

**AN APPROACH FOR SUCCESSFUL INFORMATION
SYSTEM IMPLEMENTATION: A CASE OF CORE
BANKING SYSTEMS IN KENYA**

BY

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**UNITED STATES INTERNATIONAL UNIVERSITY –
AFRICA**

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**A Project Report Submitted to the School of Science and
Technology in Partial Fulfilment of the Requirement for the
Degree of Master of Science in Information Systems and
Technology**

UNITED STATES INTERNATIONAL UNIVERSITY – AFRICA

SPRING 2018

STUDENT'S DECLARATION

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

Signed: _____ **Date:** _____

Garfield Kipruto Settim (ID No 642334)

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

Signed: _____ **Date:** _____

Dr Leah Mutanu

Signed: _____ **Date:** _____

Dean, School of Science and Technology

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ABSTRACT

The objective of this study was to establish the factors influencing successful implementation of core banking system. The specific objectives for the study were:

To find out the processes involved in implementation of a Core Banking Systems (CBS), to identify the factors influencing the successful implementation of CBS and to design a framework that will be used for implementation of CBS. The study adopted descriptive survey and targeted 374 members of various banks as the sample frame. Quantitative research methods and techniques were applied by the researcher in undertaking the research. The research instrument for the study was questionnaires being the primary data collection tool. The data collected was analysed using SPSS (Vs21). The data was manipulated through descriptive statistics such as percentages, range, mean scores and regression analysis. The presentation of data was through tables and graphs. From the findings the study concludes that all the independent variables; Initial Systems Requirements and Analysis, Project Management and Vendor, Software and Hardware selection had a positive and statistically significant correlation with the dependent variable that is Successful Implementation of the Core Banking System. The study also established that the factors critical in the successful development of a new core banking included; System requirement planning process of the CBS before implementation; End-users of the system involved in determining CBS requirements; Budget provision for the system change-over and related activities including Training and Hardware being provided; Studying old system and documenting its features for further analysis; Having an all rounded model of the system being tested; and All users requirements being taken care of in the design and modelling of the proposed CBS system. The study also revealed that team building, and skills development activities were necessary for successful CBS development. Top management support as a determinant of CBS change-over phase; Top management consistently providing all the tools and resources required to successfully deliver all the approved IT projects; Conducting efficient User Acceptance Tests before the Go-Live date and User Training was key for efficient and smooth system change-over. Vendor, Software and Hardware selection processes and final adoption was key to successful development of core banking as well as having a hardware vendor with good support. The study undertook and analyzed the responses of a total of 315 bank employees from 22 banks in various key departments. The reports were presented in tables for ease of

understanding and critical information have been analyzed which can be utilized for development of a successful Core banking systems in Kenya. These have been captured by banks response to the questionnaire issued. These included having Top management of banks spearheading the development of CBS system, having clear system functional requirements in place before the start on the CBS implementation. It was noted that having a well experience software vendor was key to successful implementation. It was also noted that having good communications is critical to the entire process. In general, the researcher found that having experienced project manager to carry out successful project management is key to successful Implementation. There is need to relook on upcoming technologies for deploying CBS through Cloud computing. Cloud computing, the future of CBS being implemented through this on demand computing, banks need to explore measures which will enabled them to deploy their CBS through cloud environment. As Banks move through dynamic IT infrastructure changes in the future, banks are under pressure to evolve technologically while preparing to emerge in a competitive advantage.

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DEDICATION

This research project report is dedicated to my parents the late Francis K Settim who passed on in the mid of this study and mother Hellen Kimoi Settim. Special dedication goes to my wife, Violet and children baby Kimoi, Chemtai and Kipyagan for constant encouragement during the writing of the same.

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Chapter 1: Introduction

1.1 Background of the Problem

There is constant need for automation of new processes which is triggered by new regulations and digitalization. This automation is driving costs and hence the need to review and optimize the current IT infrastructure for optimal competition and meet regulation from Central Bank of Kenya. Banks are increasingly using Information Technology (IT) to meet business goals, to improve their business efficiency and effectiveness, and to gain competitive advantage. Customer requirements expectations are rapidly changing, and adoption of digital channels are on an upward growth (Hailu and Mesfin, 2016).

Bank management must do more to adopt to changes in the Kenyan banking sector, these includes, competition that is continually increasing, retaining of existing customers and challenges from new entrants in the banking industry. These are characterized by heavy investments due to the complexity and criticality of the implementation projects they are meant to perform. The core banking systems are highly parameterised, and modules are interlinked to achieve high levels of automations. Core Banking systems takes a lot of time and resources during the process of implementation. There is need for integration and adoption of risk management functions within the core banking, change in banks' core systems, re-thinking of business processes, operating models and technology, (IBM Financial Services Sector, 2011).

Bank's main business processes are all aimed at supporting five key transaction initiating channels; Branch, Internet, Mobile, Automated Teller Machines (ATM) and Point of Sale (POS). Currently most banks in Kenya are advancing in information technology as well as trying to have segmented clients that are offered different services depending on region, income, time available as well as gender basis. This forms a niche market for more income generation since all are providing the same basic services and so differentiation is required.

Many banks as noted by Rong et al. (2009) are being transformed to become customer centric. Banks have also expanded their financial services to include investment management and insurance through acquisition and diversification. Kenyan Banking industry is being faced with increased regulations from Central Bank of Kenya and other regulatory agencies. These regulations are changing the business processes which include

monitoring compliance and reporting, fraud control, security and risk management. Fast adaptations to these changes without incurring increased costs gain the advantage to the bank.

