6.4 Significance of the study

The study on the impact of technological advancements on operations will be of great benefit towards centenary bank in various ways which include;

Improved communication. The study on technological advancements will help the bank identify proper and efficient ways through communicating to its clients using information based technologies and rather making the customers get to the desk always for information from the bank itself.

The bank will further be in position to reduce the time spent on servicing its clientele and thus improving its operations efficiency through getting to know more about internet banking and the usage of automated teller machines all that come as technological advancements in operations. The study in this regard will open to the bank the many ways how its clients will be in position to easily access their banking needs with the help of the internet.

From the study, the bank will be in position to expand its clientele both national wide and worldwide. With the use of these advancements, other financial users dealing with the bank clients will be in position get along with the bank services in order to easily access the bank services. The study will explore on how the advancements in technologies do attract customers to access the improved bank products and services.

1.7Justification to the study

Technological advancement has tremendously improved the banking industry into a fast, convenient and customized service offering. Technology as used in banks has now become a corner stone of financial services and it has become difficult to imagine the world without the support of information technology.

In Uganda today, many people in various classes are accessing financial services who still on a large scale use the manual way of accessing financial services i.e. lining up for both banking and withdrawing, transferring money in bigger sums from place to place among others. The way financial services are handled by clients thus create a room for a large untapped opportunity for technological advancements within operations.

With financial inclusion, by improving operational efficiency and productivity in the banking sector, advancements in technology within the banking sector are being viewed as the means through which Banks and financial institutions are to cub down the increased levels of competition and effective operations through delivery of banking services to their growing clientele.

1.8 Definitions of terms

Technological Advancement

Technological advancement is defined as the improvement in the known methods of production. Its therefore the process of combining and reorganizing knowledge to generate new ideas. The development of technology has an impact on the operations of an organization Technological advancement generates from internal advancement which implies that there is a close relationship between technological advancement and operations of a firm (Muhammad, 2014).

Online/Internet Banking

Internet banking is looked at as a relatively new front-office information technology in which Banks offer a variety of Internet service and combinations of Internet and physical offices and ATM networks to extend their services towards clients. With internet banking, some banks employ a "click-and-mortar" implementation strategy in which the banks add a transactional Internet site to their physical offices and ATM networks for its clients (Berger, 2003).

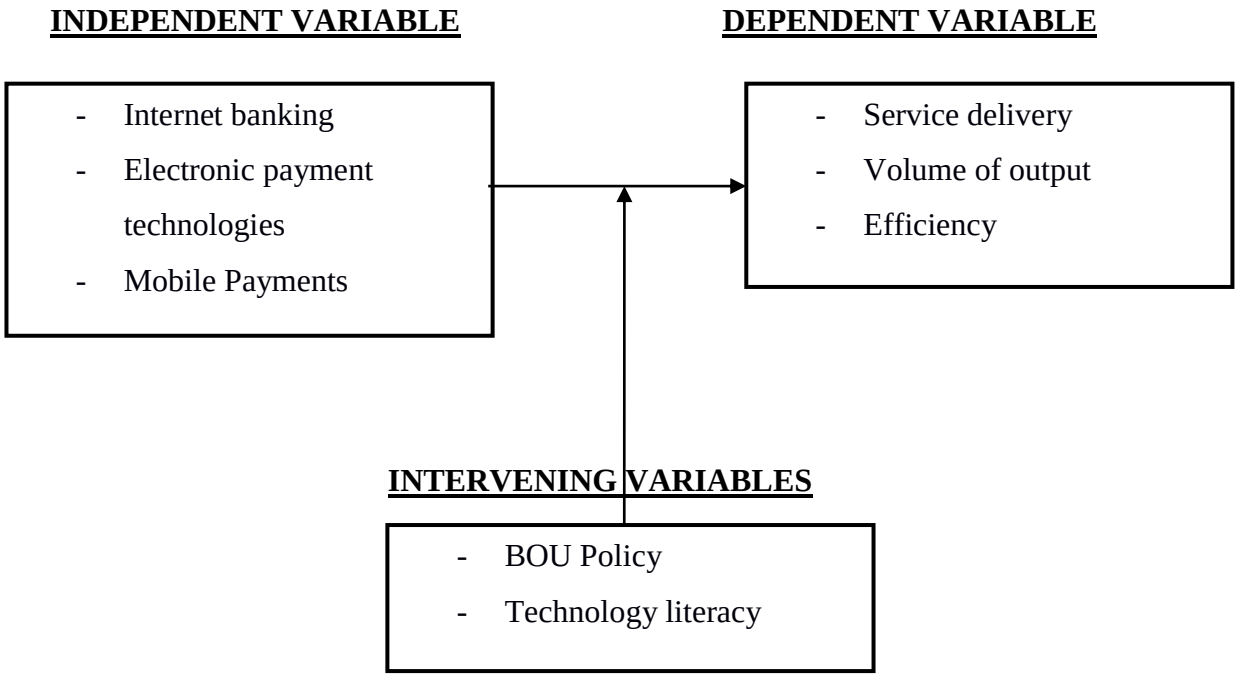
Electronic Payment Technologies (E-Payments)

Electronic payments technologies are defined as methods of transferring funds/ money electronically with relatively little paperwork using systems (Berger, 2003).

1.9 Conceptual framework

This is a diagrammatic representation of the variables as they were used in the study. It represents both the Independent and the Dependent variables along with their corresponding dimensions and the intervening variable which affect the two main variables. The conceptual framework had its independent Variable as technological Advancement which will took on Internet banking, mobile money transactions and electronic payment technologies all as its dimensions. The dependent variable on the other side had the operations of the bank and their relation to service delivery, volume of output and efficiency as its dimensions. However, as a cut through, the intervening variables had the Bank of Uganda policy and technology literacy as dimensions affecting both the independent and intervening variables.

Figure 1: Conceptual Framework



Adapted from:Kyampaire (2015) and Oduro (2012). Primary data 2015.

Explanation

The above illustration shows the conceptual frame work of this piece of work with dependent variables, independent variables as well as the intervening variables. From the side of the independent variables, focus was turned towards the different types of technologies as used in bank operations on a daily basis and these include; internet banking, electronic means of payment as well as mobile money transfers.

Through the use of the above technologies in the daily operations of the bank, various effects are witnessed on the side of both the clients as well as the employees of the bank itself. How these technologies affect the operations is evident on the side of the dependent variables through aspects of service delivery, volume of output as well as efficiency.

When these technologies are brought on board and are fully functional, the level of service delivery is often expected to be of high quality and if it so happens that the technologies are not as good as they sound then service delivery is greatly impaired on the side of the clients as well as the banking officers. This can also be extended to the volume of output in a sense that volume of output refers to the amount of work that the banking staff is able to accomplish within a given time frame. If it so happens that these technologies are user friendly and efficient in their level of operation then the amount of work that is able to be done would be tremendously high whereas it would be greatly affected if the technologies are not effective and efficient.

It should be noted that none of the above technologies can be functioning without due authorization from the central bank which happens to be Bank of Uganda in this case because it is the principle regulating authority regarding all banking businesses in the country. In addition to Bank of Uganda being the principle regulator, the level literacy regarding the use of these technologies must also come into play lest they remain useless and irrelevant to the clients out there.

CHAPTER TWO

LITERATURE REVIEW

2.1Introduction

This chapter reveals the various pieces of work that have been advanced by authors in relation to the study. The literature is about; the different operations in Banks, the types of technologies used in Banks, the effect these technologies have on the operations in Banks, summary of the gaps and a conclusion.

2.2 Conceptual Review

Technological advancement refers to the new developments, new findings, new establishments and progress that are taking place in the science world. However, with regard to this study, focus is rendered to the exodus experience in the Banking sector that is, from the traditional ways of banking to the modern ways of carrying out transactions in the bank (Aker and Mbiti, 2010).

Thanks to innovations in technology, modern day banking institutions are able to extend their services effectively and efficiently to a vast majority of their customers. These services include; mobile money transfers, electronic payments, automated teller machine services as well as electronic banking and electronic funds transfer system.

Users can store value in the account and transfer value between users via text messages, menu commands and personal identification numbers (Aker and Mbiti, 2010).

Mobile transfer arrangements, automated teller machines enable users to make transfer and payments at relatively low costs across a much wider geographic area than is possible using localized informal payment solutions.

Individuals living in the era of rapid technological advancement believe that technology

facilitates people's lives thereby creating more comfort for them. Reports show that since 2005, mobile and electronic transfer systems have been established in more than 80 developing countries, that is, in Africa, Asia and Latin America.

2.3 Operations in the Banking Sector

From the onset of Operations management, teams design various methods of converting inputs (materials, labour, proprietary information, etc.) into outputs (goods, services, value-added products) that are most beneficial to the organization. Thus, this section will mainly address the major Operations there are in the Banking sector with reference to the case study.

2.3.1 Retail Banking

Retail banking also known as Consumer Banking is the provision of services by a bank to individual consumers, rather than to companies, corporations or other banks. It is a typical mass-market banking in which individual customers use local branches of larger commercial banks to effect transactions (www.investopedia.com/terms/retailbanking.asp). According to Morrison and Wilhelm WJ(2007), services offered under the umbrella of retail banking include; savings and checking accounts, transacting consumer loans, mortgages, taking deposits, debit and credit cards.

