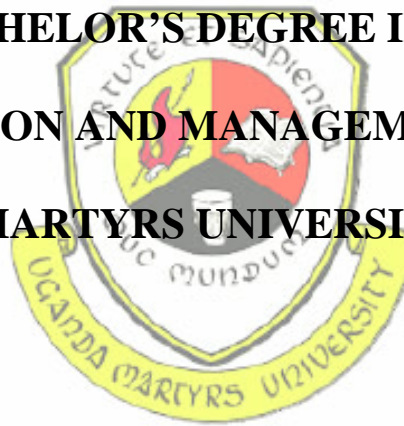


**THE CONTRIBUTION OF MODERN TECHNOLOGY ON THE
FINANCIAL PERFORMANCE OF COMMERCIAL BANKS.
CASE STUDY OF CENTENARY BANK MASAKA BRANCH.**

**A RESEARCH REPORT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE AWARD
OF A BACHELOR'S DEGREE IN BUSINESS
ADMINISTRATION AND MANAGEMENT AT UGANDA
MARTYRS UNIVERSITY.**



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DEDICATION.

I dedicate this piece of work to my dear parents Mr. and Mrs. Nsereko, who against all odds have laboured much in thick and thin to invest in my education for a prosperous and bright future.

ACKNOWLEDGEMENT.

I am so grateful to my Supervisor Mr. Mutattira Simon Peter for his professional advice and constructive guidance that he gave me in the formulation, execution and presentation of this report.

I thank the management of Centenary Bank, Masaka branch for all their assistance and valuable information they availed to me to make this study a success.

I also acknowledge the contribution made by my dear loved parents for their moral and financial support they rendered to me.

ABSTRACT.

The study sought to determine the contribution of modern banking technology to the financial performance of commercial banks. With a case study of Centenary Bank Masaka Branch, the research Objective was to investigate the effect of technological innovation on the financial performance of commercial banks. Specific research objectives.

1. To assess the effect from the progress from the Traditional banking systems to modern ICT systems.
2. To assess the cost benefits associated with acquiring modern banking technology in commercial banks.
3. To recognize problems associated with acquiring modern technology in commercial banks.

The study was based on Technology acceptance model (TAM), diffusion of innovations theory and resource based theory. The study population included 59 employees and clients of Centenary bank licensed by Central Bank of Uganda. Briefly the research conducted discovered a positive relationship between usage of modern technology in the banks and financial performance. Among the benefits of modern ICT included better financial performance due to timely information produced, increased business capacity and improved efficiency in terms of service delivery despite the high costs involved in maintenance.

The short coming of ICT were also given and ways how to overcome these shortcomings and these included: high maintenance costs, virus attacks, hardware purchasing costs, need to train employees. These were solved by employing ICT officers, ICT literate employees, updating anti viruses.

Findings were summarized in chapter five and recommendations given to centenary bank and these included

1. Centenary should develop their electronic facilities to cater for the elderly and disabled such as lowering the height of the ATM screens to make the service available to people in wheel chairs.
2. Customer feedback is an established concept of strategic planning.

LIST OF ABBREVIATIONS.

ATMS: Automated Teller Machines

CRM Customer Relationship Management

DOI Diffusion of Innovation Theory

EDP Electronic Data Processing

ESCA Electronic Smart Card Account

ICT Information and Communication Technology

MICR Magnetic Ink Character Reader

MIS Management Information Systems

ROA Return on Assets

ROE Return on Equity

SMS Short Messaging Services

SSB Self Serviced Banking

US United States

VSAT Very Small Aperture Technology

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CHAPTER ONE

INTRODUCTION.

1.1 Introduction

Information and communication technology (ICT) has in particular brought a complete standard shift on the banks performance and on the customer service delivery in the banking industry. In a bid to catch up with global development, improve the quality of customer service delivery, and reduce transaction cost, banks have invested heavily in ICT and have widely adopted ICT networks for delivering a wide range of value added products and services. The ICT development has a significant effect on development of more flexible and user friendly banking services. In this context one of the objectives of this paper is to examine the relevant literature to assess to what previous researchers have found about the impact of Information Technology on bank's performance and customer service delivery after adoption of information technology. Customer satisfaction and customer service delivery is a key parameter for banks to ascertain how effectively the web furthers their objectives of customer acquisition, retention and increased share of wallet. The research on the impact of ICT on bank's financial performance and customer service delivery in the banking industry have been broad. However, few areas, with consumer perspective, are left with less exploratory debate. Today, information and communication technology has become the heart of banking sector, while banking industry is the heart of every robust economy. If it collapses so will the economy. Electronic banking system has become the main technology driven revolution in conducting financial transactions. However, banks have made huge investments in telecommunication and electronic systems, users have also been validated to accept electronic banking system as useful and easy to use (Adesina and Ayo, 2010).

Castells (2001) reveals that, now transactions worth billions of dollars can only take place in seconds in the electronic circuit throughout the globe by pressing a single button. Although, ICT has revolutionized the way of living as well as conducting businesses and study of Banking industry has received increased attention over the last decade, it continues to pose challenges for marketers and academic alike. According to Loonam et al (2008), ICT advancements, globalization, competition and changing social trends such as heightened customer proactiveness and increased preferences for convenience have caused intense restructuring of the banking industry.

1.2 Historical Background of the Study.

The world banking and financial system is in the process of transformation caused by increasing globalization and deregulation. Technological innovations such as those available in ATMs, phone banking, Internet banking, and smartcard applications are taking place at an overpoweringly fast pace in the global banking industry. Banking can be traced back to the year 1694 with the establishment of the bank of England. The bank was started by a few individuals who were actually money lenders with an aim of lending money at interest (Kariuki, 2005) Massive, rapid, technological innovations (Norton, 1995) are replacing the traditional branch teller. With greater competition brought by deregulation, globalization and widespread mergers and acquisitions taking place in the ATMs as part of a larger rationalization exercise.

Even with the massive branch network banking sector, more branches are being closed down and replaced by self-serviced banking (SSB) facilities like the use of mobile phone banking and Internet banking is strongly promoted by the banks in addition to ATMs

In today's commercial banking environment information technology, effective service delivery and customer satisfaction are an essential competitive strategy. Furthermore, the stiff

competition has forced banks to set up and put into effect all necessary decision support technological systems. This enables them to dynamically plan new locations, evaluate their performance, forecast customers' attitude to new offered products and services, estimate clients' switching behavior, and finally provide marketing support to their geographically separate branches.

Centenary Rural Development Bank Ltd started as an initiative of the Uganda National Lay Apostolate in 1983 as a credit Trust and it began operations in 1985 with the main objective of serving the rural poor and contributing to the overall economic development of the country. In 1993, Centenary Rural Development Bank Ltd was registered as a full service commercial Bank. Today it is one of the leading Microfinance Commercial Bank in Uganda serving over 1,300,000 customers. Its services can be accessed across 62 full service branches and 146 ATMs networked countrywide.

1.3 Background of Centenary Bank.

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The bank is a large financial services provider in Uganda. It is primarily involved in the promotion of development through loans to rural farmers, processors of agricultural produce, small traders, small manufacturers, importers, and exporters. While engaged in all areas of

commercial banking, the bank has a significant portion of its portfolio in the microfinance arena in an attempt to meet the needs of the many individuals and business entities with limited means. As of December 2015, the bank's assets were UGX: 1.974 trillion, with customer deposits of UGX: 1.380 trillion and shareholders' equity of UGX: 400 billion.

1.4 Conceptual background.

1.4.1 Technological Innovation.

An innovation is defined as a new idea or a new or substantially improved good or service that has been commercialized or any substantially new improved process for the commercial production of goods and services (Roger, 1995). Fisher (1998) notes technology when applied in today's banking environment falls into three specific categories: customer independent (a technology that involves a customer conducting and completing a transaction with a bank entirely independent of any human contact with the institution e.g. ATMs, phone banking and Internet banking); customer assisted (a bank employee will use customer-assisted technology as a resource to complete a transaction e.g. call center's customer service officers will use a Customer Relationship Management (CRM) System to understand a customer's profile and provide instant responses to customers' queries on the banking transactions and up-to-date billings (Guttek & Welsh, 1999); and customer transparent Customer technology which represents the real core of bank operations and customers never see it but expect it.

1.4.2 Financial Performance.

There are various measures of organizational performance. However the most used is profitability. Profitability measures the extent to which a business generates a profit from the factors of production: labor, management and capital. Profitability analysis focuses on the

relationship between revenues and expenses and on the level of profits relative to the size of investment in the business (Gilbert and Wheelock, 2007).

Four useful measures of firm profitability are the rate of return on firm assets (ROA), the rate of return on firm equity (ROE), operating profit margin and net firm income. The ROA measures the return to all firm assets and is often used as an overall index of profitability, and the higher the value, the more profitable the firm business. The ROE measures the rate of return on the owner's equity employed in the firm business. It is useful to consider the ROE in relation to ROA to determine if the firm is making a profitable return on their borrowed money. The operating profit margin measures the returns to capital per dollar of gross firm revenue. Recall, the two ways a firm has of increasing profits is by increasing the profit per unit produced or by increasing the volume of production while maintaining the per unit profit. The operating profit margin focuses on the per unit produced component of earning profit and the asset turnover ratio.

Net firm income comes directly off of the income statement and is calculated by matching firm revenues with the expenses incurred to create those revenues, plus the gain or loss on the sale of firm capital assets. Net firm income represents the return to the owner for unpaid operator and family labor, management and owner's equity. Like working capital, net firm income is an absolute dollar amount and not a ratio, thus comparisons to other firms is difficult because of firm size differences (Gilbert and Wheelock, 2007).

Despite the potential benefits of ICT and e-commerce, there is debate about whether and how their adoption improves bank performance. Use of and investment in ICT requires complementary investments in skills, organization and innovation and investment and change entails risks and costs as well as bringing potential benefits. The impact of ICTs and e-business

strategies on bank performance are positive overall, but that ICTs are not a panacea in themselves. Kariuki (2005) argues that there exist positive impacts of e-banking on the turnover and profitability and to a lesser extent on employment, most notably when e-commerce is part of larger business strategies of bank. Further, Kariuki (2005) provides evidence that the use of e-banking can contribute to improved bank performance, in terms of increased market share, expanded product range, customized products and better response to client demand. Information and Communication Technology is a combination of information and technology. It merges computing with high speed communication link carrying data, sound and video. It deals with the collection, storage, manipulation and transfer of information using electronic means. Communication technology refers to the physical devices and software that link various computer hardware components and transfer data from one physical location to another (Nelson, 2016).

Information Communication Technology (ICT) refers to a wide range of computerized technologies that enables communication and the electronic capturing, processing and transmission of information. These technologies include products and services such as desk top computers, laptops, hand held devices, wired or wireless intranet, business productivity software, data storage and security, network security etc.