According to Zeb (2017), banks are subjected to ever higher costs and increasing investment needs which has resulted in dwindling profit margins. This has led to implementation of new requirements especially triggered by business regulations, digitalisations, and these have in turn driven higher costs in a very competitive environment. According to Rong et al (2009), the banking industry is being forced to renovate their core systems to survive stern competition, change in business regulations and industry needs and changes in business processes like channel introductions of Call Centres and of Internet services.

Data migrations and challenges in change-over of the core banking systems are amongst the most complex IT procedures (Zeb, 2017), management of varied and complex issues across various disciplines which including business processes, IT, regulatory, and legal disciplines. At first glimpse, changing the core banking system (CBS) primarily impacts the IT landscape, however, there are considerable implications for the business products and processes supported, costs of changing and running as well as future strategic options. Therefore, a bank must look in to business processes, IT, strategic and economic perspective to make an informed decision on the right Core Banking System to be used. (Banking Up, 2015).

Some of the challenges banks face include business perspective, IT perspective, Strategic perspective and economic perspective. These are summarised in the following Figure 1-1 according to (Banking Up, 2015).



Figure 1-1: Challenges in CBS Selection (Source: BankingUp, 2015)

For large established banks, one of their great strengths can also be the major inhibitor in their old core banking systems. For many, these reliable, high-volume systems have been used for decades and are difficult to change. They have undergone periodic customization overtime, some of these have their programs hard coded as opposed to being parameterised hence these applications are very expensive to change (Andre, Pretorius and Pretorius, 2008). To address these issues therefore, there is need for the banks to replace their old core banking systems with modernized systems which can handle their processes with ease and with less overheads (Rong, Wua, Yasodhar, and Santhosh, 2009).

1.2 Statement of the Problem

Core banking system replacement is a considerable investment for many banks in Kenya. Its impact is far reaching from customer service all the way through to back-office and ICT infrastructure. With the trend in most banks being that Core Banking Systems implementations are overshooting their set project timelines and budget estimates, studies have explored the reason for this. The banking sector is a unique industry and its problems therefore may be unique.

Given the fast-paced changes in customer needs, increased regulations and development in new technology; the overruns in the time and budgets on these projects are more likely to be encountered.

Statistics have shown that there is a very high failure rates in Core Banking implementations Hailu and Mesfin (2016). It is projected that 25% of core banking system implementations fail without any results while 50% do not achieve the intended objectives (where cost and implementation time double). Other reasons for failures are insufficient information collected during the requirement gathering phase, lack of clear objectives and scope change midway the project. Only 25% of the implementations can be considered successful (Cognizant, 2012). This research aimed at establishing a framework to be used when implementing a core banking system in a banking institution to address these failure factors.

1.3 Purpose of the Study

The purpose of the study is to propose and test a framework for changing the core banking system for commercial banks in Kenya. With proper preparations, there is need to have a smooth CBS changeover, which would lead to more desirable results and better customer handling as well as mitigate any risk involving the system change. There is also need for banks follow the model which would ensure proper governance. The study is of importance because change is inevitable especially when using information technology.

1.4 Research Objectives

The general objective of this study was to develop a framework for implementing a core banking system. Specifically, the study was guided by the following objectives:

- i. To identify the processes involved in implementing a Core Banking System
- ii. To identify the factors influencing the success of implementing the Core banking system
- iii. To design a framework and test the same for successful implementation of the core banking system.

1.5 Significance of the Study

Information technology is dynamic and therefore change is inevitable. The study focused on significance to the banks intending to change their core banking systems. The study also helped in the formulation of a framework that banks can use when they need to change their core banking system. Policy makers, project managers, scholars, Senior IT personnel, Auditors, Compliance officers, Risk management, bank operations, Credit administrators and system administrators will find it useful to these findings.

The study defines best practices for a successful core banking change management process and implementation. It forms high-level guidelines to ensure a smooth transition from the old system to the selection and implementation of the new systems. It also includes the critical success factors needed to be accomplished and before and after the go-live of the system.

The study aims to have a smooth system change-over processes with key objectives of the elimination of costs being exceeded during the implementation, having delivery of all the initial objectives of the system within the setup timelines. It also seeks to highlights all the areas which needs concentration for a successful system change.

1.6 Scope of the Study

This study addressed the implementation of Core banking application, the reasons for the change, the processes of implementation, and came up with a framework for the successful change of the Core Banking system strategy with was successfully tested through the focus group. The study targeted a total of 42 banking institution sin Kenya. The study came up with results of the findings by questionnaire used in data collect. The study also made various recommendation and conclusion from the study. The study does not included banks which have been put in statutory management by Central Bank in Kenya, it does not also include Micro Finance institutions and corporative movements in Kenya

1.7 Definition of Terms

The following are the definition of terms used in the study

Core Banking System Gartner Industry Research Note (2011) defines a core banking system as a back-end system that processes daily banking transactions and posts updates to

accounts and other financial records. Core banking systems typically include deposit, loan and credit processing capabilities, with interfaces to general ledger systems and reporting tools.

Successful system implementation – This is when all the system objectives have been implemented according to the pre-determined schedules, fulfil, to put into effect accordingly, costs being handled within budget and user requirements all being accomplished (Beaver, 2012).

System Changeover - This is concerned with the smooth shift from one way of doing things to another and the mitigation of disruption to business activities during the changeover (Banerjee, 2017).

User Requirements – This is a document usually used in software engineering that specifies what the user expects the software to be able to do (Laudon & Laudon, 2014).