Retail banking aims to be the one-stop shop for as many financial services as possible on behalf of retail clients. Some retail banks have even made a push into investment services such as wealth management, brokerage accounts, private banking and retirement planning the more reason for a significant investment in branch offices, as well as other customer service points of contact like automated teller machines and bank tellers.

As the world continues to move towards the realization of a global village, retail banks are frequently competing on matters of convenience, the accessibility of branches, automated

teller machines and on costs (Morrison and Wilhelm, 2007). Retail banks also attempt to market multiple services to customers by encouraging customers who have a checking account, open a savings account, borrow through its mortgage loan office, and transfer retirement accounts and so on.

While some of these ancillary services are outsourced to third parties (often for regulatory reasons), they often intertwine with core retail banking accounts like checking and savings to allow for easier transfer and maintenance.

2.3.2 Business Banking

Just like retail banking, operations still revolve around the collecting of deposits, making loans and persuading customers to use other fee generating services offered by the financial institutions.

Business banking mainly focuses on a company's financial dealings with an institution that provides business loans, credit, savings and checking accounts specifically for companies and not for individuals (Kyompaire, 2011). This type of operation is also known as commercial banking because it occurs when a bank or division of a bank only deals with businesses.

Though having a good number of similarities, the primary difference between business banking and retail banking is that in as far as business banking is concerned; customers have tendencies of being in possession of more sophisticated demands from their respective banks. They often lean on banks for assistance when it comes to matters of managing their payables, receivables and other treasury functions (Kyompaire, 2011).

According to the Glass-Steagall Act or the Banking Act of 1933, previously investment banks and retail/commercial banks had to be separate entities, but now a single bank can deal with retail banking, investment banking and business banking. This Banking Act was introduced

to manage speculation. Parts of the Act were repealed in 1999, making it no longer illegal for an investment bank to also engage in business / commercial and retail banking.

According to Rhee, RJ (2010), Business Banking is a targeted bank offering that provides banking and financial services to the small business and SME market. Its offering includes; transaction accounts, business loans, lines of credit, cash management, trade finance, manage payments and other related products catered to companies and not individuals.

Business banking example: Business Banking seeks to meet the financial needs of multiple business sectors such as trade, agriculture and industry, playing an important role in meeting their commercial and economic requirements when establishing, managing and growing their business.

It covers several financial functions such as deposits, loans, credit, money transfers, and merchant banking facilities, rent payments, foreign exchange transactions and securities trading. However in business banking, the bank may also perform the functions of a trustee, attorney and executor in addition to tax planning (Rhee, 2010).

2.3.3 Private Banking

Private Banking refers to banking, investment and other financial services provided by banks to high-net-worth individuals with high levels of income to invest sizeable assets. The term "private" refers to customer service rendered on a more personal basis than in mass-market retail banking, usually via dedicated bank advisers. It does not refer to a private bank which is a non-incorporated banking institution (Whitlock, Craig. "Swiss Talk Tough In Banking Battle: Blacklist Threat Looms Over Tax Havens" Washington Post, Sunday, March 29,2009).

Private banking forms a more exclusive (for the especially affluent) subset of wealth

management. At least until recently, it largely consisted of banking services (deposit taking and payments), discretionary asset management, brokerage, limited tax advisory services and some basic concierge-type services, offered by single designated relationship manager.

The internationalization of the economy, technological developments such as the internet and mobile phones ensure that banks have to innovate their value proposition and venture into new markets. For example, the growth of high-net-worth-individuals is low in traditional private banking markets like Europe, compared to Asia where the number of millionaires has grown to 3.6 million.

Technological developments have made sure that online banks can offer banking services without an extensive network of offices. The regulation of rewards and the regaining of confidence after the banking crisis require a new level of transparency and different methods of charging for services (Whitlock, 2009).

2.3.4 Investment Banking

An investment bank is a financial institution that assists individuals, corporations, and governments in raising financial capital by underwriting or acting as the client's agent in the issuance of securities. An investment company may also assist companies involved in mergers and acquisitions and provide ancillary services such as market making, trading of derivatives and equity securities and fixed income instruments, currencies and commodities. (Morrison and Wilhelm, 2007).

The two main lines of business in investment banking are called the sell side and the buy side. The sell side involves trading securities for cash or for other securities (e.g. facilitating transactions and market making) or the promotion of securities (e.g. underwriting and research, etc.). The buy side involves the provision of advice to institutions concerned with buying investment services. Private equity funds, mutual funds, life insurance companies,

unit trusts and hedge funds are the most common types of buy side entities.

According to the U.S. Securities and Exchange Commission, 2015, an investment bank can be split into private and public functions with an information barrier which separates the two to prevent information from crossing. The private areas of the bank deal with the private insider information that may not be publicly disclosed, while the public areas such as stock analysis deal with public information.

Personnel specializing in investment banking are referred to as Investment bankers. These are individuals that work in a financial institution that is in the business of primarily raising capital for companies, governments and other entities, or who work in a large bank's division that is involved in these activities, often called an Investment Bank (Morrison & Wilhelm, 2007).

2.4 Types of Technologies Used in Operations

With the advent of computers and electronic communications, a large number of alternative electronic payment systems have emerged and below are some of those commonly used today.

2.4.1 Mobile Money Transfers / Telephone Banking

Also referred to as mobile payment, mobile money and mobile wallet, generally refer to payment services operated under financial regulation and performed from or via a mobile device. Instead of paying with cash, cheque or credit cards, a customer can use a mobile phone to pay for a wide range of services and digital or physical goods (Oduro, 2012).

This is a service that enables people to send and receive money anywhere in the world for as long as it is within the range of a particular local area network using their mobile phones. Rose and Hudgins (2010), suggest that the phone remains among the most popular channels

for putting customers in touch with their respective financial providers today.

According to Andy Oduro, 2013, Mobile Money is a cash management service available on the mobile phone or Internet. It is mainly about facilitating money transfer for the Ghanaian market. The service is available to both mobile and non-mobile users. Statistics show that a high percentage of Ghana's population are "unbanked" meaning they conduct their transactions outside the banking sector with no access to financial services.

Products like "mobile money," that enable safe and secure money transfers without the use of a bank account, could have a major impact on this unserved segment of the population. Mobile money gives anyone with a mobile phone the ability to transfer money, make cash payments and conduct other financial transactions over the phone (Oduro, 2013).

Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available. Mobile payment is being adopted all over the world in different ways (Oduro, 2013). In 2008, the combined market for all types of mobile payments was projected to reach more than $600B globally by 2013, which would be double the figure as of February, 2011. The mobile payment money for goods and services excluding contactless Near Field Communication transactions and money transfers had excluded $300B globally by 2013.

In developing countries, mobile payment solutions have been deployed as a means of extending financial services to the community known as the "unbanked" or "under-banked," which is estimated to be as much as 50% of the world's adult population. These payment networks are often used for micro payments. The use of mobile payments in developing countries has attracted public and private funding by organizations such as the Bill and Melinda Gates foundation, United States Agency for International Development (www.financialaccess.org).

In the predominant model for SMS payments, the consumer sends a payment request via an SMS text message or an USSD to a short code and a premium charge is applied to their phone bill or their online wallet. The merchant involved is informed of the payment success and can release the paid for goods.

To truly transform the financial lives of underserved people, mobile money must become a central monetization mechanism, universally available across a greater range of digital transactions. By making mobile money more central to the financial lives of these users, greater financial inclusion, economic empowerment and economic growth can be achieved.

Mobile payment systems hold great promise to improve the financial lives of the poor. But problems of cost, complexity, management, and even human behavior stand in the way of progress (Oduro, 2013).

2.4.2 Electronic Funds Transfer (EFT)

This is the electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, through computer-based systems and without the direct intervention of bank staff (Turban et al., 2008). Electronic Funds Transfers are known by a number of names. In the United States, they may be referred to as electronic checks or e-checks.

The term covers a number of different payment systems, for example:

- card holder - initiated transactions, using a payment card such as a credit or debit card
- direct deposit payment initiated by the payer
- direct debit payments for which a business debits the consumer's bank accounts for payment for goods or services
- wire transfer via an international banking network such as SWIFT

- electronic bill payment in online banking, which may be delivered by EFT or paper check
- Transactions involving stored value of electronic money, possibly in a private currency.

Electronic Funds Transfer includes direct-debit transactions, wire transfers, direct deposits, ATM withdrawals and online bill pay services. Case in point, when one uses a debit card to purchase a number of items at a store or online, the transaction effected is carried out using an EFT system.

One of the most widely-used EFT programs is Direct Deposit, in which payroll is deposited straight into an employee's bank account, although EFT refers to any transfer of funds initiated through an electronic terminal, including credit card, ATM, Fedwire and point-of-sale (POS) transactions. It is used for both credit transfers, such as payroll payments, and for debit transfers, such as mortgage payments (Kelly 2011).