With the use of ICT, businesses can interact more efficiently and enables businesses to be digitally networked. With the use of ICT, the time constraint and distance barrier to accessing relevant information is eliminated or drastically reduced hence it improves coordination of activities with in organizational boundaries (Spanoset al., 2001). A vice that has been commercialized or any substantially new improved process for the commercial production of goods and services (Roger, 1995). Fisher (1998) notes technology when applied in today's

banking environment falls into three specific categories: customer independent (a technology that involves a customer conducting and completing a transaction with a bank entirely independent of any human contact with the institution e.g. ATMs, phone banking and Internet banking); customer assisted (a bank employee will use customer-assisted technology as a resource to complete a transaction e.g. call Centre's customer service officers will use Customer Relationship Management (CRM) System to understand a customer's profile and provide instant responses to customers' queries on the banking transactions and up-to-date billings (Gutek & Welsh, 1999); and customer transparent Customer technology which represents the real core of bank operations and customers Small Aperture Technology (VSAT)

1.5 Theoretical Background.

The research will rely very much on the Technology Acceptance Theory. Davis, Bagozzi, and Warshaw (1989) proposes the Technology Acceptance Theory to explain the conceptual model that users' intention or acceptance degree towards information system or new technology. TAT is constructed on the foundations of perceived usefulness and perceived ease of use. Perceived usefulness refers to individual belief to improve the degree of job performance through using particular new technology and information system. Perceived ease of use indicates how easy an individual learns how to operate or use new technology or information system (Davis et al., 1989; Gefen et al., 2003).

The model places more emphasis on how perceived ease of use would positively affect perceived usefulness. Exogenous variables such as environment are also the designer that induces perceived usefulness and perceived ease of use. Thus, TAT is based on both important perceptive factors as perceived usefulness and perceived ease of use. TAT is widely applied on the research of information technology. Liu and Arnett (2000) examined the significant

variables to build a successful website based on TAT theory. Gefen et al. (2003) combined TAT and rust to propose an integrated model for explaining online consumer behavior. Pavlou (2003) proposes e-commerce acceptance model of online consumers by separating and applying experiment designs and survey.

1.6 Contextual Background.

This section is going to include brief definition of the terms to be used in the entire research.

Internet Banking is described as “the provision of traditional (banking) services over the internet” Handbook (2001).Computer system. According to Sharp 1996), A device that can handle large quantity of information at an unbelievable pace is a computer.

Automated Teller Machine (ATM), also known as automated banking machine (ABM) is a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller Debit card also recognized as bank card or check card, it is a plastic card through which its holder can access electronically to his or her account of bank.

The usage of credit card as an alternative form of making payments and obtaining cash has gained prominence in the banking sector today however this has led to increased credit risks which are a major threat towards the bank’s performance. According to Rose (1999) mobile banking is a service provided by financial institutions in cooperation with mobile phone operators. It allows customers with busy lives to conveniently do their banking using their phones anytime.

ICT refers to a wide range of computerized technologies that enables communication and the electronic capturing, processing, and transmission of information. These technologies include

products and services such as desktop computers, laptops, hand-held devices, wired or wireless intranet, business productivity software, data storage and security, network security etc. (Ashrafi and Murtaza, 2008). With the use of ICT, businesses can interact more efficiently, and it enables businesses.

1.7 Research Problem.

Despite the potential benefits of ICT and e-commerce, there is debate about whether and how their adoption improves bank performance. Use of and investment in ICT requires complementary investments in skills, organization and innovation and investment and change entails risks and costs as well as bringing potential benefits. The impact of ICTs and e-business strategies on bank performance are positive overall, but that ICTs are not a panacea in themselves.

Ugandan banking sector has witnessed many changes since the beginning of e-banking. Today, customers of banks have efficient, fast and convenient banking services delivered through technological innovations such as ATMS, Online Banking, and Mobile banking.

The managerial and practical problem that this study wishes to address originates from the observation that technological innovations are risky ventures which are prone to failure, increased fraud and are also prone to exposure inform of proceedings and they may therefore have a resounding positive or negative effect on bank performance depending on the way they are managed .Most bank branches at present are equipped with main core banking applications supported by a central computer system. Island-wide ATM networks are also linked to branches and run on separate software applications. Banks are also equipped with ‘intranets’ providing much functionality along with e-mail facilities to branches. Internet banking, SMS banking and phone banking are also being provided as value added services. Credit card usage is also

popular among customers. Branches are initiating the issue of credit cards and debit cards (ATM cards). Also it is the branch that attracts customers for Internet banking access. They are also using word processing software, spreadsheet applications and Internet for day to day operations in addition to the use of core banking applications. Banks are spending huge sums of monies in acquiring ICT competence. They need to invest huge amounts in foreign currency for hardware, software and soft skills. Also they invest money to train bank staff and maintain and retain the group of knowledge workers. Questions arise. Do the banks gain the expected return on expenditure? Have they achieved the maximum value of their investment?

1.8 Research Objective.

To investigate the effect of technological innovation on the financial performance of commercial banks.

1.9 Specific research objectives.

1. To assess the effect from the progress from the Traditional banking systems to modern ICT systems.
2. To assess the cost benefits associated with acquiring modern banking technology in commercial banks.
3. To recognize problems and challenges associated with acquiring modern technology in commercial banks.

1.10 Research Questions.

In order to address the research problem, the following questions would be administered.

- 1 What is the financial effect of the transition from the Traditional banking systems to modern ICT?

2 What are the major benefits of using the modern technology and to what extent are they better than the manual systems in terms of productivity, efficiency and effectiveness?

3 What are the challenges and problems associated with adopting modern technology?

1.10 Scope of the Study.

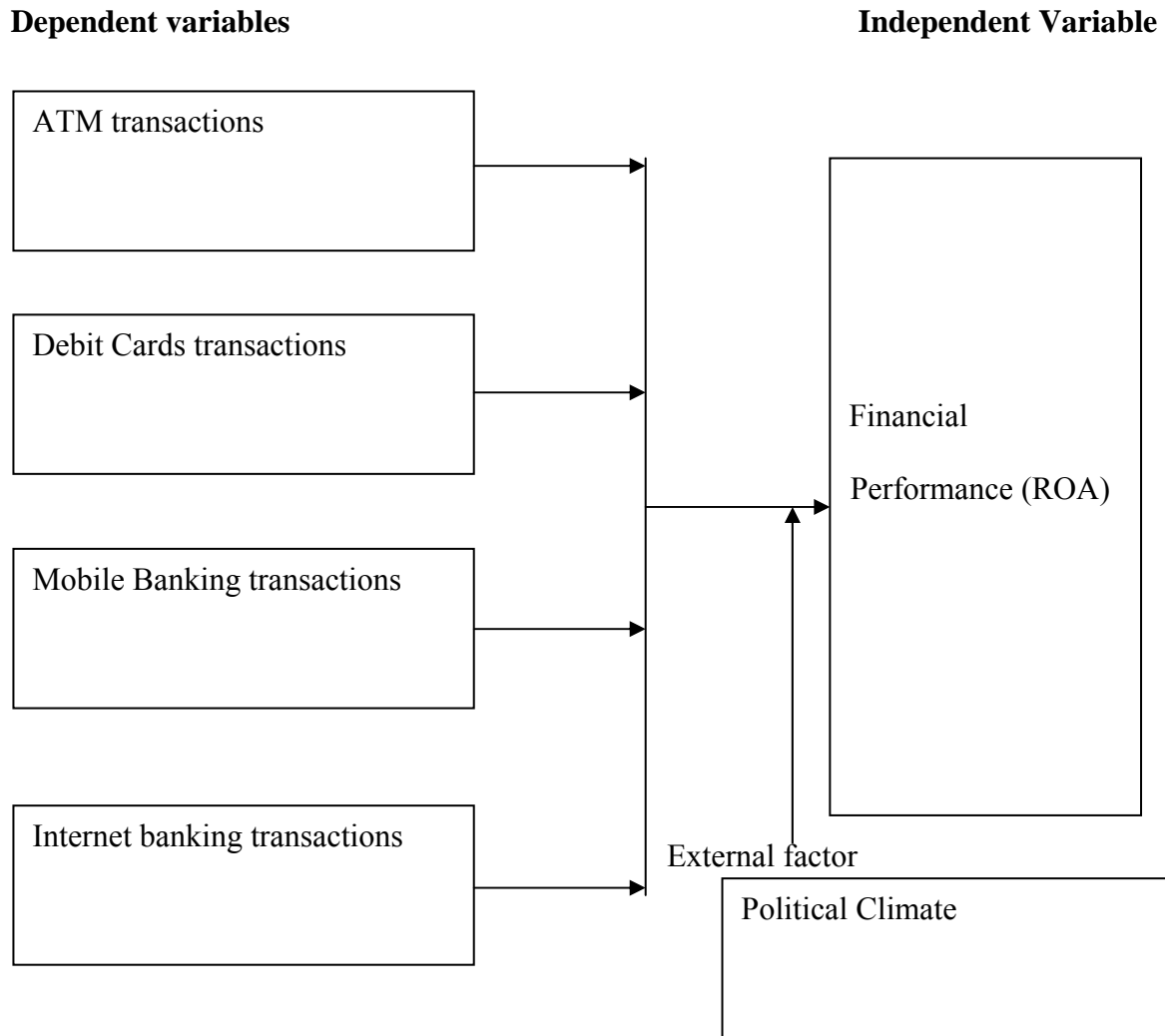
Specifically, the study intends to investigate the use and development of some classes of ICT applications such; automated teller machine (ATM), point of sales (POS) among others and their impact on selected commercial banks performance. The study covers the period from 2016 to 2017,

1.11 Significance of the study.

The study will help us to do?

- Outline the feasibility factors to be considered by banks who want to adopt a recent banking technology.
- Outline the importance of modern Banking technology.
- Identify and address some possible challenges associated with the use of modern banking technologies.
- Generate more interest for further work by researchers.

Figure 1. Conceptual Framework.



Source: developed by the researcher

According to Creswell (2009), the variables need to be specified in quantitative researches so that it is clear to readers what groups are receiving the experimental treatment and what outcomes are being measured. Return on asset (ROA) is dependent variable used in this study. It is measured in terms of net profit to total assets. As noted by Brooks (2008), including more

than one explanatory variable in the model never indicates the absence of missed variables from the model. Thus, to minimize the effect of missed variables.

1.12 Dependent Variables

Bank performance has often been measured using return on asset (ROA). Return on asset is defined as net income after tax divided by total assets. This ratio is an indicator of managerial efficiency; it indicates how capable the management of the bank's assets in to net earnings (Adegbaju, 2008). Thus, in this research use return on asset will be used as a proxy on bank performance therefore if the perceived ROA on modern is high then it will be considered profit full to adopt ICT systems in bank. While if the perceived ROA is in negative then it would be considered not useful to adopt modern ICT systems.

Return on Asset (ROA) represents efficiency in asset utilization and shows how much net income is generated out of assets. It indicates the ability of bank management to generate profits by utilizing the available assets of the bank. Thus, if the ratio of ROA is high, it indicates that it is better performance in order to generate profit. It is measured by the ratio of net profit to total asset as follows: $ROA = \text{Net Profit} / \text{Total Asset}$.

Measurement of bank performance is complicated activity. Researchers have used different approaches to assess the performance of banks in various times. However, some of the most reliable yardsticks that have been used in the past to measure bank performance are on assets (ROA). According to Ross et al., (2006) return on asset (ROA) is a comprehensive measure of overall bank performance from an accounting perspective. It is a primary indicator of managerial efficiency. It indicates how capable the management of the bank has been converting the bank's assets in to net earnings.