System implementation This is the process of defining, designing, testing, and implementing a new software application or program. It could include the internal development of customized systems, the creation of database systems, or the acquisition of third party developed software (Beaver, 2012).

Data Migration - Data migration is the process of transporting data between computers, storage devices or formats. It is a key consideration for any system implementation, upgrade or consolidation. During data migration, software programs or scripts are used to map system data for automated migration (Laudon & Laudon, 2014)

Middleware - Middleware is a software that links two separate applications and commonly used to illustrate different products it functions as a glue between two separate applications (Laudon & Laudon, 2014).

Tier 1 Banks - These are large banks with assets and/or capital markets price makers with daily trading volume exceeding 50,000 transactions. Such banks with a weighted composite index of 5 percent and above (Central Bank of Kenya, 2016).

Tier 2 Banks – These are medium banks and/or capital markets price makers, as well as trading volume averaging about 30,000 transactions daily. They have a weighted composite index of between 1 percent and 5 percent (Central Bank of Kenya, 2016).

Tier 3 Banks - These are smaller banking institutions with a primary focus on core banking and limited capital markets trading. They have a weighted composite index of less than 1 percent (Central Bank of Kenya, 2016).

1.8 Chapter Summary

The chapter introduced the basic concept of the project, the importance of the purpose of the study, the rationale and objectives and the research objectives are also included. The chapter introduced the need for the core banking in the banking sector, the reasons for need of change of the old banking systems and as and when it is needed, the development in technological changes in the IT banking related information systems which includes the Core Banking System, the need to innovate and to have a competitive advantage in the utilization of a new and modern systems.

The chapter also defined the commonly used terms in relation to the system development and introduced the case study. The following chapter provides a detailed literature review of critical success factors for the implementation of Core Banking Systems.

Chapter 2: Literature Review

2.1 Introduction

This chapter reviewed the literature related to the study. The objective of the study was to come up with a framework that can effectively be used by any bank when they want to change their CBS. The research objectives are to identify the process involved in changing the CBS, identify the factors influencing the success of CBS implementation and to propose a framework to be used in the changeover of core banking system.

2.2 The Processes Involved in Implementing Core Banking System

Core Banking System implementation processes are unique compared to any other system. There is need to follow closely every step and ensure that due diligence is followed for effective change over. Core banking systems are highly parameterised and takes considerable resources and time to complete its implementations.

The implementation phases include business justification for change of CBS, hardware and software acquisition and evaluation, product customization, testing of programs and procedures, data conversion and a variety of conversion alternatives. It also includes training and education of end users and specialists who would operate the new system. The implementation process can be complex and time consuming; however, by incorporating project manager it guarantees a higher level of success (O'Brien and Marakas, 2011) and (Groenfeldt, 2014). Implementation phase can be difficult and time-consuming process; however, it is vital to ensuring any success of the newly developed system (Hailu and Mesfin, 2016).

2.2.1 Project Formulation Stage

This is the first stage in CBS implementation process. It involves development of business objectives. During this stage, the bank takes stock of the current environment, revisits the business strategy and establishes the technology drivers for its future technology and process the infrastructure (Aggarwal, 2006).

A business case captures and documents what was the reason of starting a new project. It helps to establish whether a project justifies an organisation investment into a project (Ghosh, 2013). It further defines the problem, its impact, and performs a Cost Benefit

analysis of the proposed solution. It also looks at the possible alternative solutions and if the project aligns with the organisational strategic plan. It also describes how the desirable results will be achieved by moving forward with the project. Writers (O'Brien and Marakas, 2011) notes that understanding the business problem or opportunity is important. This involves determining how to address the business priorities and opportunities, conduct a feasibility study to develop a project management plan and obtain management approval. Once the problem statement is clear, the requirements engineering process would follow. The requirement engineering process includes feasibility study, requirement elicitation and analysis, requirement specification and requirement validation (Sommerville, 2011).

One writer (O'Brien and Marakas, 2011) calls the process system analysis phase that includes analysing the information needs, developing functional requirements and logical models of the existing system. Key activities to consider for business justification according to (Aggarwal, 2006) involves defining the business objectives and desired outcome of project, define the implementation approach and timeline to achieve the future state and accessing the current operations and existing infrastructure against the business objectives.

Defining the goals, objectives, vision and strategy are done in the analysis needs and it helps in preparation of a Request for Proposal (RFP) document. This document aids the bank in selecting the best fit core banking product (Hailu and Mesfin, 2016). These should be clearly understood by both the project team and top management.

Ramakrishnan (2008) notes that RFP will provide a detailed list of the banks requirements as this is critical. A comprehensive document significantly improves the solution evaluation process and serves as the functional and technical requirements baseline. It will become a common reference document for all the teams and then become an input for change management. It also highlights the mandatory requirements of the bank and further will assist the company in choosing the preferred vendor.

2.2.2 Core Banking System Selection and Acquisition Stage

This stage involves selecting the right core banking vendor and getting the best deal. The project team does the selection from a short list either through a request for information process or by bank defined criteria. The comprehensive set of functional and technical requirements is based on an existing model (Hailu and Mesfin, 2016).

In his research Musau (2015) discusses the criteria that can be used to select vendors. This mainly consisting of four steps i.e. requirement gathering, vendor profile creation, request for information/vendor review process and vendor selection and solution implementation. A scoring matrix is used that incorporates both business and IT requirements. The factors range from cost and quality to product support. Other criteria used mostly are price, delivery and quality.

The project team objective here is to reduce purchase risk and maximize overall value to the purchaser and develop better relationships between buyer and suppliers.