Electronic Funds Transfer atPoint of Sale (EFTPOS) — is an electronic payment system involving electronic funds transfers based on the use of payment cards, such as debit or credit cards, at payment terminals located at points of sale. In Australia and New Zealand it is also the brand name of a specific system used for such payments. The Australian and New Zealand systems are country specific and do not interconnect. EFTPOS technology originated in the United States in 1981 and was quickly adopted by other countries (Kelly, 2011).

Transactions are processed by the bank through the Automated Clearing House (ACH) network, the secure transfer system that connects all financial institutions at national level. For payments, funds are transferred electronically from one bank account to the billing company's bank, usually less than a day after the scheduled payment date.

The growing popularity of EFT for online bill payment is paving the way for a paperless

universe where cheques, stamps, envelopes, and paper bills are obsolete. The benefits of EFT include reduced administrative costs, increased efficiency, simplified bookkeeping, and greater security (Jonker&Thijs, 2007). However, the number of companies who send and receive bills through the Internet is still relatively small.

The U.S. Government monitors EFT compliance through Regulation E of the Federal Reserve Board, which implements the Electronic Funds Transfer Act (EFTA). Regulation E governs financial transactions with electronic payment services, specifically with regard to disclosure of information, consumer liability, error resolution, record retention, and receipts at electronic terminals (Stanley, 2011).

The payment options available are the Automated Clearing House (ACH) Debit, ACH Credit, and Fedwire. Fedwire payments are for emergency purposes only.

ACH Debit - The ACH Debit method allows you to transfer funds by instructing the state to electronically debit a bank account you control for the amount you report to the state's data collector. You can authorize the debit via the phone or Internet. ACH Credit - The ACH Credit method allows you to transfer funds by instructing your financial institution to debit your account and credit the state's bank account.

2.4.3 Online / Internet Banking

Online banking also known as internet banking, e-banking, or virtual banking, is an electronic payment system that enables customers of a bank or other financial institution to conduct a range of financial transactions through the financial institution's website (Rhee, 2010).

Banking online or by phone allows you to make banking transactions such as transferring money, paying a bill, checking your balance or setting up a regular payment on your bank or

building society's secure website. Online banking is accessible via a computer or a mobile phone and it can also be known as internet banking.

Internet Banking allows customers to conduct financial transactions such as transferring money, checking their balance or setting up a direct debit on a secure website operated by their bank in building society. Internet banking is accessible via a computer or a mobile phone (Stanley, 2011).

On the other hand, Online banking, offers a secure website operated by a bank or building society that allows customers to conduct financial transactions such as transferring money, checking the bank account or setting up a standing order.

Some online banks are traditional banks which also offer online banking, while others are online only and have no physical presence (Oduro, 2012). Online banking through traditional banks enable customers to perform all routine transactions, such as accounttransfers, balance inquiries, billpayments, and stop-payment requests, and some even offer online loan and credit card applications. Account information can be accessed anytime, day or night, and can be done from anywhere.

A few online banks update information in real-time, while others do it daily. Once information has been entered, it doesn't need to be re-entered for similar subsequent checks, and future payments can be scheduled to occur automatically (Kirui et al, 2012). Many banks allow for file transfer between their program and popular accounting software packages, to simplify record keeping.

2.4.4 Electronic Payment (E-Payment)

E-payment is a subset of an e-commerce transaction to include electronic payment for buying and selling goods or services offered through the Internet. Electronic payments are payments that are made directly to payees from bank accounts using security features over the internet

to process the transactions (Jonker&Thijs, 2007). The E-payments start with an arrangement a customer makes with his/her financial institution to have funds withdrawn from their account and sent to a payee.

When it comes to payment options, nothing is more convenient than electronic payment. One does not have to write a check, swipe a credit card or handle any paper money; all one has to do is enter some information into his/her Web browser and click the mouse. It is no wonder that more and more people are turning to electronic payment -- or e-payment -- as an alternative to sending checks through the mail.

An e-commerce payment system facilitates the acceptance of electronic payment for online transactions. Also known as a sample of Electronic Data Interchange (EDI), e-commerce payment systems have become increasingly popular due to the widespread use of the internet-based shopping and banking (Turban et al., 2008).

Over the years, credit cards have become one of the most common forms of payment for e-commerce transactions. In North America almost 90% of online retail transactions were made with this payment type. Turban et al. (2008), goes on to explain that it would be difficult for an online retailer to operate without supporting credit and debit cards due to their widespread use. Increased security measures include use of the card verification number (CVN) which detects fraud by comparing the verification number printed on the signature strip on the back of the card with the information on file with the cardholder's issuing bank.

According to Jonker and Thijs (2007), E-payment is a subset of an e-commerce transaction to include electronic payment for buying and selling goods or services offered through the Internet. Generally, electronic payments refer to online transactions on the internet and there are actually many forms of electronic payments.

As technology keeps developing, the range of devices and processes to transact electronically continues to increase while the percentage of cash and check transactions continues to decrease. In the US, for example, checks have declined from 85% of non-cash payments in 1979 to 59%. Following the pattern established in the early 2000s American consumers continue to adopt electronic means of payments, according to Fed's 2010 Payments Study, released in segments in late 2010 and early 2011 (www.stlouisfed.org/publications/central-banker/spring2011).

The use of paper checks continues its steep decline. In 2001, paper checks accounted approximately 60% of non-cash payments, where today they account for only about 20%. The number of electronic payments is up 9.3% or three quarters of all payments since the Fed's 2007 study, which concluded that roughly two-thirds of payments were made electronically. Highlights of the study that was carried out in this regard include the following;

- Of the nearly 109 billion non-cash payments in 2009, approximately 84.5 billion were electronic and about 24.4 billion were checks paid.
- Debit cash use now exceeds all other kinds of non-cash payments and represents approximately 35% of total non-cash payments.
- Payments made with prepaid cards increased at the highest rates of all payment instruments reaching a total of 6 billion transactions in 2009.
- The electronification in clearing inter-bank checks more than doubled between 2006 and 2009 as image exchange between banks also expanded.

Richard Oliver, executive vice president at the Atlanta Fed said, "not only does the study show the continued move from checks to electronic means of making payments, but we also see the extraordinary progress the industry has made in electrifying the clearing process for

the 27.5 billion checks still being written (www.stlouisfed.org/publications/central-banker/spring2011).

The Internet has the potential to become the most active trade intermediary within a decade. Also, Internet shopping may revolutionize retailing by allowing consumers to sit in their homes and buy an enormous variety of products and services from all over the world. Many businesses and consumers are still wary of conducting extensive business electronically. However, almost everyone will use the form of e-commerce in near future.

2.5 The effects of Technological Advancement in Operations.

Shifting from the commonly known to something new realistically does not leave things the same way they were previously in a sense that the newly introduced item either brings about a positive effect or a negative effect. Thus, with reference to the topic, the changes brought about as a result of technological advancement will be addressed below following the aspects of service delivery, volume of output and efficiency.

Looking at service delivery, a good number of mobile money services offer features like balance alerts. These alerts help the customers to monitor their accounts and avoid fees. They can even set up alerts to abreast on account activity. Some standard alerts include transaction alerts, and Bill Pay alerts (Oduro, 2012).

Online banking provides consumers with a convenient method of conducting bank business from the comfort and security of their own home and personal computer. Consumers can check account balances and review other account information any time of the day or night. Online banking has changed the face of transactional business and affects commerce across many trades and industries (Stanley, 2011). Just like through EFTs, various stakeholders no longer have to worry about the burden of carrying large sacks of money to the banks to make transfers but rather make this transfer using an electronic system.

It is no secret that much as these established financial institutions are making an effort to make their services move from the traditional system to the digital way, thereby coming up with new and innovative forms of payment over time, this whole exercise and transition has high cost implications. According to Buntinx, (2015), the amount of funds being spent towards the development and implementation of new payment technology is indeed a lot and the whole exercise is very expensive.

Although EFTs, Internet banking, Mobile banking and E-payments have brought a great deal of advantage to the service providers, we cannot rule out the fact that these technologies are prone to cyber fraud (Dodd, 2015). Case in point is that cyber criminals usually use malware to gain access to people's personal computers and phones after which the virus records the login and password details used to access internet banking services and passes it back to the attackers who then use the information to steal from the various bank accounts.

However efficient it may appear to the business community, online banking favors those individuals who are computer literate and mainly those areas that pride themselves in having a steady and uninterrupted internet network. It should be noted that poor internet network affects online transactions (Jonker&Thijs, 2007).

Again in line with service delivery, Consumers now have the ability to perform transactions online that were traditionally reserved for tellers inside a bank branch. Teller transactions have declined because Internet users have the convenience of transferring funds, making deposits and requesting withdrawals from their personal computers (Wilhelm, 2007). According to Bank Systems and Technology, "Internet banking has been the most influential in displacing branch transactions." Consumers also have the option of paying bills through their banks online.

There is an increase in the volume of output as well as service delivery because online banking can be performed 24 hours a day, 7 days a week. Consumers and employees with Internet access can log in to their bank website any time of the day and perform any number of banking transactions.

Unlimited access provides consumers with the convenience of doing business on weekends and holidays when banks are traditionally closed (Kirui et al, 2012).