1.13 Independent Variables

Independent variables are explanatory variables that explain the dependent variables. The independent variables included in this study are ICT investment, ATM. Mobile phone banking technology, internet banking. These factors were determined by detailed review of the literatures. These independent variables are proposed to increase the understanding of the determinant factors of performance in commercial banks. Information and Telecommunication Technology (ICT) According to Jackson et al., (2015), the benefits of application of ICT in the enhancement of banking services is not only limited to cost reduction benefits alone, the innovation is found also to have significant contribution to giving access to customers residing outside the branch network and create opportunities for effective cross selling, among others.

1.14 External Factors.

External factors for example political and economic climate effected the results of this study in that in a politically unstable country for example southern Sudan, banking ICT systems cannot properly be implemented due to fear and risk of investing lots of capital resources in an insecure environment. Similarity in an economy affected by high rates of inflation, discourages investors from investing in the CAS

1.15 Conclusion.

This chapter has discussed background of the study, problem statement, general objective, specific objectives, research questions, scope of the study, conceptual framework, limitations and conclusion, the next chapter is the literature review.

CHAPTER TWO

LITERATURE REVIEW.

2.1 Introduction

This chapter reviews the literature relevant to this study. The theories relevant to the study area are reviewed. In addition, the chapter commences by reviewing the theories that informed the discussion on technological innovation. It then dwelt on the experimental studies that discuss the link between technological innovation and performance of commercial banks.

Critique of the Existing Literature Relevant To the Study.

Although some studies have demonstrated that there exists a positive relationship between ICT and financial performance some studies have however showed that there is a negative relationship or no relationship between the variables. A study by Wang et al. (2006) reported findings that IT investment in virtual integration of supply chain is unlikely to contribute to manufacturers' cost advantage directly. Similarly, Ray et al. (2005) also found that there were no direct effects of three different IT resources (technical skills of IT unit, managers' technology knowledge, and IT spending) on the performance of the customer service process. Going by these findings, it is unclear whether a direct relationship exists between ICT and financial performance (Liang and Lu, 2010).

2.2 Theoretical Review.

This section explores the various theories and models that can explain the effect of technological innovation on the financial performance of commercial banks. Technology Acceptance Model.

Technology acceptance model (TAM) was originally proposed by Davies in 1986. This model was designed to forecast the user's acceptance of information technology and usage in an organizational setting. Cracknell (2014) posits that firms are adopting technology to cope with the dynamics of the external environment. This model has been tailored in a manner that can accommodate changes for improved costs reduction and efficiency. Technology Acceptance Model deals with perceptions as opposed to real usage, the model suggest that users , the key factors that influence their decision on how, where and when they will use it (Davis, 1989).

The factors to consider are: Perceived usefulness (PU). According to Davis, it is the degree to which a person believes that using a particular system will lead to improved performance (Britton and McGonegal, 2007). Perceived ease-of-use (PEoU) is explained as the degree to which a person believes that using a particular system would results to improved productivity. The TAM was proposed by Davis et al. (1989), this model expounds on the attitude behind the objective to use technology or a services. This theory is relevant to this study since it explains user's acceptance of information technology and usage in an organizational context. Acceptance is the first process in technology use and has a bipolar implication. First of all acceptance is a precursor to adoption and hence this theory complements the preceding theories. Secondly, acceptance dictates the attitude and perception of the users which eventually affects efficiency of use and hence performance. Strategic adoption as well as operational efficiency and hence productivity of systems are a function of acceptance of the technology. It is thus plausible to conclude that without acceptance, the rest of the theories would be redundant and invalid. Though acceptance is an initial phase, it is also an attitude shaping surface that influences adoption and effectiveness of use.

2.2.1 Diffusion of Innovation Theory.

Rogers (1962) posit that diffusion of innovations is a theory that seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Rogers (1962) explains that critical factors that determine the adoption of an innovation at the general level are the following: relative advantage, compatibility, complexity, trialability and observability.

Relative advantage refers to the degree to which an innovation is perceived as providing more benefits than its predecessor. It results into increased efficiency, economic benefits and enhanced status. Previous research has concluded that relative advantage of an innovation is positively related to the rate of adoption. When a user perceives relative advantage or usefulness of a new technology over an old one, they tend to adopt it. In the context of ICT adoption, benefits such as immediacy, convenience and affordability to customers have been reported. Thus, it is assumed that, when customers perceive distinct advantages offered by ICT, they are more likely to adopt it (Roberts and Amit, 2003).

2.3 ICT Investment.

According to McKenney (1995) the information and communication technology infrastructure of an organization comprises of its physical ICT asset stock. The business functionality of an organization depends on the range of the stock of this resource. It is a major business resource and a key source for attaining long term competitive position. Many researchers have studied the relationship between ICT investment and firm performance. According to Hernando et al., (2007), the adoption of internet as a delivery channel involves a gradual reduction in overhead expenses. This effect is statistically significant after one and half year of adoption.

The cost reduction translates in to an improvement in banks profitability, which becomes significant in terms of return on assets (ROA) and after three years in terms of return on equity (ROE).Cracknell (2004) posits that firms are adopting technology to cope with the dynamics of

the external environment. This model has been tailored in a manner that can accommodate changes for improved costs reduction and efficiency. Technology Acceptance Model deals with perceptions as opposed to real usage, the model suggest that users , the key factors that influence their decision on how, where and when they will use it (Davis, 1989) The factors to consider are: Perceived usefulness (PU). According to Davis, it is the degree to which a person believes that using a particular system will lead to improved performance (Britton and McGonegal, 2007). Perceived ease-of-use (PEoU) is explained as the degree to which a person believes that using a particular system would results to improved productivity.

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First of all acceptance is a precursor to adoption and hence this theory complements the preceding theories. Secondly, acceptance dictates the attitude and perception of the users which eventually affects efficiency of use and hence performance. Strategic adoption as well as operational efficiency and hence productivity of systems are a function of acceptance of the technology. It is thus plausible to conclude that without acceptance, the rest of the theories would be redundant and invalid. Though acceptance is an initial phase, it is also an attitude shaping facet that influences adoption and effectiveness of use.

2.3.1 ICT and Banks Financial Performance.

There is no doubt that commercial banks play an important role in the economic development of any nation. The need for efficiency and effectiveness in the performances of the banks as leading players in the financial services that the commercial banks provide a nation cannot be

overemphasized. Recent advances in the technological world giving birth to the emergence of information and communication technology have led to remarkable changes in the ways businesses are running in modern times.

There are various literatures that approve positive impacts of information and communication technology on bank's performance. But, according to the study conducted by Sullivan (2000) in Kansas USA, there is no systematic evidence that multi-channel banks in the 10th Federal Reserve District were either helped or harmed by having transactional web sites. These findings were among the previous findings of Sathye (2005), for the credit unions in Australia banks for the period of 1997 to 2001 that shows electronic banking has not proved to be yard stick for performance enhancing tool.

According to Haq (2005) banks' existence depend on their ability to achieve economies of scale in minimizing disproportionateness of information between savers and borrowers. Today, one of the major challenges facing the banking industry is how ICT has helped banks to sustain the economies of scale whereas shifting from bricks and mortar banking to online banking. As stated by DeYung et al. (2005), the internet delivery channel may generate scale economies in excess of those available to traditional distribution channels. In this context, DeYoung et al. (2005) refer to the internet banking as a "process of innovation that functions mainly as a substitute for physical branches for delivering banking services". According to Hernando et al., (2007), the adoption of internet as a delivery channel involves a gradual reduction in overhead expenses. This effect is statistically significant after one and half year of adoption.

The cost reduction translates in to an improvement in banks profitability, which becomes significant in terms of return on assets (ROA) and after three years in terms of return on equity (ROE). The study was conducted by Eyadat et al., (2005), and evaluated the effects of ICT on

gains efficiency and banks cost in American banks between 1992 and 2000. The study showed a positive relationship between level of ICT implementation and profitability of the bank's assets and costs reduction. However, efficiency has increased for all American banks but the cost efficiency was less than the benefit. This point reflects the fact that introduction of new banking services lead to increase revenues on the other hand offers new and higher expenses.

2.4 Automated Teller Machine (ATM).

ATMs were introduced first to function as cash dispensing machines. However, due to advancements in technology, ATMs are able to provide a wide range of services, such as making deposits, funds transfer between two or accounts and bill payments. Banks tend to utilize this electronic banking device, as all others for competitive advantage. ATMs also save customers time in service delivery as alternative to queuing in bank halls, customers can invest such timesaver into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers (Rose, 1999). Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after banking hours.

2.4.1 ATM's and Financial Performance.

Automated Teller Machine (ATM), also known as automated banking machine (ABM) is a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller. On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number

and some security information such as an expiration date. Authentication is provided by the customer entering a personal identification number (PIN).

Using an ATM, customers can access their bank accounts in order to make cash withdrawals, credit card cash advances, and check their account balances as well as purchase prepaid cell phone credit. This improves convenience since customers can withdrawal money from their point of reach without necessarily visiting the bank. This increases efficiency and mitigates the costs of transactions leading to financial performance.

This is consistent with Fannie Mae Foundation report of that indicated that automated teller machine as used in banking sector serve approximately 420 million transactions annually for a total of \$3.3 billion in gross annual revenues. Ogbuji et al. (2012) observed the Automated Teller Machines (ATMs) is one of existing replacements of the cascading labor intensive transaction system effected through what is popularly referred to as paper-based payment instruments. An automatic teller machine allows a bank customer to conduct his/her banking transactions from almost every other ATM machine in the world. The ATM, therefore, performs the traditional functions of bank cashiers and other counter staff. It is electronically operated and as such response to a request by a customer is done instantly.

The combined services of both the Automated and human tellers imply more productivity for the bank during banking hours. Also, as it saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers Rose (1999). Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after

banking hours. Prepaid cell phone credit. This improves convenience since customers can withdrawal money from their point of reach without necessarily visiting the bank. This increases efficiency and mitigates the costs of transactions leading to financial performance. This is consistent with Fannie Mae Foundation report of that indicated that automated teller machine as used in banking sector serve approximately 420 million transactions annually for a total of \$3.3 billion in gross annual revenues.

2.5 Telephone Banking.

Telephone banking is a service provided by a financial institution which allows its customers to perform by telephone are known as phone banks (Cronin, 1997). Mostly telephone banking uses an automated phone answering system with phone keypad response or voice recognition capability (Jane Blake, 2000). To guarantee security, the customer must first authenticate through a numeric or verbal password or through security questions asked by a live representative located in a call centre or a branch, although this feature is not guaranteed to be offered 24/7. According to Leow (1999), tele-banking has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks' perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services. It has almost all the impact on productivity of ATMs, except that it lacks the productivity generated from cash dispensing by the ATMs. For, as a delivery outlet that provides retail banking services even after banking hours (24 hours a day) it accrues continual productivity for the bank. It offers retail banking services to customers at their offices/homes as an alternative to going to the bank.