Vendor demonstrations and scoring of shortlisted vendors are also important (Ghosh, 2013). Development of customised scripted scenarios, reference site visits are equally important. Contract negotiation and final vendor due diligence is valued in CBS selection.

The next objective after selection of CBS vendor is the acquisition of hardware and other services that support the solution. It involves acquiring the enabling technology for CBS and the service provider (Aggarwal, 2006). It starts with issuance of Request for Information (RFI) which should be easy to the point and the open-ended.

Loudon and Loudon (2014), note that companies formalize these requirements by listing them in an RFP form then is sent to various vendors which is then used to prepare a proposed purchase agreement. Some companies may use a scoring system for evaluation when the bidding companies are many. They give each company an evaluation factor with a certain number of points. This will help the company to organise and document the evaluation process well and spotlight the strengths and weaknesses of each proposal (Laudon and Laudon, 2014).

A summary of hardware evaluation factors includes performance, cost, reliability, compatibility, technology, ergonomics, connectivity, scalability and support. Software evaluation factors include quality, efficiency, flexibility, security, connectivity, maintenance and documentation. For CBS selection, factors included are the system functionality, flexibility, cost, viability, operational performance and IT management (O'Brien and Marakas, 2011).

2.2.3 User Training

Training is a key area throughout the implementation and must proceed without delay (Jogada and Samaranayake, 2016). Training and education schedules for the workforce should be developed to match with the functional components to be implemented (Laudon and Laudon, 2014).

During training the vendors take the users of the bank through the live system showing them the functions and features and how the application can be used in the various day to day scenarios (O'Brien and Marakas, 2011). In training, emphasis should be on technical aspects, business aspects and oriented towards practice, according to Doom, Milis, Poelmans, and Bloemen (2009).

According to Soja (2006), 10 to 15 per cent of the total budget is to be reserved on training to obtain an overall implementation success rate of 80 percent. Atamamen, Mohammed, Abdullah, and Hamid (2016) and Haller and Heuberger (2009) also emphasise the importance on training.

The key activities include business user training across organisational hierarchy within the branch and across departments. It includes comprehensive coverage and training anywhere and anytime (Hailu and Mesfin, 2016).

Users' training should be thorough by having the users being imparted with the knowledge and users testing the new system in their own environment. By having business simulations, where the users are made to simulate the life of normal workings in a bank by posting transactions this will aid in the efficacy of the process and accuracy of the system and its reporting is assured (Ramkumar, 2016).

According to Malan, Pretorius and Pretorius (2008), behaviour-modelling training yields consistently superior performance and higher self-efficacy. They further note that re-training is important until the users have passed the agreed test. Recurrent training is highly recommended to keep employees up to date with latest developments and for training new employees. The team should invest in preparing up-to-date training manuals.

2.2.4 Installation, Implementation and Operation Stage

It's the process of actualising and process of putting up all the details together for the eventual running of the system. It also involved in various hardware and software assembling. According to Satchidananda et al (2008) the implementation phase is made up of many activities.

Haller and Heuberger (2009) notes that the implementation phase requires the bank and software vendor implementation team to fully cooperate in the customisation, testing and rollout of the system to meet the bank's and customers' needs and final preparation for go-live date.

2.2.5 Product Customization

Customization is the process of fitting the chosen CBS software to the needs of the bank. Ramkumar (2016) notes that the implementation team should go through the process of determining the gaps that needs customisation. This involves going through the functional and system requirement specifications. This should then be validated and signed off and be used as a key document for the product enhancement team.

There can be bank specific customisations that deals with how the bank operates. Core banking system is a highly parameterised application, various functionalities are needed and tested to ascertain the accuracy of the same. Failure to have all these parameters made in time can be a source of conflict during the post implementation period and can result in loss of income or customer dissatisfaction. It is worth noting that the fewer the customization, the higher the chances of a successful implementation (Haller and Heuberger, 2009).

Other activities include product walkthrough, gaps and requirement finalization, customization effort and initial product review (Ramkumar, 2016).

2.2.6 Data Conversion and Migration

This activity involves the transferring of the data from the old system to the new system seamlessly with the minimum disruptions in the day-to-day business of the bank (Satchidananda, Sanat , and Rahul , 2008). The success or failure of data migration can make the difference between the success and failure of the entire implementation.

Data migration can be complex especially if the old data sources are inconsistent or incomplete. Creating a coherent data migration strategy will help reduce risk. This is by using industry models for analytics and insights and can accelerate deployment and reduce costs. The industry data models provide anchor reference points during migration of data to new systems, enabling duplicate, redundant and non-required data fields to be discarded (IBM Financial Services Sector, 2011).

Data extraction can start earlier but mapping must wait for functional and technical designs to be at enough level of completeness. A proven extraction tool will be ideal to be used here (Malan, Pretorius, and Pretorius, 2008).

Ramkumar (2016) notes that the activities include Data Migration strategy, mapping, develop script and tools, verification approach, mock and drill migrations, and final migration run plan. The migration plan should be written bearing in mind the requirements. The team should ensure that the new platform has what it needs and align it to the new system. A series of mock sessions are conducted to fine tune the migration logic and to clock the migration time.

The migration process according to Ramakrishnan (2008), involves data cleansing or purging prior to export processes. Data definitions of both source and target systems need to be documented. The bank users and migration team members need to be educated on the definitions. A mapping algorithm can be used to increase the high level of accuracy.