There is a lower chance of having ETF prices that are higher or lower than the actual value. ETFs trade throughout the day at a price close to the price of the underlying securities, so if the price is significantly higher or lower than the net asset value, arbitragewill bring the price back in line (Jonker&Thijs, 2007). This is different than closed-ended index funds because ETFs trade based onsupply and demandand market makers will capture price discrepancy profits.

There is a high level of preference to carry out transactions using mobile money technology than travelling long distances to go and queue up in bank branches to access financial services (Kirui et al, 2012). This is most evident in cases where individuals register and get mobile money accounts with the various telecom service providers and on these accounts, they can deposit money as well as make transactions effectively world over.

In as far as operational risk management in banks is concerned, the various technologies come with a sensitive task involving continuous system software updates. According to Hoffman, (2015) technologies like Mobile banking, Internet banking, ATMs, EFTs and E-payments do requires continuous system software upgrades so as to be effective and efficient to suit the needs of the customer. However, just like Bintinx (2015) put it, all these come with a hefty cost implication.

Since there is a high level of sensitivity regarding operations in banks both on the side of the employees (access to systems) and customers (keeping their money secure), both parties have been subjected to using system passwords and encryptions so as not to allow un authorized access to both funds and operational channels (strictly reserved to staff). It has been established that both stakeholders as a must get passwords to their systems which must be known and kept secretly to the users themselves at all times and in case of any breach, then the relevant authorities are notified immediately (Hoffman, 2015).

The other effect brought about by the development, design and implementation of the technologies is that the level of congestion in banking halls has greatly been minimized not only in Africa but globally (www.onlinebankingconsult.com/onlinebanking/2015). It is globally observed that both customers and employees need not to stand in long queues in banking halls in order to access services but rather they are making use of the mobile phones, internet and ATMs to access the required services.

According to Wilhelm (2007), the speed at which information is exchanged among employees as well as customers and the speed at which both large and small money transactions take place is unbelievably awesome. Within a few minutes (if not seconds) one can access his/her bank account using a mobile phone, computer or ATM and within a few minutes a transaction can be performed within the least possible time any person could ever imagine.

2.6 Conclusion

Though the world is evolving and technological advancement is the order of the day, a lot of activities within the banking sector have been enhanced in as far as service provision, levels of output and efficiency is concerned. The level of penetration is overwhelmingly high since it is evident that even the new banks on the financial market are embracing these new

technologies at the very moment of their inception. However the challenges still loom the industry as illiteracy rates are still high, network interruptions and cyber-fraud dominate the era.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1Introduction

This chapter includes the detailed ways in which the study was carried out. It highlights Research Design, Study Population, Sample Size, Data Source, Instruments of Data Collection, Quantitative Tool of Data Collection, Data Processing and Analysis, Data Collection Procedure, Presentation of Data, Data Validity and Reliability and Ethical issues in research.

3.2 Research Design

The researcher used a cross sectional study designed with both qualitative and descriptive approaches. Descriptive and analytical data was found suitable since it gave the researcher a clear understanding about the effect of Technological Advancement in Operations at Centenary Bank – Mapeera Branch.

3.3 Study Population

The study targeted employees of Centenary bank at Mapeera branch who belong to two divisions namely; the Finance division and the Business technology division. According to Ms. Jane Nakazibwe, an administrator in the human resource department at the same branch, the finance division headed by Mr. Godfrey Byekwaso (GMF) is divided into two units that is finance unit and treasury unit each having 17 and 6 employees respectively whereas the Business Technology division has two units (ICT and Core Banking) having a total of 52 employees, which is a total of 75 employees altogether.

3.4 Sample Size

The sample size of the respondents involved in the study was calculated using Solvin's formula and supported by the table of Krejcie and Morgan (1970 – Appendix 1).

Solvin's formula: $n = \frac{N}{1+Ne^{\wedge}2}$

n = Number of samples; N = Total population; e = Error tolerance

$$n = \frac{75}{1+ 75(0.05)^{\wedge}2} = \frac{75}{1.1875} = 63.157 \text{ or } 63 \text{ samples}$$

3.5 Data Source

Data was collected from the field using questionnaires and interviews from the selected respondents belonging to the two divisions. Primary data was collected from the field by administering questionnaires and interviews to the respondents whereas Secondary data was obtained from magazines, journals, online materials, newspapers and internal reports.

3.6 Instruments of Data Collection

The researcher used data collection instruments such as questionnaires, interviews and observations.

3.6.1 Quantitative Tool for Data Collection

The researcher used questionnaires which he distributed to the selected respondents belonging to the Finance division as well as those in the Business Technology division.

3.6.2 Qualitative Tool for Data Collection

In this regard, the researcher engaged the chosen respondents in an interview with carefully chosen questions that related appropriately to the topic under question and carried out observations within the area of the case study.

3.7 Data Processing and Analysis

After collection of the data, it was sorted using the SPSS and thereafter a summary of the findings was made. The data was classified into main elements in relation to the research which included the descriptive and statistical approaches.

3.8 Data Collection Procedure

The research was conducted after getting permission from the University accompanied with an introductory letter from the university administration. The introductory letter accompanied the questionnaires to the respondents in the Finance and Business Technology divisions**.**

3.9 Presentation of Data

Data was presented using the descriptive techniques, tables and graphs which constitute a summary of the findings.

3.10 Data Validity and Reliability

3.10.1 Data Validity

Data validity will be ensured through carrying out a pilot study (trial survey). It is from the pilot study that the researcher will ask questions and get answers to them. In addition to the questions, the researcher will also carry out a mini observation exercise of how operations run at Centenary bank – Mapeera branch.

3.10.2 Data reliability

The researcher looked at the extent to which the results were consistent over time as well as an accurate representation of the total population under the study. The researcher ensured that all questions were well understood and interpreted by the respondents. Those with issues

regarding understanding and interpretation of the questions were given more time for further explanation to ensure reliability.

3.11 Ethical issues in research

After explaining the purpose and objectives of the study, respondents were allowed to choose whether or not to participate in the study and their decisions to this effect was respected. As a measure to safeguard the confidentiality of the information obtained from the respondents, the questionnaires were coded in a way that guarantees anonymity.

3.12 Conclusion

This chapter covered the introduction to the chapter, research design, area of the study, study population, sampling procedures, data collection sources, data collection instruments and procedures, data management and analysis, data validity and reliability as well as ethical considerations.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the analysis and interpretation of the findings of the study at hand. This study aimed at establishing the effect of technological advancement in operations of Centenary bank – Mapeera branch, which is the study's general objective.

Specifically, the study was to carried out to establish how the various technologies in the name of Mobile banking, EFTs, Online banking and ATMs aid the employees in both the Finance and Business technology division in effecting their daily operations, looking at both the positive and the negative side.

The findings of the study are presented in accordance with the specific objectives which include; drawing the relationship between internet banking and operations, exploring the role of electronic payment technologies within operations and establishing the contribution of mobile phone transactions within the operations of Centenary bank – Mapeera branch.

The study targeted a sample of 63 employees belonging to both the Finance and Business Technology divisions at Centenary Bank – Mapeera branch. The findings were derived from responses obtained by use of a self-administered questionnaire to the employees in the above divisions. A total of 63 questionnaires was distributed and good enough all were retrieved thus registering a response rate of 100% thereby making the data sufficient enough because Sivo et al (2006) suggest that a response rate of 60% is good.

This chapter in summary is constituent of the background information of the respondents, the presentation, analysis, interpretation and discussion of the findings in reference to the stipulated objectives of the study.

4.1 Background Information of the Respondents

This section describes the background information of the respondents in relation to gender, age, division, level of education and the type of technology of preference by the respective employee.

Table 1: Gender of Respondents

		Frequency	Percent %	Valid Percent	Cumulative Percent
Valid	MALE	31	48.4	49.2	49.2
	FEMALE	32	50.0	50.8	100.0
	Total	**63**	**98.4**	**100.0**	
Missing	System	1	1.6		
Total		**64**	**100.0**		

Source: Primary Data

From the above table showcasing the gender of the respondents to whom questionnaires were distributed, it is evident that 31 were male while 32 were female thereby making a percentage of 48.8% and 50.0% respectively. However, as the table suggests, of the 63 respondents only one happened not to disclose the gender as was required in that section hence the missing system subsection making a percentage 1.6%.

Table 2: Age of Respondents

		Frequency	Percent %	Valid Percent	Cumulative Percent
Valid	20-30	34	53.1	54.0	54.0
	31-40	27	42.2	42.9	96.8
	41 AND ABOVE	2	3.1	3.2	100.0
	Total	**63**	**98.4**	**100.0**	
Missing	System	1	1.6		
Total		**64**	**100.0**		

Source: Primary Data 2016

From the representation in table 2, 53.1% were between the age bracket of 20-30 years, 42.2% were between the age bracket of 31-40 years whereas only 3.1% were in the section of 41 years and above, thereby comprising a total of 98.4% of the total respondents. Again it should be noted that one respondent did not disclose his / her age.