2.6 Internet Banking.

The idea of Internet banking according to Essinger (1999) is: “to give customers access to their bank accounts via a web site and to enable them to enact certain transactions on their account, given compliance with stringent security checks”. To the Federal Reserve Board of Chicago’s Office of the Comptroller of the Currency (OCC) Internet Banking Handbook (2001), Internet Banking is described as “the provision of traditional (banking) services over the internet”. Internet banking by its nature offers more convenience and flexibility to customers coupled with a virtually absolute control over their banking. Service delivery is informational (informing customers on bank’s products, etc) and transactional (conducting retail banking services). Customer deposits leading to financial performance. .

2.6.1 Internet Banking and Financial Performance.

Internet banking (e-banking) is the use of internet and telecommunication networks to deliver a wide range of value added products and services to bank customers. Mols (1999) argue that through the use of a system that allows individuals to perform banking activities at home or from their offices or over the internet. Some online banks are traditional banks which also offer online banking, while others are online only and have no physical presence (Bradley and Stewart, 2003). Online banking through traditional banks enables customers to perform all routine transactions, such as account transfers, balance inquiries, bill payments, and stop-payment requests, and some even offer online loan applications (Kannabira and Narayan, 2005).

Internet banking refers to a bank making its services accessible to clients using the internet as its delivery channel. Using internet banking, registered customers are able to log on to the bank’s website and carry out banking dealings on their accounts. It is also referred to as online

banking (Gerrard and Cunningham, 2003). Internet Banking is beneficial to banks as well as consumers, whereby there is an improvement of efficiency in services rendered to customers. Internet banking is convenient and cost-efficient. Moreover, the development of Internet banking has transformed the distribution channel structure in bank sector (Giannakoudi, 1999). Customers can access account information at any time, day or night, and this can be done from anywhere. Internet banking has improved banking efficiency in rendering services to customers. Financial institutions cannot ignore information systems since they play an important role in their operations because customers are aware of technological advancements and demand higher quality services this leads to financial performance. In a study on the impact of mobile and internet banking on performance of financial institutions in Kenya, it was concluded that the adoption of internet banking has enhanced financial performance of the banking industry due to increased customers' deposits. This is attributable to improved efficiency, effectiveness and financial performance (Oruro and Ndungu, 2013).

2.7 Branch Networking.

Networking of branches is the computerization and inter-connecting of geographically scattered stand-alone bank branches, into one unified system in the form of a Wide Area Network (WAN) or Enterprise Network (EN); for the creating and sharing of consolidated customer information/records (Abor, 2005). It offers quicker rate of inter branch transactions as the consequence of distance and time are eliminated. Hence, there is more productivity per time period. Also, with the several networked branches serving the customer population as one system, there is simulated division of labour among bank branches with its associated positive impact on productivity among the branches. Furthermore, as it curtails customer travel distance to bank branches it offers more time for customers' productive activities.

2.8 Electronic Funds Transfer at Point of Sale.

According to Nina (2015), an Electronic Funds Transfer at the Point of Sale is an on-line system that allows customers to transfer funds instantaneously from their bank accounts to merchant accounts when making purchases (at purchase points). A POS uses a debit card to activate an Electronic Fund Transfer Process (Chorafas, 1988). Increased banking productivity results from the use of EFTPoS to service customers shopping payment requirements instead of clerical duties in handling cheques and cash withdrawals for shopping. Furthermore, the system continues after banking hours, hence continual productivity for the bank even after banking hours. It also saves customers time and energy in getting to bank branches or ATMs for cash withdrawals which can be harnessed into other productive activities. As the importance of innovation in developing countries increases, so does the need for research on the subject.

2.9 Conclusion.

Although some literatures still oppose that modern technology does not automatically result to improved bank performance but there exists more literature that agrees with the researcher that ICT leads to improved bank performance.

CHAPTER THREE.

METHODOLOGY.

3.1 Introduction.

In this chapter, an attempt is made to point out the area, context and design of the study. This is aimed at providing a method against which the findings of the study were assessed regarding their validity, reliability and conclusions made. Consequently this chapter provides a description of the research design and methodology to be used to collect process and analyze data.

3.2 Research Design.

According to Zikmund& et al. (2005) many good research projects combine both qualitative and quantitative research. Qualitative data rate from slight to highly significant effect based on qualitative judgments, such as perception and attitude. According to Kumar (2006), it is the most appropriate method to measure the characteristics for which numerical value cannot be assigned, are called attributes and used to find out the facts. Creswell (2003) describes the importance of quantitative focusing on survey as follows. "A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. From sample results, the researcher generalizes or makes claims about the population. Therefore, mixed research approach were employed for this study completion to generate rich data from multiple sources, which are both quantitative and qualitative type. The researcher interested to present both employees view and managements attitudes towards retaining employees of Enterprise. Descriptive research design portrays a profile of events. This is useful in descriptive statistics such as averages, proportions, distributions and percentages.

3.3 Study Population.

The study population included 70 people in the following groups Accounts staff who affect payments, the audit staff, top management staff, Accountants and internal control staff who provide the accountability of funds. However Morgan's table was used to come out with a sample size of 59 resonates. A formula $s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$.

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

3.4 Area of the study.

The study will basically cover the field of computerisation of accounting systems and financial performance with major emphasis on the extent of computerisation, benefits, manual accounting systems and financial performance management in Centenary.

3.5 Sampling techniques.

The convenience technique was employed, as the researcher chose respondents due to their proximity, and willingness to answer the questions. The degree of ease to reach these respondents played a vital role in the choice of sample.

Purposive sampling was also used Oso and Onen (2008) defines purposive sampling as the process by which the researcher chose to use purposive sampling because the respondents who were targeted a specific category of the study population who have the desired information in

order to make the facts gathered reliable. As such it was necessary to consciously guide sample selection towards administrators, employees and customers of Centenary.

3.6 Sample size.

The sample size was developed using Morgan's table as indicated in section 3.2 to come up with 59 respondents of which 6 were from the top management 10 from internal control departments, 20 from the accounts department and 4 were from the attendants. 14 were clients of Centenary.

3.7 Data collection methods/ tools.

Data collection methods used in the collection of data included the following.

3.7.1 Questionnaires.

The researcher used structured questionnaires to collect data. This tool was used to create focus on the area of the study and to get accurate information. These questionnaires were given to the bank staff and customers. In applying this tool, the researcher had to explain fully what the research was all about to the respondents and this helped them to understand fast and provided answers quickly.

3.7.2 Interview.

This involved physical interviewing of the respondents who included various customers and bank staff. Since it was a face to face method, the researcher was able to get information from the customers that cannot give information if other methods like mail, questionnaire had been used.

3.7.3 Document review.

This method was used to examine the Micro finance institutional reports, journals and other documents that were found relevant to computerization and banking.

3.8 Data Management.

In this study, the qualitative thematic was used. It is a systematic identification and isolation of the major themes emerging from the respondent's answers. This technique was chosen because of the nature of responses that the researcher got from respondents, which required recoding and summarizing the information to facilitate the study. An analyst was employed to guard against subjectivity.

3.8.2 Data Analysis.

The researcher will analyze the data using measures of dispersion and measures of central tendency. These are mean, standard deviation, range and percentages expressed in tabular form to facilitate interpretation about particular issues of concern.

3.9 Reliability and validity of data instruments.

A validity test was carried out prior to the administration of the research instruments. This was done in order to find out whether the questions are capable of capturing the intended data. Experts in research reviewed the questions to see whether they are capable of capturing the intended response.

3.9.1 Reliability.

Reliability being the extent to which results are consistent over time and accurately representative of the total population, it is the consistency of the research results if it is repeated different times the same results are obtained Kothari (2008). When reliability is upheld, then the research instruments should collect similar results when administered to different to different sampled populations exhibiting related characteristics. Instrument reliability refers to the internal consistency of measuring device (Mugenda, 1999). A pretest method was used to test the reliability of instruments of instruments before they are administered to assess their clarity .It

was done by administering them to a group of respondents and collecting the responses .then after two weeks, the same instruments was administered to the same respondents to compare the results of initial responses with later .

3.10 Data management and analysis.

Data analysis is the breaking down of data into consistent parts to obtain answers to research to questions .editing to ensure accuracy and reliability of the information contained in transcripts will be done to raise accuracy information and ensuring that all desired information is conceptualized (Korobo and Tromp 2006packages) .The cleaned data underwent cleaning to ensure only adequately and appropriately questionnaires are to be considered, this was done to get rid of non-responses and extreme outliers. The cleaned data was then coded and analyzed using both the descriptive and inferential statistics with the aid of statistical for social sciences.

3.11 Ethical considerations.

The researcher had to pick an introduction letter from Uganda Martyrs University to present to the manager of Centenary and other respondents. He also had to assure the respondents that their identities would be concealed. Some respondents declined from answering the questions, and their rights to refuse to answer were respected.

The researcher asked permission from Centenary to carry out his research on the institution. The organization's officials were assured by the researcher that the purpose of research was purely academic.

3.12 Limitations.

- Lack of records for references. The researcher did not get enough literature from the bank apart from newsletters. However the researcher used the internet and books from the libraries to discover relevant information about computer knowledge.

- Biased responses: in some cases there were no responses and others were biased to questionnaires and some respondents claimed not to be knowledgeable about some questions and some were reluctant to offer answers. The researcher tried to convince the respondents with an attractive introduction on questioners making it easy for the respondents to answer.

3.13 Conclusion.

Depending on the sample size of the respondents, available data collection techniques, data analysis techniques, data management techniques and solutions put across to overcome the limitations that were encountered by the researcher, the researcher expected to come up with data with less errors, to be used to make conclusions.

CHAPTER FOUR

PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS.

4.1 Introduction.

This chapter presents the findings in reference to the research questions in chapter one. The study examines the contribution of modern technology on the financial performance of the bank. To be able to establish the relationship between ICT systems and financial performance, a number of factors were used such as business capacity, service delivery, accuracy and determination of errors, efficiency, timely, reports, employees, client, fraud profitability and costs. The data collected is presented qualitatively with the aid of tables, percentages and averages.

4.2 Response Rate.

Among the 64 questionnaires distributed, 50 were duly filled and returned for analysis. This represented a response rate of 78%. According to Mugenda and Mugenda (2003), a response rate of 50% or more is adequate. Babbie (2004) also asserted that return rates of 50% are acceptable to analyze and publish, 60% is good and 70% is very good. Based on these assertions from renowned research academicians, the responses rate for this study of 78% was considered to be adequate in forming conclusions and generalization of the study population. The response rate matrix is presented on Table 4.1 below.

Table 4.1: Response Rate.