Business user involvement is key in the conversion cycle. They need to validate the data that was exported to ensure that it has transformed correctly. The data conversion team should be aware of the entry criteria for each testing cycle and they could set their completion targets accordingly (Ramakrishnan, 2008).

2.2.7 User Acceptance Testing and Integration Testing

The testing phase is where the bank will validate whether the system is ready to be rolled out. The team ask themselves questions like “Is the product doing the intended purpose?” Are all the customizations delivered and parameterisation values working well? Does the data used for testing shown that migration has succeeded? (Ramkumar, 2016).

Ramakrishnan (2008) notes that testing is a critical phase in implementation. To avoid common pitfalls at this stage, the author encourages the project team to allow sufficient time for testing, define clearly the exit and entry criteria for each testing cycle, define scope for testing, define the number of test cases to be used, plan stress and performance tests and monitoring and control the testing process.

User Acceptance Testing (UAT) should be done for end users to experience what the system can do. System Integration Testing should be done prior to UAT to validate the technical aspects of the system (Groenfeldt, 2014). UAT is the last phase of software testing process. During this process the end users test the software to make sure that it can handle the tasks in real world scenarios according to specifications. These steps involve designing test cases, selection of testing team, executing test cases, bug fixing and sign off notes (Ochwoto and Ogolla, 2017).

Performance testing is undertaken to validate the speed and performance of the hardware and software. This also checks on the response time and the end user experience. Penetration testing will be of importance to validate that no external loopholes exist in the system. It would be wise to also test the system on internet access too (Ramkumar, 2016).

The project manager should work keenly with the implementation team to ensure that the testing, functionality and performance of the CBS meets the banks objectives (Hailu and Mesfin, 2016).

There is need to test the system several times, effective testing results to more user confidence and there is an opportunity to discover hidden bugs or scenarios which needs correction at the point from (Malan, Pretorius, and Pretorius, 2008) and (Gargeya and Brady, 2015). He notes that there should be investment in testing tools and the tracking of the testing process. By using a team of system users and testing specialists is recommended. If possible, the testing tools should be automated.

2.2.8 Go Live and Post Go-live Support

This activity involved the implementation of go-live checklist and post go-live support. The operation activities were done with the consultant and the IT Team members (O'Brien and Marakas, 2011).

Some banks preferred the use the cut-over method where all the new solutions are replaced by the new solution on an identified date simultaneously. This is referred to as “Big Bang” approach (Ramakrishnan, 2008). It’s recommended that a phased approach be used where the project was implemented in three phases. The first being applications that can be operated with minimum integration or those that contribute to significant percentage of business like treasury.

The second phase involved the critical mission or the transaction processing applications and the final one data warehouse application (Andre, Pretorius, & Pretorius, 2008). Replacing products one at a time is preferred due to the risk exposure that is generated when many of these are replaced at one go.

A formalised project approach and methodology is fronted (Doom, Milis, Poelmans, and Bloemen, 2009) who proposes a methodology of implementing the core of CBS only with limited functionalities then expand subsequently module per module.

The activities here include roll-out strategy, continual communication with customer and all stakeholders, Go-live and Post-Go Live stabilization (Ramkumar, 2016).

2.3 The Factors Influencing Successful Implementation of Core Banking Systems

Several definitions of Critical Success Factors (CSF) have been define, however, CSF is established as the most relevant factors for project success which must be ascertained earlier before embarking on a project writes (Atamamen, Mohammed, Abdullah, & Hamid, 2016). CSF’s are those things that must be done if a company is to be successful as defined by (Imtiaz, Al-Mudhary, Mirhashemi, & Ibrahim, 2013). Determining the CFSs has a great practical importance because a project manager can exploit these factors for the realization of the success of their project. From literature, critical success factors are key in implementation of CBS. The factors were selected based on strong evidence given in the literature.

The successful implementation of CBS is dependent on technical requirements coupled with detailed planning and clear project objectives. The authors identified the necessary strategies, processes, tools, methods and other devices that are contributing factors towards successful implementation of CBS (Andre, Pretorius, and Pretorius, 2008 and Soja, 2006).

On analysing research articles, researcher enlisted factors that are critical for the success of CBS implementation, each of these factors has been explained in the following literature review.

2.3.1 Project Management Factors

2.3.1.1 Project Management Skills

Poor project management can lead to cost overruns, time slippage, technical shortfalls that impede performance and the failure to obtain the anticipated benefits (Laudon & Laudon, 2014). According to Ochwoto and Ogolla (2017), effective project manager should be keen on time management and problem-solving skills together with being a good negotiator. The manager should possess good communication skills and be a keen listener.

Imtiaz et al. (2013) noted that leadership of project manager is vital, project manager should possess strong technical and rational skills which are vital in influencing the working environment. The team should have clearly spelt out goals on the onset for successful IT projects. Great teamwork and team capability are vital across all functional teams. The leaders can use their charisma and influence it to better working environment.

In many instances, the primary driver for the CBS change-over project is the Information Technology department. In most successful projects, the prominent role is played by the Sponsor/Project Leader. An effective and successful sponsor should ensure that the requirements are documented well by the business and technical groups and should actively be involved in the solution selection process. He should seek full management support for the project team in terms of budget and resources. The manager should also seek utmost cooperation of the business users and ensure their full involvement. The committee meetings should be result and task oriented, monitor proactively, and resolve any post-implementation issues (Satchidananda, Sanat , and Rahul , 2008).

The project manager is the person from the organisation who sacrifices most of his working time to implementation duties (Soja, 2006). An effective implementation of core banking system needs detailed planning, accurate delivery and a project manager who focuses on the project objectives being met (Andre, Pretorius, & Pretorius, 2008).