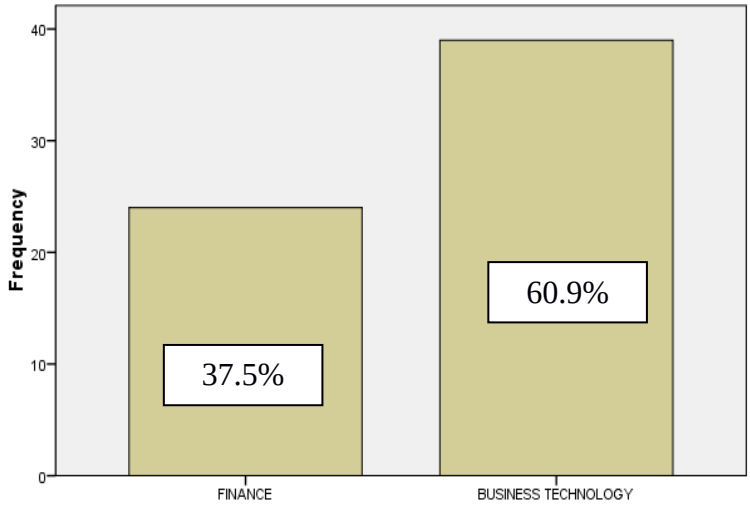
Table 3: Level of Education

		Frequency	Percent %	Valid Percent	Cumulative Percent
Valid	DIPLOMA	3	4.7	4.8	4.8
	DEGREE	49	76.6	77.8	82.5
	POST GRADUATE	11	17.2	17.5	100.0
	Total	**63**	**98.4**	**100.0**	
Missing	System	1	1.6		
Total		**64**	**100.0**		

Source: Primary Data 2016

The findings in table 3 are in reference to the level of education of the respondents. The respondents at Diploma level constituted 4.7%, those at Degree level constituted 76.6% whereas those at Post Graduate level constituted 17.2%. The implication of this is that majority of the employees working in these selected divisions are at degree level while the least are at diploma level.

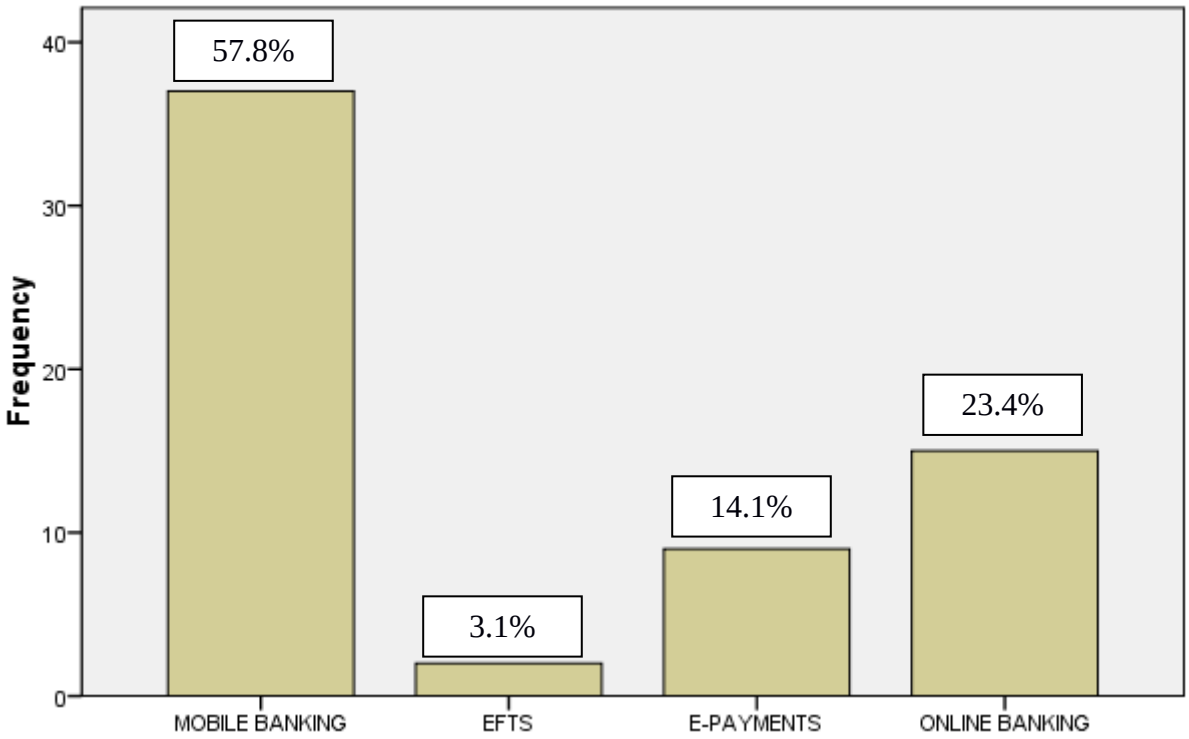
Figure 2: Division of Respondent



Source: Primary Data 2016

The table is representative of the two divisions that were given consideration for this study that is the finance division and the business technology division. From the above, a frequency of 24 respondents which is representative of 37.5% were from the Finance division, a frequency of 39 respondents representing 60.9% were from the Business Technology division while only one respondent making 1.6% did not specify the division he / she belongs to. This implies that majority of the respondents were from the Business technology division.

Figure 3: Type of Banking Technology most preferred



Source: Primary Data 2016

The figure above exhibits the findings established by the study in relation to the kind of banking technology that is of preference to the different employees in the two divisions under study. A frequency of 37 respondents prefer Mobile banking technology which is 57.8%, a frequency of 2 respondents prefer using EFTs which is 3.1% , 9 respondents prefer using E-payments making 14.1% while 15 respondents which is 23.4% prefer using Online / Internet banking. This information thus implies that majority respondents prefer using Mobile banking technology whereas the least preferred is EFTs.

4.1.1 Number of years spent working with Centenary Bank – Mapeera Branch

According to the information obtained from the various respondents that were approached with questionnaires, it was revealed that;

Table 4: Number of years worked with Centenary Bank – Mapeera Branch

Number of years worked	**Frequency**	**Percentage**
0 - 3	34	54%
4 – 7	25	40%
8 - 11	4	6%
Total	**63**	**100%**

Source: Primary Data 2016

Basing on the results in table 4, it was revealed that a frequency of 34 employees had worked for utmost three years making a percentage of 54%, a frequency of 25 employees had worked for Centenary between four to seven years making a percentage of 40% while a frequency of 4 had worked with the bank between eight to eleven years constituting only 6% of the respondents.

4.2 Service Delivery

This section presents the study findings regarding Technological Advancement in Operations and its effects on service delivery in the Finance and Business Technology divisions in Centenary Bank at Mapeera branch.

Key to the abbreviations used in the tables in this section include: **N** – Number of respondents; **Min** – Minimum; **Max** – Maximum; **Std Deviation** – Standard Deviation.

Table 5: Service Delivery

	N	Min	Max	Mean	Std. Deviation
The various technologies used in Banking Operations are expensive.	63	1	5	3.90	.946
Software updates to help in the smooth running of Operations in the Business Technology and Finance divisions are easily accessed.	63	1	5	3.54	.964
The Business Technology division ensures that all the banking technologies (Online, EFTs, Mobile, ATMs) are accessed 24 hours 7 days a week.	63	1	5	3.89	1.064
In Centenary Bank, mobile payments solutions have been deployed as a means of extending financial services to the community known as the unbanked	63	2	5	4.13	.871
Electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, through computer-based system occurs	63	1	5	3.89	.900
Competence of the employees in the Finance and Business Technology divisions is assured for the smooth running of Banking Operations	63	1	5	4.06	.914
Using Online banking, EFTs, and Mobile banking services has helped reduce on the level of congestion in the banking halls.	63	1	5	4.02	1.114
The E-Payments start with an arrangement a customer makes with his/her financial institution to have funds withdrawn from their account and sent to a payee.	63	1	5	3.87	.813
The way these various technologies operate is highly significant in determining the level of service delivery in these two divisions.	63	1	5	3.71	1.113
Unlimited access provides personnel with the convenience of doing business on weekends and holidays when banks are traditionally closed.	63	1	5	3.79	1.180
Valid N (listwise)	**63**				

Source: Primary Data 2016

4.2.1 The various technologies used in Banking Operations are expensive.

From the information revealed in table 5, majority of the respondents believe and agree to the fact that the various technologies used in banking Operations are expensive and this is revealed by the mean value of 3.90. This is in line with Buntinx (2015), who goes ahead to point out how costly it is for banks at the moment to develop and implement the functionality of these technologies towards effective service provision. However, a significant standard deviation value of .946 under the same test revealed varied responses from the respondents. This implies that much as there is a standard deviation figure, the various technologies used in banking Operations are indeed expensive.

4.2.2Software updates to help in the smooth running of Operations in the Business Technology and Finance divisions are easily accessed.

The findings presented in table 5 show a mean figure of 3.54 being a representation of the respondents agreeing to the fact that software updates to these technologies are easily accessible whereas a standard deviation figure of .964 is representative of the respondents who think otherwise. Just like Hoffman (2015) addressed the need for continuous system software updates for these technologies, the implication is that Software updates to help in the smooth running of Operations in these divisions are easily accessed by the employees.