Response	Frequency	Percent
Returned	50	84.7%
Unreturned	9	15.3%
Total	59	100%

Source: Research Findings

4.3 Results/Findings

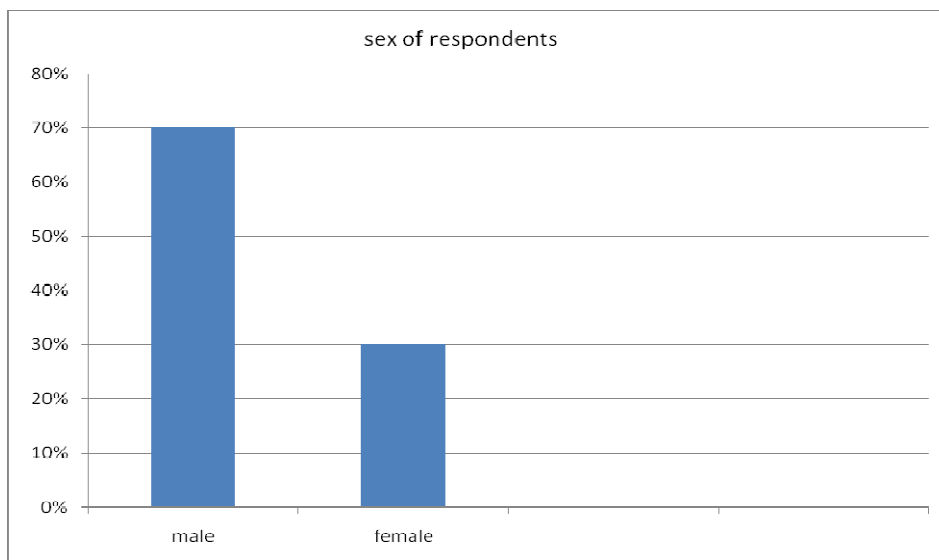
This section is arranged based on the objective of the study.

4.4 Demographic characteristics.

4.4.1 Gender of respondents.

Questions were raised to determine the sex of the staff who were involved in the different bank accounting departments, internal control departments, top management and the attendants.

Figure 1: sex of respondents

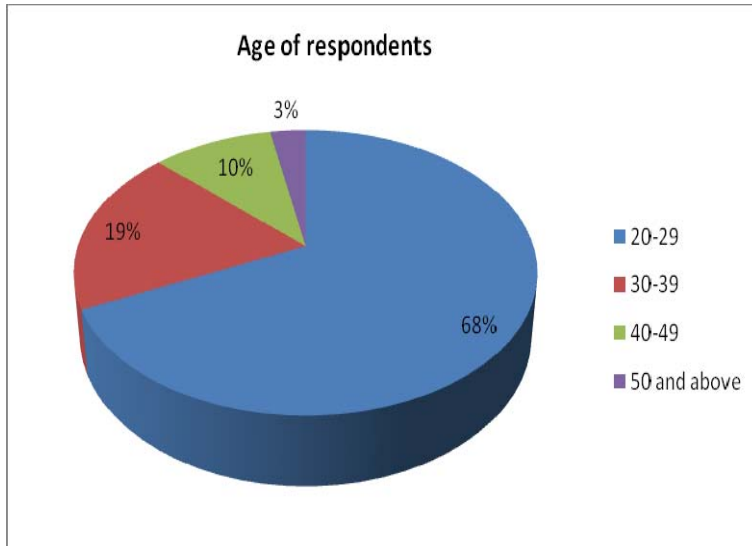


Source: primary data

Male employees in Centenary bank contribute highly to the use of ICT systems. The reason for this is because they understood the meaning of ICT, what systems were normally carried out in monitoring accounting systems according to the questionnaires that were given to them.

4.4.2 Age of respondents.

Figure 2: Age of respondents.

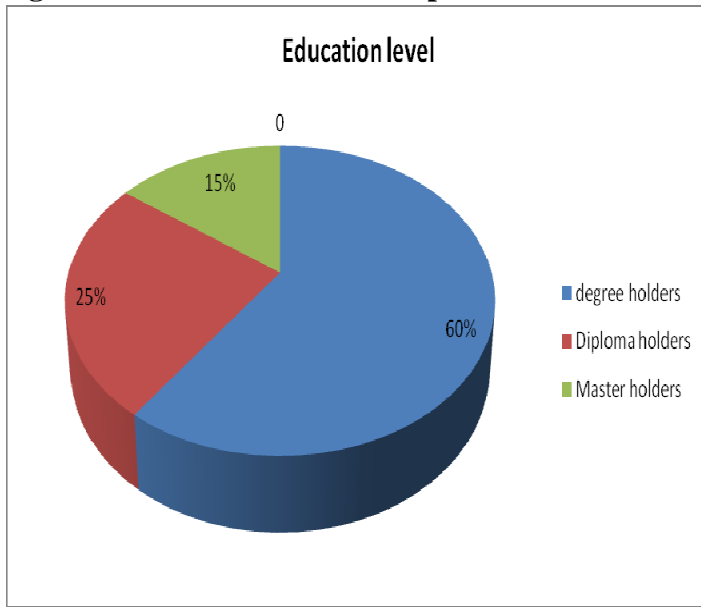


Source: primary data

Majority of the employees who participated in answering the questionnaires about the impact of modern technology on financial performance of the bank were between 20-29 years. This corresponded with the findings of Pack (2015) who emphasizes that the young generation of employees is adjustable to the use of new technological innovations in the organizations.

Education level of respondents.

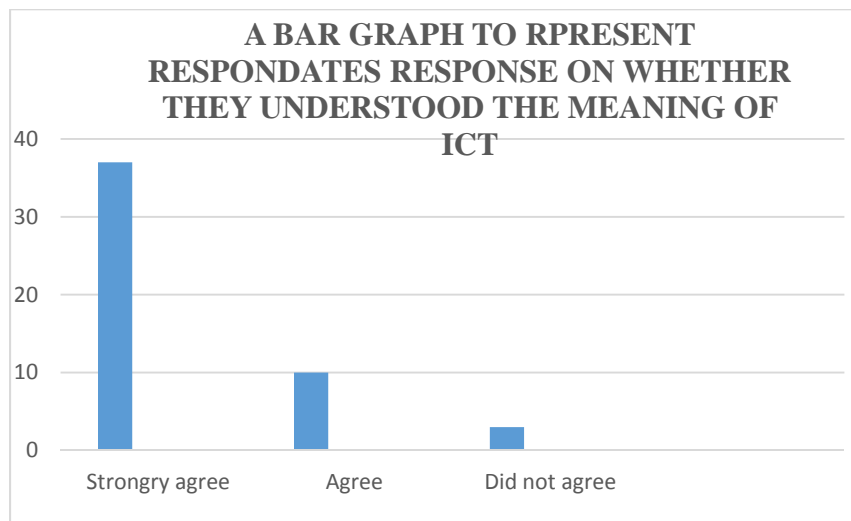
Figure 3: Education level of respondents



Source: primary source

The researcher also issued questionnaires to determine the education level of respondents and this was to find out if the education level affects the performance of the bank in relation to ICT usage. Thus the researcher found out that most of the degree holders contribute positively to the use of ICT systems mainly because fresh graduates want to adapt highly to the changing environment. The findings further support those of Pack (2015), who emphasizes that education level of employees in organisation is a major determinant on the adoptability of new technological innovations in the organisation.

4.4.3 Respondents were asked about whether they understood the meaning of ICT systems and these were their responses.

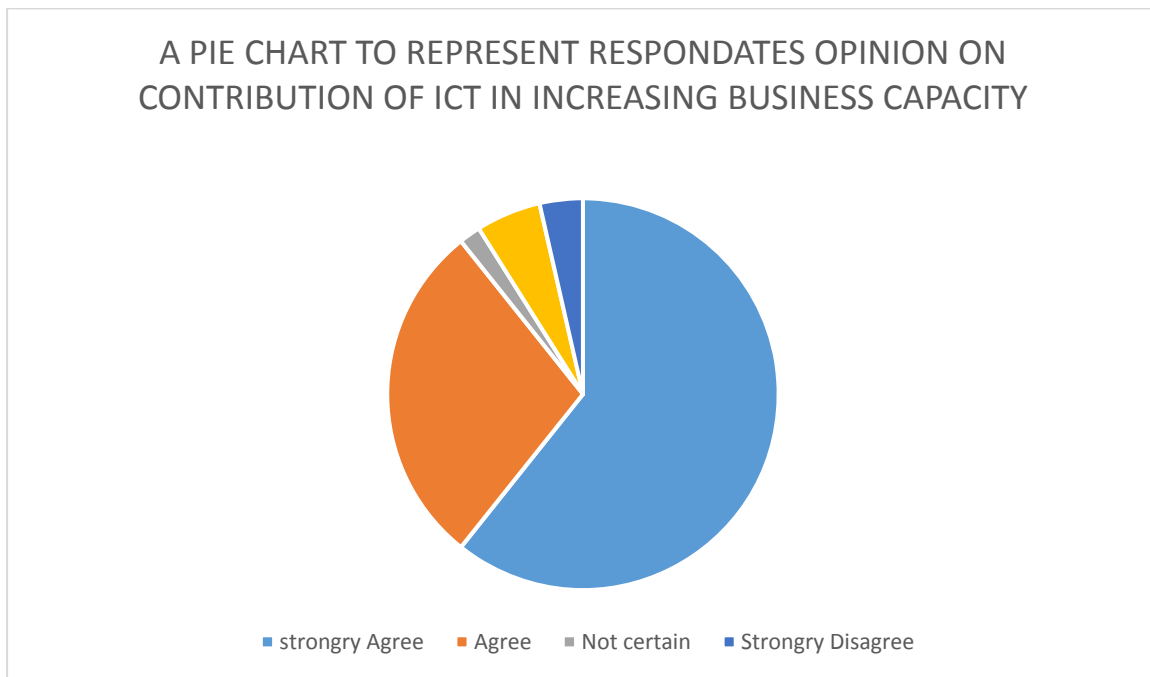


It was found out that many employees who understood the meaning of ICT systems were familiar with the banking technology used in their bank and these included computerized accounting systems, ATM, Closed Circuit Cameras, electronic calendars, Mobile phone banking among others, the respondents agreed and appreciated the presence and of modern technology in form of internet banking, mobile phone banking, ATMs among others that these were all used in Centenary bank.

In order to come up with conclusions on the contribution of modern technology on the financial performance of commercial banks, questionnaires that were designed to answer the questions depending on the objectives of the study, the objective that was tested was: To assess the effect from the progress from the Traditional banking systems to modern ICT systems. And below were the findings in tabulated format

4.5.1 Business capacity increased due to ICT.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
45%	43%	2%	6%	4%



In the interview with a respondent who never wanted to disclose his name, *“he explained that the ATM at Centenary Bank can handle over 600 hundred transactions on a daily basis there for these clients if they were added to those that are serviced in the bank, employees would leave the workplace very tired and very late past midnight.”* According to that information gathered from Centenary in relation to the contribution of modern technology to the financial performance of banks clearly indicates that technology improved business capacity.

Before the implementation of Automatic Teller Machines (ATMs) customers had to visit their own branches to withdraw cash. Anytime banking was not available. Unavailability of anywhere banking features was due to the unavailability of ATM banking, Internet banking, SMS and phone banking. Branches were opened only during the specified time durations. Banking hours were restricted. Branch staff could not leave the branch until they balance their day's accounting. In some instances, balancing was extended to late nights. Daily balancing, month-end balancing and year-end balancing were tedious tasks to operational staff of the branch.

Branches had to offer more restricted banking hours during such periods. If a customer wanted to withdraw money from his savings account, he had to fill a savings debit form, present it to the cashier, obtain a token and wait till the number is called. When the token number is called, he had to place the signature again on the same debit voucher confirming cash receipt from the cashier. Accordingly he had to visit the cashier at least twice to receive his own money.