According to Doom et al. (2009), the project manager is considered a project champion and a dedicated advocate of the project, coordinate all the issues relating to the system from the inception to the time of closing the project.

The project formulation stage involves the appointing of the Project Manager, who then receives a Charter from the Sponsor, and may perform a feasibility study and initiate the project (Malan, Pretorius, and Pretorius, 2008).

The project manager enforces a project plan, which includes job responsibilities, timetables for major milestones and financial budgets. This will be necessary for the project to be completed within stipulated time, with the established budgets and still meet the intended objectives (Laudon and Laudon, 2014). These activities include planning, assessing risks, estimating resources to accomplish a task, organising work, reporting and analysing results. IT projects must deal with five major variables which are scope, time, cost, quality and risk.

2.3.1.2 Clear Goals and Compelling Vision.

Gargeya and Brady (2015) noted that organizations top management should have a clear and motivating overall business vision on what the organization wants to achieve in implementing a CBS. Clear business plans, describing strategic and tangible benefits, the project resources and timing, the costs and the risks must be available.

By clearly establishing the objectives, outcomes, benefits and goals expected would aid in purchasing of the right hardware and software (Matthias, Balve, and Spang, 2017). Project missions involved having proper project definitions, having clarity of goals and general direction of the project. These missions should be related to business needs, be clearly stated and goals identified and effectively tracked (Kornkaew, 2012).

2.3.1.3 Team Capability

A study by Imtiaz et al, (2013) emphasized the importance of a well-qualified team. The international scope of IT projects makes team capability an importance critical success factor. There is need to encourage use of experienced teams, this is because so much goes in the implementation process of CBS, every user was being valued for his or her roles (Andre, Pretorius, & Pretorius, 2008). The writers add that by having experienced teams

of technical, functional, training and other skills on board leads to a much smoother and lower risk project.

There was need to put more emphasis on this and included team composition of various people having high qualifications and knowledge about the organisation being important (Soja, 2006). The author also adds that the project manager and members of the implementation team should have a strong team involvement in the implementation duties. The researchers on their research identifies project team capacity as a factor that influences CBS project delivery, this included adequate resource allocation, correct skill set and top management support (Ochwoto & Ogolla, 2017).

The team members should be given compensation and incentives for successful completion of projects on time and within its assigned budgets (Ochwoto and Ogolla, 2017; Soja, 2006; Doom, Milis, Poelmans, and Bloemen, 2009).

Human resource management is one facet that is critical in any team. Team member possessing the correct skill and experience, access to adequate number of resources and motivation of the team members through performance management will be key in successful implementation of CBS (Musau, 2015).

2.3.1.4 Clearly Defined Project Scope

Scope is the term that defines the entire deliverables that is expected at the end of the project (Ochwoto and Ogolla, 2017). All project plans, estimations, schedule, quality and baselines are usually designed base in the initial scope. Therefore, any change in the project scope during the project execution stage means that the entire project plan in terms of budget, schedule, quality will have to change. According to Musau (2015) highlights the point that scope pertains to the work necessary to deliver a product. It's part of project planning and involves finding out the specific project goals, tasks, budgets to provide the boundary within the system. The writers Doom, Milis, Poelmans, and Bloemen (2009); Gargeya and Brady, (2015) defines scope as the initial blueprint for the implementation.

They emphasise the point that the original plan, budgetary and resource needs are established upfront and requirements or responsibilities are stated then. The project manager ability to maintain the scope is related to project planning.

The project manager task is to ensure that all team members understand the tasks to be accomplished within set budget and time (Musau, 2015). Conflict and controversies can arise about the implementation of the project. Stakeholders should be engaged and their concerns and expectations well managed. Also, a proper change management plan should be adopted involving the project stakeholders and incorporating their needs. This will help mitigate conflict when they arise.

Scope creep can occur where software projects grow beyond their original bounds. The project manager should try to avoid scope creep so that the project can be delivered on time and on budget (Ochwoto and Ogolla, 2017) and (Kornkaew, 2012).

2.3.1.5 Top Management Commitment

This is one of the most important factors of information projects management (Imtiaz, Al-Mudhary, Mirhashemi, and Ibrahim, 2013). Lack of top management commitments can lead to project failure. There is need for weekly meetings by both top management and the project team. This is important in ensuring long-term vision and interaction to facilitate successful implementation (Hailu and Mesfin, 2016).

Senior management is instrumental during the whole project implementation and it may be encouraged by appropriate compensation policy for motivation purposes (Doom, Milis, Poelmans, & Bloemen, 2009). The writer Soja (2006), agrees to top management support, participation and awareness. A successful implementation is only achievable when high-level executives have strong commitment to the project (Gargeya & Brady, 2015). It will affect the flow of funds and information in the project. They also may provide substantial incentives and by having open communication channels always.

2.3.1.6 Adequate Testing

Quality assurance according to Garner (2017) refers to the process of ensuring the product meets the demands of the user. Software needs internal quality controls, ensuring the codes is free from errors. The development team needs to be on the same page.

There is need to address issues early before they are being encountered while the system is at the production stage.

System testing has proven to be a key element of success of banks CBS change-over (Doom, Milis, Poelmans, and Bloemen, 2009). Inadequate testing is seen as the single reason for unsuccessful implementation, thus the team should complete adequate testing and fix any problems (Gargeya and Brady, 2015).

There are several tests which are critical for any system development, these included the following tests Unit testing, Integration testing, system testing and regression testing.