4.2.3 The Business Technology division ensures that all the banking technologies (Online, EFTs, Mobile, ATMs) are accessed 24 hours 7 days a week.

Study findings from table 5, show that the Business Technology division ensures that all the banking technologies that is, Online, EFTs, Mobile and ATMs are accessed 24 hours 7 days a week. This is revealed by the mean figure 3.89. A significant standard deviation figure of 1.064 under same tests shows varied responses from the respondents questioned. Just like Kirui et al, (2012) suggest that consumers and employees with Internet access can log in to

their bank website any time of the day and perform any number of banking transactions, it implies that the Business Technology division ensures that all the banking technologies are accessed 24 hours 7 days a week**.**

4.2.4 In Centenary Bank, mobile payments solutions have been deployed as a means of extending financial services to the community known as the "unbanked."

The findings in table 5 and from the information obtained from www.financialaccess.org it is revealed that mobile payment solutions have been deployed as a means of extending financial services to the community known as the "unbanked and this is verified with a mean value of 4.13.A significant value of standard deviation of .871 under the same tests varied responses from the respondents questioned.

4.2.5 Electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, through computer-based system occurs

According to the findings in table 5 and in relation to the information put across by Turban et al, (2008)it is through a computer based system that electronic transfer of money from one bank account to another either with a single financial institution or across multiple institutions takes place and this is evidenced with the value of mean which is 3.89. Under the same tests, a significant value of standard deviation is .9 showing the varied responses from the respondents questioned.

4.2.6 Competence of the employees in the Finance and Business Technology divisions is assured for the smooth running of Banking Operations.

With reference to the findings in table 5, it is revealed that for the smooth running of operations in the Finance and Business Technology divisions employee competence is a must have. This is shown with a figure for mean presented as 4.06 whereas a significant value of

.914 showing standard deviation is indicative of the varied responses from the respondents questioned.

4.2.7 Using Online banking, EFTs, and Mobile banking services has helped reduce on the level of congestion in the banking halls.

From table 5, the findings reveal that indeed the use of online banking, EFTs, and Mobile banking has helped reduce on the level of congestion in banking halls as shown by the mean at 4.02 whereas a significant value of standard deviation at 1.114 is indicative of varied responses from the respondents questioned. According to the information obtained from www.onlinebankingconsult.com/onlinebanking/2015, indeed it is evident that few people queue up in banking halls to access services under the preference of using mobile phones, EFTs and online banking.

4.2.8 The E-Payments start with an arrangement a customer makes with his/her financial institution to have funds withdrawn from their account and sent to a payee.

According to Jonker & Thijs (2007), E- payments start with an arrangement a customer makes with his / her financial institution to have funds withdrawn from their account and thereafter sent to a payee. This is revealed in the findings of table 5, where a mean value of 3.87 attests to this very fact whereas a significant value of standard deviation at .813 is indicative of the varied responses from the respondents questioned. This implies that in relation to the findings of the study, E-payments start with an arrangement a customer makes with his / her financial institution to have funds withdrawn from their account and sent to a payee.

4.2.9 The way these various technologies operate is highly significant in determining the level of service delivery in these two divisions.

Table 5, with reference to the mean value which is 3.71 reveals that the way these various

technologies operate is highly significant in determining the level of service delivery in the Finance and Business Technology divisions, a fact attested to by an employee in the Finance division who preferred anonymity. A significant standard deviation figure of 1.113 under same tests shows varied responses from the respondents questioned**.**

4.2.10 Unlimited access provides personnel with the convenience of doing business on weekends and holidays when banks are traditionally closed.

According to Kirui et al, (2012) business in banks still goes on during weekends and holidays when banks are traditionally closed, a fact that is backed up with the study findings in table 5 having a mean figure of 3.79, whereas under the same tests a standard deviation figure of 1.180 indicates varied responses from the respondents questioned. This implies that unlimited access provides personnel with the convenience of doing business on weekends and holidays when banks are traditionally closed.

4.3 Volume of Output

The use of Online / Internet banking, Mobile banking, ATMs and EFTs in a way inevitably has a significant effect on the volume of output in Centenary bank and this assertion is in line with the number of transactions registered on a daily basis that goes through these technologies or even in relation to how much work is accomplished by the employees in the Finance and Business Technology divisions with the aid of the above technologies**.**

Table 6: Volume of Output

Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
70 of every 100 clients would prefer banking with the aid of their mobile phones and ATMs to standing in long queues in the banking halls.	63	1	5	3.81	1.203
Mobile banking, ATMs and EFTs record the highest number of transactions every year compared to the transactions in banking halls.	63	1	5	3.51	1.134
Mainly large sums of money transactions are effected through EFTs and Internet banking.	63	1	5	3.62	1.128
Mobile banking outlets and ATMs are widely distributed thereby having a wider coverage of the customer base.	63	2	5	4.11	.825
Mobile banking, EFTs, ATMs and Online banking have greatly led to an increase in the number of customers for Centenary Bank	63	2	5	3.97	.761
Advanced methods and technologies have enhanced operations in the banking sector	63	1	5	4.24	.856
These technologies favor those individuals who are computer literate.	63	1	5	4.03	1.107
Valid N (listwise)	**63**				

Source: Primary Data 2016

4.3.1 70 of every 100 clients would prefer banking with the aid of their mobile phones and ATMs to standing in long queues in the banking halls.

From www.onlinebankingconsult.com/onlinebanking/2015 and relating to the findings in table 6, the mean value of 3.81 indicates that 70 of every 100 clients would prefer banking with the aid of their mobile phones and ATMs to standing in long queues in the banking halls.. However, a significant standard deviation value of 1.203 under the same test revealed varied responses from the respondents.

4.3.2 Mobile banking, ATMs and EFTs record the highest number of transactions every year compared to the transactions in banking halls.

Table 6 findings reveal that mobile banking, ATMs and EFTs record the highest number of transactions every year as compared to the transactions in banking halls as shown by the figure of the mean which is 3.51.A significant standard deviation value of 1.134 under the same test revealed varied responses from the respondents. According to an employee who preferred anonymity, this implies that mobile banking, ATMs and EFTs record the highest number of transactions every year compared to the transactions registered in banking halls.

4.3.3 Mainly large sums of money transactions are effected through EFTs and Internet banking.

According to the findings revealed in table 6, the figure of mean, that is 3.62 shows that majority of the respondents attest to the fact that mainly large sums of money transactions are effected through EFTs and Internet banking which is a fact backed by Stanley (2011) whereas the figure of standard deviation which stands at 1.128 under same tests shows varied responses from the respondents questioned. This implies that basing on the findings revealed, indeed mainly large sums of money transactions are effected through EFTs and Internet / Online banking.

4.3.4 Mobile banking outlets and ATMs are widely distributed thereby having a wider coverage of the customer base.

Table 6 further more reveals that with the figure of mean at 4.11, majority of the respondents attest to the fact that Mobile banking outlets and ATMs are widely distributed thereby providing a wider coverage of the customer base for Centenary bank. A significant value of the standard deviation which is.825 under same tests reveals varied responses from the respondents questioned. The implication of this is that due to the fact that Mobile banking outlets and ATMs are widely distributed, Centenary bank has a wider coverage of the

customer base.

4.3.5 Mobile banking, EFTs, ATMs and Online banking have greatly led to an increase in the number of customers for Centenary Bank

Table 6 reveals that the advancement in technology applied in operations at the area of study through the use of Mobile banking, EFTs, ATMs and online banking have greatly led to an increase in the number of customers for Centenary bank – Mapeera branch, which is a fact that an employee who preferred anonymity confirms through an interview. The results show a mean figure of 3.97 and a low standard deviation figure under the same tests of .761 an implication that the vast majority agreed with the statement while the rest had varied responses.

4.3.6 Advanced methods and technologies have enhanced operations in the banking sector

Study results in table 6 showed that advanced methods and technologies have enhanced operations in the banking sector and this is based on the evidence of the figure of mean being 4.24 whereas the standard deviation figure indicative of the varied responses from other questioned respondents is .856.

4.3.7 These technologies favor those individuals who are computer literate.

According to the findings established in table 6, the figure of mean was 4.03 showing how the majority of the respondents had agreed to the fact that these banking technologies favor those individuals who are computer literate whereas a standard deviation figure of 1.107 shows the varied responses from the questioned respondents. This is in line with Jonker & Thijs (2007), who asserted that however effective these technologies may be, online banking in particular strictly favors only those individuals that are computer literate which implies that the 1.107 according to table 5 are at a disadvantage in as far as these technologies are

concerned.

4.4 Efficiency

Having a good number of latest technologies brought on board is one thing while their efficiency in as afar as running Operations are concerned is another. It is on this note that research was carried out in this subsection in order to establish how efficient these technologies are regarding Operations.