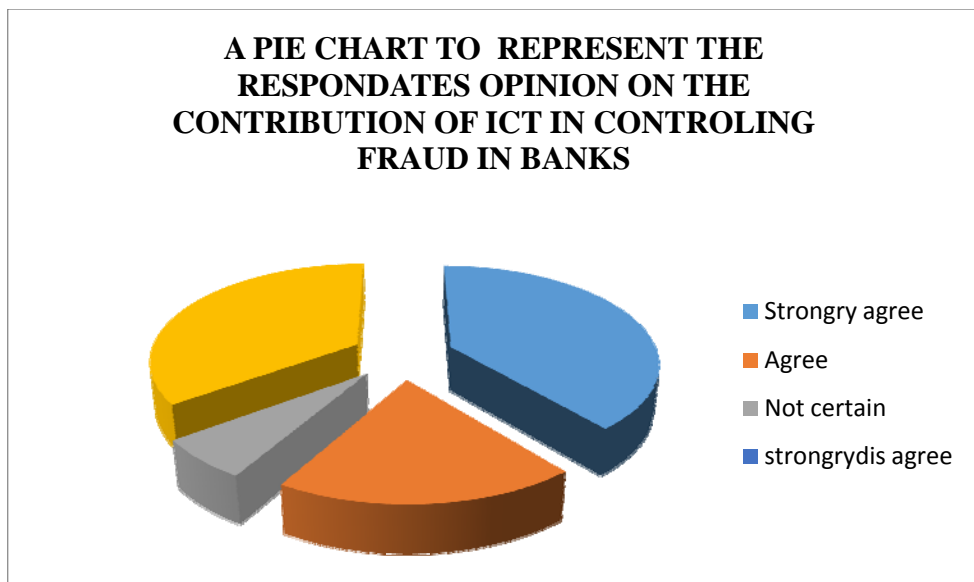
There were no single point transactions. Branch staff had to check signatures, mandates and ledger sheets and they need to make necessary entries manually before disbursing or after accepting cash from customers. There were long waiting queues at branches on special days when the branch staff could not handle the workload. Fund transfer between two accounts belonging to separate branches or banks was a complicated task and it took several days to effect the transaction. Reconciliation of main accounts took many days and they were usually two to three days behind. Extraction of past records was a task of searching through huge paper files and documents. But today, a customer can receive cash from the branch teller at the first appearance. Tellers are given authority to pay up to a higher level without seeking officer's approval. Tellers can review all the information on-line using the teller terminals before taking decisions. Debit voucher forms are validated on- line using teller printers. Customer advices

and statements were type written. Even the balance inquiry was a complex task. Job expertise was a mandatory requirement to work at the branch. Customers were given lengthy account numbers as the branch codes and ledger numbers were incorporated in account numbers for easy identification. There was no easy way to extract instant ad-hoc MIS reports for decision-making.

There were no cashless shopping, marketing or holidaying. People had to carry cash with them. Credit cards and debit cards were not available. The findings support those of (Kannabira and Narayan, 2005). Who argued that adoptions of advanced ICT systems can lead the business to earn more customers due to improved customer care services.

4.5.2 Fraud has reduced due to transparency brought by ICT systems.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
30%	15%	5%	27%	23%



Fraud in ICT can be defined as the electronic misuse of assets or deliberate falsification of financial information by one or more persons among management, workers or third parties. It may take the form of fabrication of transactions and recording of transactions without substance. Computer fraud in the Banking sector over the past decade has taken the following forms: Unauthorized system access through the use of other staff's passwords and fraudulent authorizations, Falsification of computer files and alteration of data in order to draw funds from customer's bank accounts.

This is done through the Exploitation of Managements inadequate knowledge of IT by systems Administrators, Inadequate or lack of systems audits and upgrades to strengthen internal controls and laxity in prosecution due to inadequate laws on computer fraud.

The implication of computer frauds for banking sector in particular are that it may have an adverse effect impact on the profitability, reserves and capitals of Commercial banks through provisions for unrecoverable committed frauds. In an interview with Samuel, he explained that Fraud was both reduced and accelerated by the introduction of ICT systems due to the fact that the employees who engage in swindling funds in organizations also advanced in the way they plan their strategies of embezzling funds and currently Fraud done by done by the use of Internet is very difficult to trace the people involved and very many victims have stayed un helped fallowing cases were many clients have lost millions of money via the internet banking, he further explained that in 2010. Centenary reported over 1000 cases of clients losing their cash via ATMs.

However it was letter discovered by the of Closed Circuit Camera recordings that money on their accounts was withdrawn by people the account owners knew very well and these were either their marriage partners or relatives who shared Pin numbers with the account owners he therefore

concluded that ICT cannot permanently put away fraud in the banking sector. Jointly according to the data collected by use of questionnaires proved that a good percentage of the respondents totally do not agree that ICT has in any way controlled Fraud and increased transparency in the banking sector.

This supported the findings of Harry (2015) who argued that computers without the integrity of employees cannot total put away fraud in organizations.

In order to come up with conclusions on, among questions in the questionnaires included those that targeted objective (2) of the study: To assess the cost benefits associated with acquiring modern banking technology in commercial banks, and below are results from respondents.

4.6 To assess the cost benefits associated with acquiring modern banking technology in commercial banks.

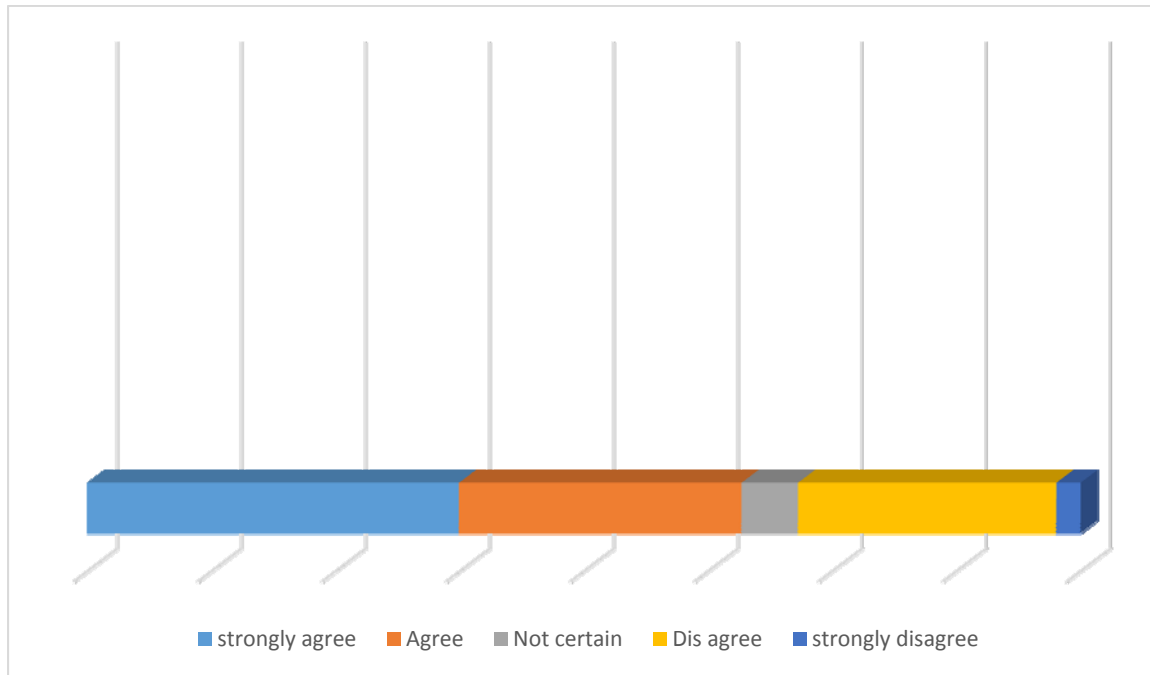
4.6.1 Relationship between ICT systems and financial performance

The findings obtained are presented below:

Table 8: Relationship between usage of modern ICT systems and financial performance.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
30%	35%	7%	32%	3%

A BAR GRAPH TO REPRESENT RESPONDATES OPINION RELATIONSHIP BETWEEN USAGE OF MODERN ICT SYSTEMS AND FINANCIAL PERFORMANCE.

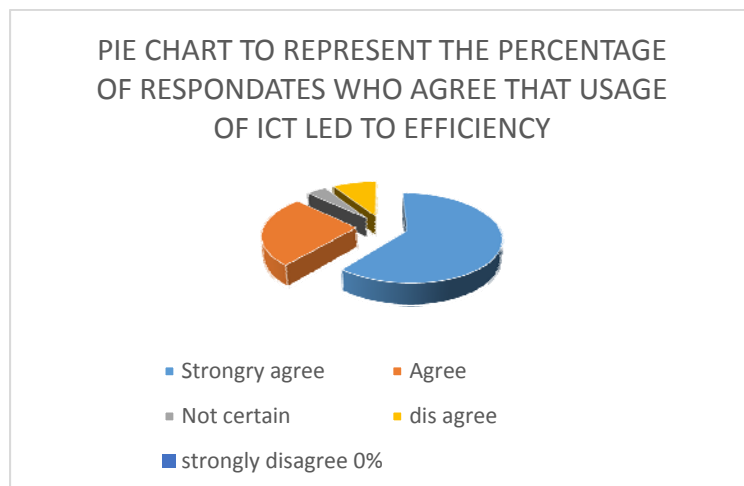


There are many factors governing the performance of decision-making units that are to be considered in benchmarking. Some of them can be listed as customer attitude towards ICT usage, scope of ICT applications used, level of ICT service quality, ICT security level, complexity of ICT, unreliability of ICT, job satisfaction of the staff, profitability, considering ICT as a strategic tool, level of customer relationship management, customer satisfaction, cost reduction, operational efficiency and operating efficiency. A study done on comparison of service quality states that the ICT usage on branch performance can be measured using the use of the Internet as a marketing intelligence tool, perceived usefulness and perceived ease of use, system quality

(information quality), attitudes towards web retailing, compatibility, personality, working experience, educational level, Internet access availability, training received and frequency of use and trust. In a research done by Davis in 1989 using the Technology Acceptance Model (TAM) as a basis, indicated that application of ICT was the way to improved performance which is in accordance with the data from questionnaire that ICT is an ideal contributor of better financial performance.

The findings agree with those in Yasuharu (2003) who argued that implementation of information technology and communication networking has brought revolution in the functioning of the banks and the financial institutions. It is argued that dramatic structural changes are in store for financial services industry as a result of the Internet revolution; others see a continuation of trends already under way. The findings agree with those in a study conducted by, DeYoung, Lang, and Nolle (2007) who reported that Internet adoption improved U.S. community bank profitability. Primarily through deposit-related charges. In a related study, Hernando and Nieto (2007) find that, over time, online banking was associated with lower costs and higher profitability for a sample of Spanish banks.

4.6.2 Efficiency greatly improved.



Process Efficiency Process efficiency can be evaluated on the basis of time taken to complete or execute a particular task to achieve a desired standard or quality. It can also be evaluated on the basis of savings on waste of inputs in any given input-output process. In the study, a few metrics were used to measure the impact of technology on process efficiency. This included time taken to open an account and time taken to prepare bankers cheque. (a) Distribution by time taken to open a savings account the process of opening a savings account is important to any bank. It is the process through which the relationship between a bank and a customer is established. The process includes keying in of customer details, scanning of documents and taking of customer photograph and uploading them into the system. Most banks have implemented various electronic systems to facilitate this activity to ensure high standards of control and speedy completion of the process.