Unit testing is performed on standalone modules during development to debug errors within that module, while integration testing would test sets of components into subsystem as well as unit to unit integrations and regression testing would be tested during development and product maintenance.

2.3.1.7 Awareness Training and Education

Active user involvement in the design and implementation of the system often leads to user acceptance and thus the desired transformation and adoption of the new CBS (Rahman and Hailu, 2012).

Staff training is identified as a critical CSF by some researchers. Where successful training was conducted with help of user manuals and user involvement the project succeeded (Imtiaz, Al-Mudhary, Mirhashemi, and Ibrahim, 2013). Training should be conducted for managers, staff and end-users. Training helps user gain more confidence of the CBS and hence it affects their attitudes towards their system.

An adequate training program should be created that's suitable to the bank's needs (Soja, 2006). The employees must be trained on the new system and readiness for change.

2.3.2 Selection of Vendor, Software and Hardware Solution

2.3.2.1 Product Functionality

It is essential that the selected Core Banking system has full functionality as to the expected business requirements of the bank. Without CBS satisfying its potentials would render the system incomplete and the need to spend additional resources to complement the new system. It is important to have a comprehensive CBS to cover all products, all customer grouping, and all geographical locations.

Mapping all banks functionality to the CBS is not only important aspect of selection. There is need to focus on the future aspects of the application which includes future marketing and business initiatives. Another aspect to consider is the application need to adapt to the business and not the reverse. Banks need to concentrate on the efficiency and effectiveness that will empower the business (Gartner, 2011).

The usefulness of the product epitomizes the key components of significant worth that are obtained and developed (Malie, Duffy, & Rensburg, 2008).

2.3.2.2 Product Costs

For any system selection and acquisition and from bank to bank, costs issues are very relative and are very sensitive issue. There are situations where the system being acquired is not justifiable to the costs spent. According to Gartner Industry Research Note (2011), business case justification using only Return on Investment (ROI) is becoming very rarely used model. It is an important justification, but it does not only measure the success of an IT system. Banks needs to consider ROI and additional aspects in measuring such as strategic alignment, risks, architecture and business process impact (Ghosh, 2013).

According to Malie, Duffy, and Rensburg (2008), a few analysts have distinguished cost as a key factor in big business application choice. Cost is a thought for all organizations looking to acquire a CBS. While examining cost, purchasers need to look past the underlying expense of obtaining, as "establishment and on-going expenses can reach seven to ten times the underlying programming cost". This implies the aggregate cost thought ought to incorporate every one of the costs.

Due diligence on the vendors project management abilities should be considered, unchecked program management may exponentially rise the costs of the project implementation. Their plans should be reviewed to ensure that each task has clear inputs, processes and definable outputs as well as measurable targets. Banks management should be able to maintain higher controls over the vendor in the management of the entire project (Doom, Milis, Poelmans, and Bloemen, 2009).

Failure of management obligation is always the main cause for project failure. IT Project management of the core banking replacement/implementation needs business management

support. Involvement in all the stages by management is key to the smooth and successful system management according to (Aggarwal, 2006).

2.3.2.3 Customizability of Product

Flexibility is a key factor in the selection processes for any system CBS included. The system should be able to adapt to several issues including changes in the regulatory reporting and other business requirements issues. The CBS should be easily integrated to the other external system environments for data workflow, connectivity, component-based architecture (Gartner Industry Research Note, 2011).

ERP arrangements will frequently be coordinated with different frameworks keeping in mind the end goal is to fulfil the one of kind needs of an association. It is vital that the chose ERP bundle can effectively be incorporated with existing and future programming and equipment items (Malie, Duffy, and Rensburg, 2008).

2.3.2.4 Product Reliability

Most bank concentrate on the technical capabilities and system design for a CBS solution. There is the need to review the design elements associated with scalability, resilience, data centralization and real-time enablement to have a true value to the business. In Scalability, banks should ensure that the system should handle current customer base and projection of the future growth of at least five-years growth. Banks need to consider hardware and software configurations that match the vendor-supplied proposal says (Cognizant, 2012).

There is need for systems which are resilient, and which support multithreaded functions with failover features and low system downtimes (O'Brien and Marakas, 2011).

2.3.2.5 Product Viability

In the selection of a system and a vendor, the bank practically gets into a relationship, which could have durable effect on working of the bank. Determination of a vendor who is and would remain monetarily practical over the long haul and isn't reliant on a couple of clients for survival is crucial. Apart from a reasonable budget, specialized ability, advancement capacity and foundation with the vendor, quality of support and top management all have effects in the delivery of the system by the vendor (Satchidananda, Sanat , and Rahul , 2008).

Selecting a core banking product should be entirely strategic and vital to the long-term strategy of the bank. Vendor viability is a crucial element in the process of selecting for a replacement of a core banking system (Gargeya and Brady, 2015). Banks should assess the like hood that a given product will survive an acquisition, how likely that a new owner would support the development of that system. Some of the indicators that a product is not viable include: - Lower sales, Poor design or architecture, Operating System, hardware and database dependency and decreased customer satisfactions (Groenfeldt, 2014).

2.3.2.6 Vendor Viability

Vendor viability is a CSF in the acquisition of hardware and software (Satchidananda, Sanat , and Rahul , 2008), as well as the vendor financial viability, technical competence, development capability, quality support, quality practices. The vendors should be committed to finishing the implementation of the project successfully. There should also be a contract between the vendor and the bank clearly showing the role of vendor in the project (Hailu, 2016).