Table 7: Efficiency

Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
Transacting using mobile phones, EFTs, ATMs is much faster compared to standing in long queues in the banking halls.	63	1	5	4.37	1.021
Information exchange between the Finance division and the Business technology division is swift enough	63	1	5	3.78	.906
You are subjected to a good number of training sessions to help you master the techniques of knowing how to use these technologies.	63	1	5	3.57	1.160
EFTs, Mobile banking and Online banking technologies are prone to cyber fraud more often compared to individuals who visit teller-stalls in the banking halls.	63	1	5	3.71	1.170
Repetitive usage of Mobile banking services and ATMs makes it more convenient for the clients to access basic banking services.	63	1	5	4.03	.822
Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available.	63	1	5	3.78	.870
Issues to do with the system's poor network often may deter information exchange and transactions from being carried out which limits the bank's productivity.	63	1	5	4.14	.820
System passwords on mobile phones, ATMs, Online and EFTs have played a significant role in as far as safeguarding the finances of the various stakeholders that happen to use the above means of technology.	63	1	5	4.19	.840
You feel proud to be associated with Centenary Bank as their employee because of the level of efficiency exhibited.	63	1	5	4.14	1.030
Valid N (listwise)	**63**				

Source: Primary Data 2016

4.4.1 Transacting using mobile phones, EFTs, ATMs is much faster compared to standing in long queues in the banking halls.

According to the findings presented in table 7, it is revealed that transacting using mobile phones, EFTs and ATMs is much faster compared to standing in long queues in the banking halls as shown by the figure of mean which is 4.37 whereas 1.021 is the figure for standard deviation showing varied responses from the respondents questioned. This is in line with what was revealed by Wilhelm (2007) that the speed at which account access and transactions are effected using these technologies is unbelievably awesome.

4.4.2 Information exchange between the Finance division and the Business technology division is swift enough.

The results of the study further revealed that basing on the figure of mean which is 3.78, information exchange between the Finance division and the Business Technology division is swift enough as compared to the standard deviation figure of .906 which shows varied responses from other respondents. Just like it was revealed again by Wilhelm (2007), not only transactions but also information exchange among employees as well as customers is swift.

4.4.3 You are subjected to a good number of training sessions to help you master the techniques of knowing how to use these technologies.

From the findings revealed in table 7, it is evident that just like Jonker & Thijs (2007), asserted how these technologies favor only the computer literate, the figure of the mean, 3.57 shows that majority of the respondents agree to the fact that one is subjected to a good number of training sessions to help one master the techniques of knowing how to use these technologies. However, a significant figure of the standard deviation, 1.160 is indicative of the varied responses obtained from other respondents upon whom the same tests were done.

4.4.4 EFTs, Mobile banking and Online banking technologies are prone to cyber fraud more often compared to individuals who visit teller-stalls in the banking halls.

Basing on the findings as registered in table 7, EFTs, Mobile banking and online banking technologies are prone to cyber fraud and this is attested to by the figure of mean which is 3.71 whereas a significant figure of standard deviation which is 1.170 indicates the varied responses of other respondents that were questioned. Just like Dodd, (2015) asserted recently that very many cases of cyber fraud had been reported in British bank accounts as well as throughout Europe and that law enforcement officials were hunting cyber attackers who had pulled off a series of internet "heists" worth at least $ 100m so far, this implies that these various technologies are prone to cyber fraud more often compared to individuals who visit teller-stall to effect transactions.

4.4.5Repetitive usage of Mobile banking services and ATMs makes it more convenient for the clients to access basic banking services.

Results of the study from table 7 revealed that majority of the respondents agreed to the fact that repetitive usage of Mobile banking services and ATMs makes it more convenient for the clients to access basic banking services and this is given evidence to by the mean figure 4.03, just like Turban et al (2008) asserted. A significant value of standard deviation .822 shows varied responses from other respondents that were questioned.

4.4.6 Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available.

According to Oduro (2013), although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available and this has been attested to by the findings showed in table 7 where the majority of the respondents represented by a mean figure of 3.78 agreed to this fact.

However, a significant standard deviation figure of .870 indicates varied responses from other respondents who were questioned.

4.4.7 Issues to do with the system's poor network often may deter information exchange and transactions from being carried out which limits the bank's productivity.

Findings in table 7 reveal a mean figure of 4.14 showing the majority of respondents attesting to the fact that issues to do with the system's poor network often may deter information exchange and transactions from being carried out, a fact which is confirmed by Jonker & Thijs, (2007). With a standard deviation figure of .820 showing varied responses, the implication is that poor network may deter information exchange and transactions from taking place thereby limiting productivity.

4.4.8 System passwords on mobile phones, ATMs, Online and EFTs have played a significant role in as far as safeguarding the finances of the various stakeholders that happen to use the above means of technology.

A mean figure of 4.19 shows the number of respondents who agree with Hoffman (2015) that system passwords on mobile phones, ATMs, Online and EFTs play a vital role in safeguarding the finances of different stakeholders whereas a significant standard deviation figure of .840 indicates varied responses from other respondents who think otherwise. This implies that system passwords on mobile phones, ATMs, Online and EFTs have played a significant role in as far as safeguarding the finances of the various stakeholders that happen to use the above means of technology.

4.4.9 You feel proud to be associated with Centenary Bank as their employee because of the level of efficiency exhibited.

Findings in table 7 reveal that majority of the respondents feel proud to be associated with Centenary Bank as employees because of the level of efficiency exhibited, a fact represented

by a figure of the mean at 4.14 whereas a standard deviation figure of 1.030 is indicative of varied responses from other respondents questioned.

4.5 Conclusion

Relating to the findings revealed statistically in this chapter, advancements in technology have an effect on the operations in as far as the case study is concerned. This is because the results of the study reveal that information exchange and transactions take place swiftly, small and large sums of transactions are effected, congestion in banking halls has subsided, security measures and system software updates have all been guaranteed for the smooth running of operations. In addition to the above, unlimited access to the bank services has been realized and consequently there has been an increase in level of customer base coverage because of the development, design and implementation of these technologies**.**

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter basically presents a summary to the findings established in the study carried out relating to the objectives of the study. From this, a conclusion is drawn and recommendations consequently made in relation to the effect of technological advancement in operations of Centenary bank – Mapeera branch.

5.1 Summary of the Findings

Basing on the results established from the study carried out at Centenary bank –Mapeera branch, the level of service delivery had tremendously improved due to the fact that the bank has put to use these various technologies. Availability of software updates has ensured that internet banking, mobile banking, EFTs and ATMs provide effective and efficient services to the various stakeholders (employees and customers). In relation to the Bank of Uganda policy of ensuring unlimited access to banking services, the large scale distribution of ATMs as well as network coverage enabled both employees and customers to obtain the relevant services any time any day anywhere thereby bridging the gap that may have existed between the bank and its stakeholders.

The results of the study indicated that guaranteed access to Mobile banking, EFTs, Internet banking and ATMs has a positive relationship on operations. The ascertainment follows the fact that guaranteed access led to an increase in the volume of output since majority of the stakeholders preferred using these technologies in addition to those other individuals who accessed the bank services through the banking halls. This is supplemented with the fact there are quite a good number of ATMs situated at Centenary bank – Mapeera branch.

According to the results of the study, it was indicated that technological advancement has a positive relationship on the efficiency of operations. Just as Bank of Uganda policy stipulates and encourages continuous training sessions for all employees and sensitization drives to customers, the study revealed that these training sessions regarding the use of these technologies led to efficiency in service delivery as well as information exchange. In addition, the use of system passwords had helped reduce cyber fraud since there was restricted access to banking information regarding employees and clients, while poor network reports were indicative of how operations may be affected especially with regard to information exchange and carrying out transactions.

5.2 Conclusion to the Study

From the findings established in the study, important observations were made thereby consequently leading to the drawing of the conclusions below.

Establishment and use of EFTs, Mobile banking, Internet banking and ATMs largely enhances performance in Operations at Centenary bank – Mapeera branch. This is mainly based on the fact that these technologies provide unlimited access to bank services either through information exchange or effecting transactions for both employees and clients. However, though the level of service delivery is on the high, it should be noted that these technologies still remain costly in as far as their acquisition and maintenance is concerned.

Technological advancements in the form of Internet banking, Mobile banking, ATMs and EFTs enhance the volume of output in regards to the Operations. This is because the biggest number of stakeholders prefers using these technologies to teller-stalls and as well basing on the fact that there is a wide distribution of ATMs and Mobile banking outlets which indeed serve many. However, it should be noted that much as Bank of Uganda encourages

sensitization drives, these technologies are still largely reserved to the computer literate individuals much as others are able to maneuver around the basics.

There is a high level of efficiency registered in bank Operations as a result of using these technologies. This is mainly because of the tremendous speed at which small and large transactions are effected as well as the speed at with which information exchange takes place. However, though on a large scale system passwords have hindered a lot of unauthorized access to information and individual's bank accounts, cyber fraud still remains big threat in as far as using these technologies is concerned in addition to poor network coverage (though not rampant) and these may affect the efficiency of these technologies.

5.3 Recommendations

From the study that was carried out, a number of significant issues were raised thereby prompting the suggestion of the following recommendations.

Since it is common knowledge that it is quite costly to implement and maintain the use of these technologies in banking operations, there should be a consolidated fund policy spear-headed by the Central Bank itself to help these other banks in acquiring these technologies whereas maintenance costs should come from the bank's annual budget with a portion allocated towards the maintenance of these technologies in good shape.