In the study, respondents were asked to rate how long the process of account opening was taking to complete in their organization. The results are as indicated in that, 58% of the respondents strongly agreed that the computerized systems of opening were very quick and efficient in the survey it took between 5 and 30 minutes to complete the process, 19% ,agreed that the process was quick while the rest were not in agreement with the motion.

The study also established that ICT in banking affects the efficiency of commercial banks. The study also found strong positive opinion between ICT usage in commercial banks and efficiency in banking Operations, Study revealed Efficiency technology holds the potential to fundamentally change banks and the banking industry. ICT Systems provide alternatives for faster delivery of banking services to a wider range of customers. ICT banking involves to the use of internet as a remote delivery channel for banking services. To cope with the pressure of growing competition, commercial banks have adopted several initiatives and updating

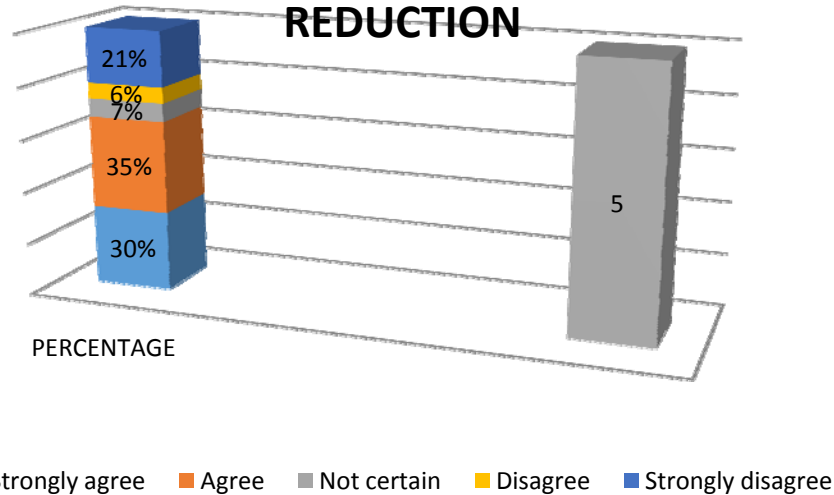
technology is one of them. The competition has been especially tough for the public sector banks, as the newly established private sector and foreign banks are leader in the adoption of updated banking technology. The study established that the use of modern banking technology for example e-banking increased accuracy and efficiency, reliability and speed which give them competitive advantage over the rest of the banks.

It is recommended that banks adopt recent banking technology to increase their competitiveness and service quality. According to (Siam 2006) the evolution of banking technology has fundamentally transformed the traditional way of operating their activities and also changed the customer's way of performing banking activities the Electronic banking offers the convenience of conducting most of the banking transactions at a time that suits the customer.

4.6.3 Cost greatly reduced.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
30%	35%	7%	6%	21%

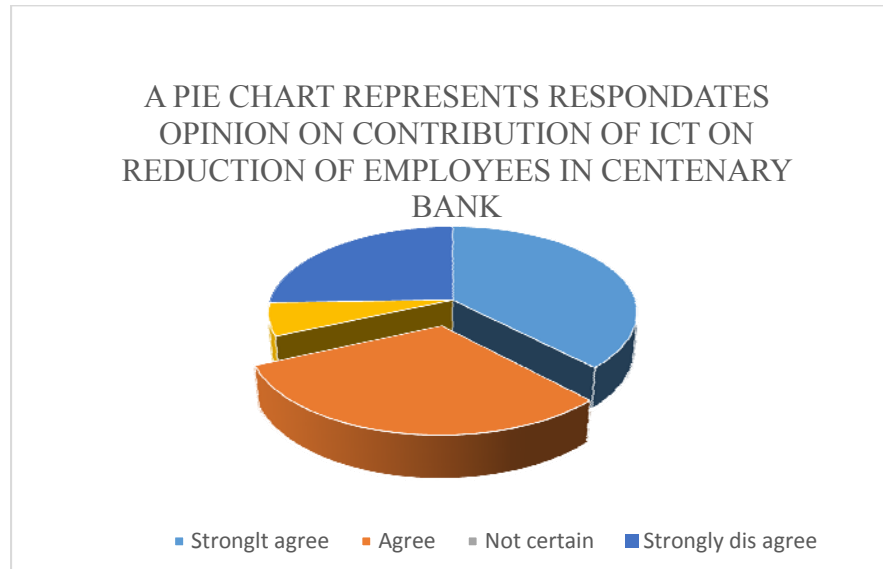
A BAR GRAPH TO REPRESENT RESPONDATES OPINION ON CONTRIBUTION OF ICT ON COST REDUCTION



In this section we had to analyze the cost impact to the technology systems to the performance of commercial banks according to the results from the field. They indicate that 94% of the respondents agreed that modern technology reduced the operating costs of the commercial banks which right however through observation and following the information the researcher got from the manager of Centenary loans section he admitted that buying, installing, maintaining and operating the ICT soft ware's and hardware is quite expensive.

4.6.4 Number of employees reduced.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
37%	30%	0%	6%	25%



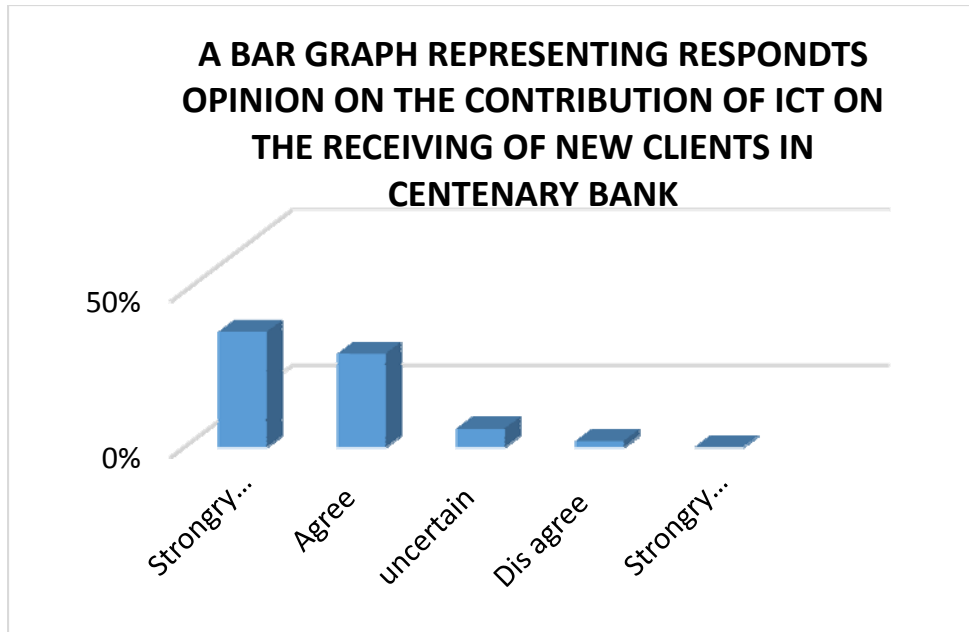
Ogbuji et al. (2012) observed the Automated Teller Machines (ATMs) is one of existing replacements of the cascading labor intensive transaction system effected through what is popularly referred to as paper-based payment instruments. An automatic teller machine allows a bank customer to conduct his/her banking transactions from almost every other ATM machine in the world.

The ATM, therefore, performs the traditional functions of bank cashiers and other counter staff. It is electronically operated and as such response to a request by a customer is done instantly. The services of the Automated and human tellers imply less employees and increased productivity for the bank during banking and non-banking hours. Also, as it saves customers

time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers Rose (1999). Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after banking hours. That corresponded with the data collected from the Field which Indicates that 92% of the respondents agree that introduction of updated modern technology reduced the number of employees in the banking sector. A reduction in employees meant the costs for example allowances, salaries, labour transport costs had all been reduced in the banking environment.

4.6.5 New client have been received due to good financial performance.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
38%	60%	0%	2%	0%

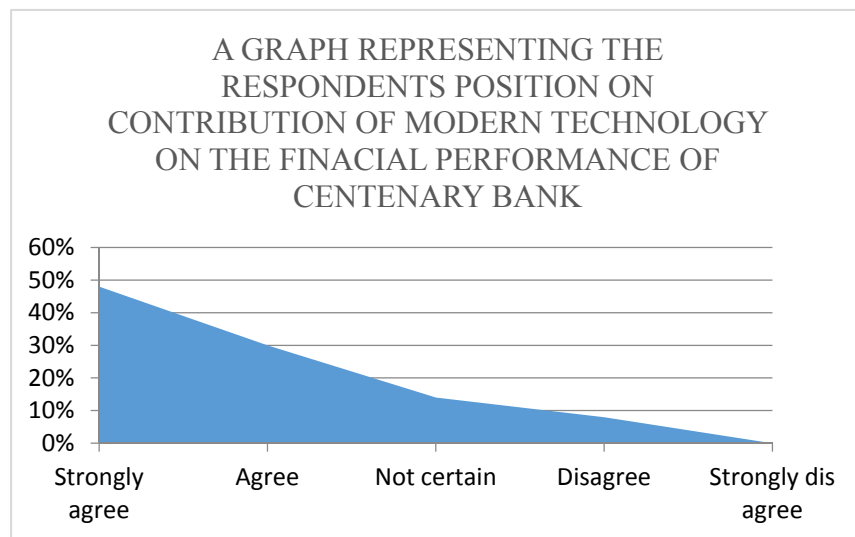


In the interview with one of the clients of Centenary Bank Nassunna Florence she admitted that *“one of the reasons I joined Centenary Bank was that Centenary was one of the first banks in Masaka to adopt malt – branch banking systems and use of ATMs which made withdrawing money from any point of the country easy.”*

The combined services of both the Automated and human tellers imply more productivity for the bank during banking hours. Also, as it saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers Rose (1999)).

3.5.6 The profitability level of Centenary bank has greatly improved.

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
48%	30%	14%	8%	0%



To be able to establish the relationship between utilization of ICT systems and financial performance, a number of factors were used such as business capacity, service delivery, accuracy and determination of errors, efficiency, reports, employees, client, fraud profitability and costs.

The results in tables above show that ICT has a positive as well as negative relationship to performance. Positively, computerized accounting system leads to considerable reduction in errors, hence attaining accuracy, increased business capacity, improved efficiency in terms of service delivery and enable timely preparation of daily reports required. In the interview with one of the employees at Centenary, she explained that currently banking cannot go on without ICT because it is integrated in every department of the bank beginning from the security systems a thumb print has to be used to authorize access of tellers to their stations of work, retrieving

bank accounts information, self-service banking through utilization of mobile phone banking, ATMs and credit cards.

She further explained that if ICT was entirely removed from their operations it would require the management to double its employees and profits could reduce by 60 percent. Similarly, Rose (1999). Explains that ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers Rose (1999). Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after 11 banking hour's positive relationship with financial performance by creating an audit trail which helps in tracing every transaction easily and faster.

In contrast however, the findings also show that computerization also affect financial performance negatively. The results strongly agree that installing and maintaining the ICT system is very costly. The costs are specifically attributed to annual licensing fees support services and system upgrade. For instance office management system costs \$ 100 annually for licensing. In terms of personnel the number of staff instead increased let alone the cost of training them.

Therefore it is conclusively analyzed that there exists to a greater extent a positive relationship between ICT and financial performance due to timely information produced, increased business capacity and improved efficiency in terms of service delivery despite the high costs involved in maintenance.

It is worth noting that, to some extent there is still the use of manual systems alongside the ICT systems. In conclusion, this implies that efficient and effective computerized accounting systems in Centenary bank has led to increased financial performance hence an increase in the banking sector.

In conclusion, this implies that efficient and effective computerized accounting systems in Centenary bank has led to increased financial performance hence an increase in the banking sector.

4.6 To recognize problems associated with acquiring modern technology in commercial banks.

In the questionnaires issued to the respondents included a questions to determine how often the

4.6.1 ICT systems were prone to failure the respondent’s opinions were as follows below.

(Source field survey)

Strongly agree	Agree	Not certain	Disagree	Strongly disagree
10%	60%	13%	8%	8%

Respondents who were interviewed admitted that the ICT systems used in the bank were associated with the fallowing problems that may have been the barriers to many financial institutions from fully adopting the modern ICT systems in their operations and among the challenges included the fallowing.

4.6.2 Hardware Malfunction.

Hardware malfunction can occur when gadgets are not acquired from right suppliers and lack of maintenance; this was dealt with in Centenary through employing experienced ICT officers who time to time engage in servicing the hardware components.

4.6.3 Virus Attack.

One of the reasons for loss of data is computer virus; the storage medium such as hard disk, diskette, computer disk, pen drive can be attached by the computer virus. It is believe that virus affect more than 5million computers around the world. Virus may change one of your programs

and erased all the information on the hard disk. Frequent browsing of the internet also increases the incidence of virus attack. The ICT officers regularly update their anti-viruses and have created very strong Fire walls to protect their customers' data.

4.6.4 High Cost.

Computerized Accounting System involves purchase of computers and accessories accounting software yearly renewal license which are expensive plus maintenance cost of computer and computer-related devices. Centenary developed every effective procurement department to enable the reduction of the prices of acquiring the modern ICT systems.

4.6.5 Lack of Information Technology Expertise.

An interview conducted during the study at Centenary Bank revealed that the majority of the employees of the banks were computer literate and through observation the researcher was able to conclude that majority of the employees are computer literate and were capable of assimilating any knowledge associated with new technologies and devices, according to the interview with the respondents the difficulty in using the technologies mainly affected majority of the Centenary's customers who still have problems with the using of the modern banking Technologies for example many customers get in mobile phone banking ,ATM banking, among others.

4.6.6 Instability in Power System.

The study revealed Centenary was negatively affected by power failures and bank had to purchase standby generators to curb this power challenge currently facing the country.

4.7 Researchers opinion.

ICT systems have for long been integrated in the banking sector through the following branch networking, mobile phone banking, ATM banking electronic purchasing, electronic calendars,

closed circuit cameras and these have played a major role to make banking quick easy and very interesting basing on the facts presented in the above finding the researcher accepts with the motion that modern technology contributes to better financial performance through satisfying the objectives which include reduction of costs by the modern technology abasing on the benefits that have also been presented in the above chapters. Therefore the researcher is in agreement with Cracknell (2014) who admitted that application of modern ICT systems leads to improved financial performance.

4.8Conclusion.

According to the data collected from the field, it is evident that modern technology positively affects financial performance of commercial banks in the fallowing area efficiency and productivity, increase business capacity and profitability of commercial banks however the facts are not in agreement with modern ICT systems fully putting away the fraud tendencies in the banking sector as stated by (Nelson 2014)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.

5.1 Introduction.

This chapter presents the summary of major findings arising from the data analysis, makes appropriate recommendations for the effective implementation and management of ICT systems in banking sector. The study is concluded at the last section of this chapter.

5.2 Summary of Findings.

From the above major findings of the study Management of Centenary bank understands that providing quality service through ICT is a key strategic component in firm profitability. The importance of service delivery and its impact on improving satisfaction and retention of customers, improving sales and market share, and improving corporate image cannot be overlooked. The purpose of the study was to examine the contribution of modern technology to financial performance of commercial banks.

The study revealed that investing in ICT has appreciable positive effects on customer service and profitability of the bank. This affects the growth of Centenary positively because customers can now collect money from any branch of the bank. Also, customers do not need to move about with large sums of money, and customers are being attended to within a short period of time.

ICT is now thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to carry out transactions any time. This revolution in the market place has set in motion a revolution in the banking sector for the

provision of a payment system that is compatible with the demands of the electronic marketplace. The advances in ICT have certainly introduced new delivery channels in Centenary

With respect to the type of ICT based product used by customers, Branch Network appears to be the most widely accepted and highly used electronic delivery tool. This is followed by ATM and SMS alert which seems to be the least used electronic delivery channel by the bank's customers. It was found that most Centenary customers still visit their bank branches regularly and find interaction with human tellers very important.

5.3 Conclusions.

The results suggest that improving the service quality through ICT experience will improve the overall customer perception of the quality of service provided by the bank and finally lead to profitability of the bank. What emerges from the present study is that the customers of the bank appear generally satisfied with the technological aspects of Centenary. This implies Centenary should concentrate their efforts on those areas customers feel are most important (i.e. Transparency, accuracy, timeliness, and convenience). Cracknell (2014) notes that firms are adopting technology to cope with the dynamics of the external environment.

These are areas in which technology (capital expense) has been well utilized to replace more costly labour resources to accomplish essentially those services that the customer is familiar to doing for himself. In other words, most customers are now familiar with the basic service provided by ATMs and bank websites, and thus expect that these services will be user-friendly and in the case of ATMs, conveniently located and in secure positions. While some banks have

already started implementing the sort of “supplementing” electronic bank delivery services that customers have come to expect, Centenary has taken their electronic service delivery to the next level in order to stay one step ahead of the competition.

Centenary bank management should determine the parameters of their customers’ service “zone of tolerance”. In other words, managers need to know the approximate threshold between satisfaction and dissatisfaction with the core service they are receiving from ICT investments. Understanding of the service level zone of tolerance would then allow banks to allocate their service fund resources accordingly. While access, location, security and ease of use of ATM machines appears to be the most pressing issue for the majority of the bank customers, it will become increasingly important to determine the level of importance that future bank customers place on telephone and online banking services. Finally, the trend toward greater Internet usage, especially among younger users, suggests that Barclays may need to re-evaluate their customer base on a more frequent and routine basis.

5.4 Recommendation.

The study suggests that Centenary provision of banking service through ICT need to concentrate its efforts in the following areas:

1. Centenary should find ways of making their electronic services more accessible. Installing more ATMs outlets is an issue, which customers consider very important and which is not being addressed to the customers' satisfaction. Centenary should also provide customers with a toll free number. This number could handle customer complaints and general feedback about the electronic banking services. This would not only provide a service to consumers that are

free, but also provide the banks with valuable trends for future development on electronic services.

2. Centenary should develop their electronic facilities to cater for the elderly and disabled. ATMs that read out the keys pressed would aid the sight impaired as well as lowering the height of the ATM screens making the service available to people in wheel chairs.
3. Customer feedback is an established concept of strategic planning. It is therefore recommended that the performance of Centenary should be monitored on a regular basis. This is important as isolated monitoring could give "snapshots" only and not accurately show trends.

5.5 Direction for further research.

- Future research should aim to improve impact of ICT, by examining whether ICT usage or adoption varies in importance across technology types, including ATMs, telephone/call centres and internet banking. The study neglects the likely impact of respondents' characteristics on perceptions of ICT adoption. Future research should seek informed answers to such characteristic-related questions.
- Future researchers should assess the extent of networking that exists among different commercial banks. A gap still exists at the extent which different banks are networked and level of its importance to the financial banks.
- Future research should investigate governmental support in the area of subsidizing costs. Research should be conducted on whether government can get some financial

5.6 Conclusion.

The study discovered that because of the many benefits that are associated with ICT adoption which include profitability, cost efficiency accuracy, high operating speed increase in the number of customers, it is suggested that all significant financial institution should endeavor to adjust to modern technology because its advantages outweigh its shortcomings.

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APENDIX

UGANDA MARTYRS UNIVERSITY RESEARCH

TOPIC: CONTRIBUTION OF MODERN TECHNOLOGY ON THE PERFORMANCE OF COMMERCIAL BANKS, THE CASE OF CENTENARY BANK.

The purpose of this questionnaire is entirely academic and the information you will give will be absolutely confidential. The data obtained will only be necessary in acquiring the information pertinent to the above topic of research. Please kindly spare some few minutes and answer the following questions. Thank you for your cooperation.

Tick in the appropriate answer or fill in the spaces provided below

SECTION A: General information

1. Gender

Male []

Female []

2. Age

20-30 []

31-40 []

41-50 []

Above50 []

1. Marital status

Married []

Single []

2. Education level Post graduate []

First degree []

Diploma []

“O” level “A” level []

Others specify.....

3. From the following categories of respondents, tick what is appropriate.

Respondents	Top management	Accounting staff	Audit staff	Attendant staff	Clients
Tick					

SECTION B

I. This section intends to find out the extent of ICT systems in Centenary bank.

6. Do you understand what ICT is?

a) Yes []

b) No []

7. Is it being used in your Bank?

a) Yes []

b) No []

8. If yes, what field is ICT mostly used?

Accounting Department []

Marketing []

Transaction Management []

Others []

Others specify.....

9 Do you have any system failures in your bank?

No [] yes [] Not sure []

10 If yes how often are the system failures?

Regularly [] Rarely []

11 Do system failures cause any inconvenience to you or customers?

Regularly [] Rarely []

12 Who is responsible for reviewing the performance of ICT systems?

General Manager []

Finance manager []

Accountant []

Others specify []

ii. For each of the following tick where applicable the extent to which you agree with the statement in regard to the financial performance levels.

14 Are all the transactions done in the bank entered in computer?

Strongly agree []

Agree []

Disagree []

Strongly disagree []

Not sure []

For each of the following tick where applicable the extent to which you agree with the statement in regard to the financial performance levels.

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Service delivery consistently improved					
Errors consistently increased					
Business capacity increased					
Efficiency greatly improved					
Reports prepared on time					
Accuracy is attainable					
Costs greatly reduced					
Number of employees reduced					
New clients received due to good performance					
Fraud is reduced					
Profitability has increased					

Section c

Specifically for the clients of Centenary

1 How long have you been banking with Centenary Bank?

0-5 year [] 6-10 years [] 10 and above []

2 Have you made any transaction in centenary bank?

No [] Yes []

3 If yes, was the transaction recorded using computer, ATM or using recorded using hand and book?

Computer or ATM [] Hand and Book [] both []

4 Which method do you find more convenient and time saving?

Teller and computer [] ATM [] Teller recording in the hand book [] Non []

MOGANS TABLE 1

Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
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	162	1800	317
45	40	290	165	1900	320
50	44	300	169	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	196	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	1000000	384

Note.—*N* is population size.

S is sample size.

LOCATION OF CENTENARY BANK MASAKA BRANCH