Of the many policies put in place by Bank of Uganda, mass sensitization campaigns is one of them. This should be given a lot of attention if the bank wants to register an increase in the volume of output periodically. Employees and clients of the bank should be sensitized in as far as how these technologies are operated since most of them prefer accessing them to standing in long queues in the banking balls. This will inevitably multiply the volume of

output in transactions and information exchange because many will be in position to navigate around these technologies to suit their pending needs.

It is indeed highly recommended that in order to curb cyber fraud, in addition to private security operatives, the bank in question should employ the services of Interpol to help beef-up security and get rid of this vice lest employees and clients lose faith in the system and consequently the bank running out of business. There should also be state-of-the-art network boosters at the disposal of the bank in question to help curb the challenge of network failure which may deter efficiency and effectiveness of Operations.

5.4 Implications of the Study

The study avails useful information to government as well as to the players in the banking sector regarding the usefulness of technological advancements in banking Operations in as far as enhancing productivity in that sector is concerned. Thus, it is on this note that one hopes this study will raise awareness and enhance the appreciation of technological advancements in operations with specific reference to the banking sector.

5.5 Areas Suggested for Further Research

Since this study looked at the effect of technological advancement in operations, other areas that can be studied include; how technology in banks helps to obtain a large market share, how technology in banks can help in the fight against cyber fraud and government input towards growth and development of the banking sector through technology.

REFERENCES:

BOOKS

Allen. N. Berger (2003). The Economic Effects of Technological Progress: Evidence from the Banking Industry

Andy OduroBoadu (2013). Effects of Mobile money on the Payment. Simon Fraser University, Burnaby, British Columbia.

Gregor, Kelly (14 December 2009). "Eight billionth eftpos transaction processed." National Business Review. Retrieved 29 September 2011.

Hoffman, Chris (2015). Picking a Banking Password. Strategies on Banking Security Environment.London: Pearson Education.

Kyompaire. Grace (2011). Information technology and profitability of Stanbic Bank.

Mambere. Caster, (2012). The role of information and communication technology in financial institutions: Case study of Centenary Bank. June 2012

Morrison AD, Wilhelm WJ. (2007). Investment Banking: Past, Present, and Future.

Mulira. M.H (2005). Information technology and its role in changing the banking environment, Kampala, Vol. II, No.1 P28-35

Olivier K. Kirui, Julius J. Okello, Rose A. Nyikal (2012). Impact of mobile phone-based transfer services in agriculture: evidence from Kenya. Nairobi, Kenya.

Turban, E. King, D. McKay, J. Marshall, P. Lee, J &Vielhand, D. (2008). Electronic Commerce 2008: A Managerial Perspective. London: Pearson Education Ltd. p.550

ONLINE JOURNALS

Buntinx Jean-Pierre (2015). Banks to Increase Expenses on Financial Technology and Payment Solution. Business Journal on Money and Technology (December 18, 2015).

Morgan Stanley. The Cuomo Report's Bonus Breakdown. The Wall Street Journal Blogs (July 30, 2009). Retrieved March 7th, 2011.

Muhammad Imran (2014). Impact of Technological Advancement on Employee: Performance in Banking Sector, Vol 4, no. 1

Nicole, J. &Thijs, K. (2007). Explaining Cash Usage in the Netherlands (pdf): the effect of electronic payment instruments. DNB Working Paper, No. 136. Amsterdam, Netherlands.

Oluwagbemi. Oluwatolani, Abah. Joshua, Achimugu. Philip (2011) The Impact of Information Technology in Nigeria's Banking Industry, VOLUME 7, ISSUE 2, JUNE.

Rhee RJ. (2010).The decline of Investment Banking: Preliminary Thoughts on the Evolution of the Industry 1996-2008. Journal of Business and Technology Law.

Vikram Dodd (2015). Cyber-attack Warning after Millions Stolen. The Guardian News Journal (October 13, 2015). Retrieved February 10th, 2016.

www.financialaccess.org

www.moneyandtech.com/banks-payment-solutions-technology

www.stlouisfed.org/publications/central-banker/spring.

APPENDICES

APPENDIX I: QUESTIONNAIRE

Dear respondent,

I am **Zziwa Francis Xavier,** athird year student at Uganda Martyrs University Rubaga branch**,** pursuing a Bachelor's degree in Business Administration and Management, specializing in Accounting and Finance.

As one of the partial requirements for the Award of a Bachelor's Degree in Business Administration and Management at Uganda Martyrs University, am conducting a study focusing on "The Effect of Technological Advancement in Operations" using Centenary Bank – Mapeera branch as my case study. Therefore, I kindly request you to fill this questionnaire as honestly as possible by ticking in the spaces provided. The information given will be purely for academic purposes and will be confidentially kept. Thank you for your cooperation.

SECTION A: BACK GROUND INFORMATION ON THE RESPONDENT (Please tick in the appropriate Box)

1. Gender: Male ☐ Female ☐

2. Age: 20 – 30 years ☐ 31 – 40 years ☐ and above years ☐

3. Level of Education: Diploma ☐ Degree ☐ Post –graduate ☐

Others (specify) …….....

4. Division: Finance ☐ Business Technology ☐

5. What type of banking technology is your most preferred?

Mobile banking ☐ E-Payments ☐

EFTs ☐ Online banking ☐

6. For how long have you worked with Centenary Bank? .....

SECTION B: SERVICE DELIVERY

Please indicate the extent to which you agree with each of the following statements about the Bank by indicating with a tick in the box of your choice. Use the key below when answering the following questions: Apply a tick where applicable using the following key.

1– Strongly disagree, 2 – Disagree , 3 – Not Sure, 4 – Agree and 5 – Strongly agree

SERVICE DELIVERY

STATEMENT	**1**	**2**	**3**	**4**	**5**
The various technologies used in Banking Operations are expensive					
Software updates to help in the smooth running of Operations in the Business Technology and Finance divisions are easily accessed.					
The Business Technology division ensures that all the banking technologies (Online, EFTs, Mobile, ATMs) are accessed 24 hours 7 days a week					
In Centenary Bank, mobile payment solutions have been deployed as a means of extending financial services to the community known as the "unbanked".					
Electronic transfer of money from one bank account to another, either within a single financial institution or across multiple institutions, through computer-based systems occurs.					
Competence of the employees in the Finance and Business Technology divisions is assured for the smooth running of Banking Operations.					
Using Online banking, EFTs and Mobile banking services has helped reduce on the level of congestion in the banking					

The E-payments start with an arrangement a customer makes with his/her financial institution to have funds withdrawn from their account and sent to a payee.					
The way these various technologies operate is highly significant in determining the level of service delivery in these two divisions.					
Unlimited access provides personnel with the convenience of doing business on weekends and holidays when banks are traditionally closed.					

SECTION C: VOLUME OF OUTPUT

STATEMENTS	**1**	**2**	**3**	**4**	**5**
70 of every 100 clients would prefer banking with the aid of their mobile phones and ATMs to standing in long queues in the banking halls.					
Mobile banking, ATMs and EFTs record the highest number of transactions every year compared to the transactions in banking halls.					
Mainly large sums of money transactions are effected through EFTs and Internet Banking.					
Mobile Banking outlets and ATMs are widely distributed thereby having a wider coverage of the customer base.					
Mobile banking, EFTs, ATMs and Online banking have greatly led to an increase in the number of customers for Centenary bank.					
Advanced methods and technologies have enhanced operations in the banking sector					
These technologies favor those individuals who are computer literate.					

Do you think that the use of ATMs, Mobile banking, EFTs and Online payments has brought about an increase in the level of output at Centenary Bank? (Give a reason to support your answer)

……

……

……

…….....**.....**

SECTION D: EFFICIENCY

STATEMENT	**1**	**2**	**3**	**4**	**5**
Transacting using Mobile phones, EFTs, ATMs is much faster compared to standing in long queues in the banking halls.					
Information exchange between the Finance division and the Business Technology division is swift enough.					
You are subjected to a good number of training sessions to help you master the techniques of knowing how to use these technologies.					
EFTs, Mobile banking and Online banking technologies are prone to cyber fraud more often compared to individuals who visit teller-stalls in the banking halls.					
Repetitive usage of Mobile banking services and ATMs makes it more convenient for the clients to access basic banking services.					
Although the concept of using non-coin-based currency systems has a long history, it is only recently that the technology to support such systems has become widely available.					
Issues to do with the system's poor network often may deter information exchange and transactions from being carried out which limits the bank's productivity.					
System passwords on Mobile phones, ATMs, Online and EFTs have played a significant role in as far as safeguarding the finances of the various stakeholders that happen to use the above means of technology.					
You feel proud to be associated with Centenary bank as their employee because of the level of efficiency exhibited.					

Do you think the use of banking technology in terms of Mobile banking, EFTs, internet banking and e-payments has enhanced the performance of Centenary bank? (Give reasons for your answer)

……

……

……

Thank you for sparing your precious time and God bless you

APPENDIX II: TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

Population Size (N)	Sample Size (S)	Population Size (N)	Sample Size (S)	Population Size (N)	Sample Size (S)
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	102	1800	317
45	40	290	105	1900	320
50	44	300	109	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	198	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Source: Krejcie and Morgan (1970)