Vendor evaluation criteria involves size, financial stability and reputation of a vendor. A criterion for software looks at functionalities specific to front-end interfaces, user friendliness, system integration, performance and security (Ramkumar, 2016).

2.3.2.7 Project Success Measurement Criteria

The criteria of success should be measured by CBS project meeting the bank's objectives and scope. The project should be completed on time and within stipulated budget (Hailu and Mesfin, 2016). Measures of implementation of ERP success should be based on time, cost, performance and benefits (Schniederjans & Yadav, 2013).

2.4 Framework for Implementation of Core Banking System

There exist different frameworks that can be used in guiding implementation of CBS. According to Hailu et al. (2016), they looked at different implementations and critical success factors that lead to successful implementation of CBS. Suitable framework was developed using the literature obtained from Section 2.3 and 2.4, and other literature to come up with a suitable framework for implementation of CBS based on Kenyan banks.

Ochwoto and Ogolla (2017) in their report on factors influencing CBS project delivery noted that project management should be viewed as a strategic pillar of the bank on technological innovations. The study was on establishing the influence of project manager, stakeholder management, project team capacity and project scope management on the delivery of CBS for commercial banks in Kenya. They found out that top management engagement and consistent communication was important. Project managers' skills and training was key to project success. Adoption of monitoring and evaluation tools can be used to demonstrate progress to internal and external management. Provision of training tools and resources was important for employees for better usability of the system.

The conceptual framework captured some CSF however, its lacked to address the vendor selection processes and criteria, it did not address the data the study of the old system, the data conversion and data migration to the new system. The conceptual framework did not mention the post implementation support and system maintenance as well.

The conceptual framework of Ochwoto and Ogolla (2017) together with the critical success factors is shown in the following Figure 2-1.

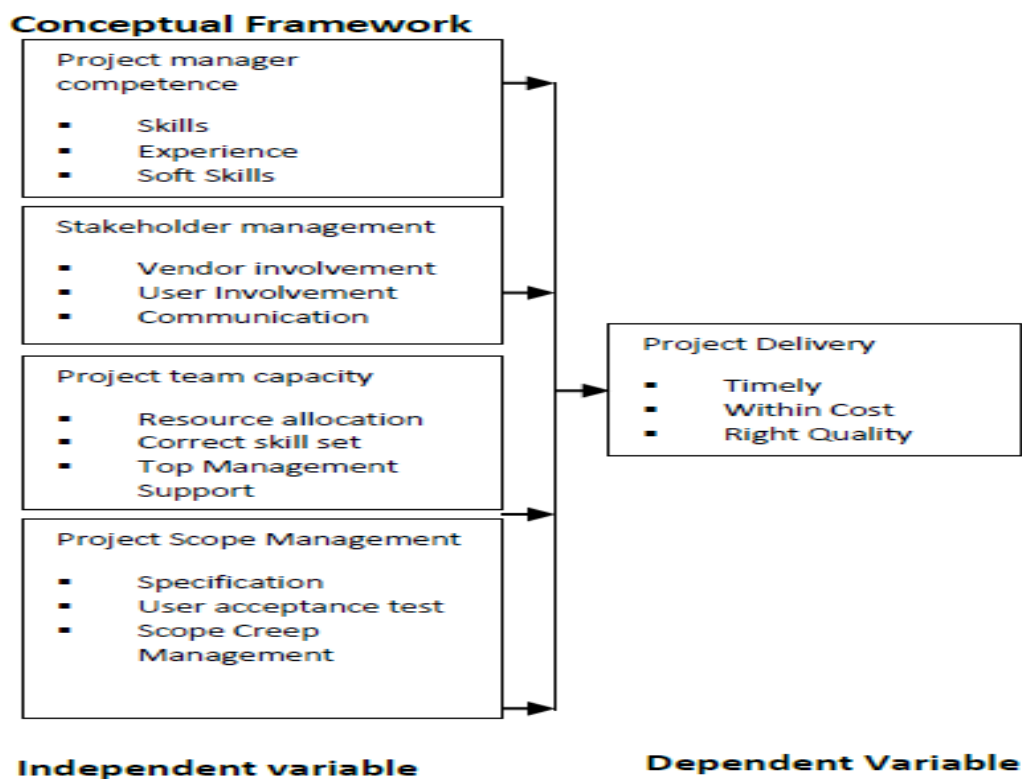


Figure 2-1: Conceptual Framework. (Source: Ochwoto and Ogolla, 2017)

From the study, the CSF was used in the project formulation section in building conceptual framework. Factors which assisted organisation in terms of strategic factors that are key during initial phase of implementation process which is project formulation. Main tasks are business justification and the critical success factors which included define goals and objectives, project scope, project management skills and team capability.

Mangwanda, Namusonge, and Ndengo (2016) sought to establish the factors that influence implementation of CBS. They identified organization structure, human resource management, technical competency and project risks as vital in the implementation of Core Banking System. In their study, they found out that for successful implementation of the CBS, staff need support in terms of resources and skills. The organisation needs to have clear based organisational structures, while ensuring risks are mitigated to protect organisation from any potential loss. Top management should continually be supportive for resources to be availed for successful implementation. The risk and compliance department should be involved to aid in ensuring the proper risk control measures are in place (Mangwanda, Namusonge, and Ndengo, 2016).

From these analyses, the conceptual framework did not put in place vendor, solution and hardware selection processes. The Framework did not consider the summarized CSF based on the dependent variables. Organization politics and cost escalation were not considered as well; however, they play a great role in the successful implementation of any given information system which CBS is included.

The following Figure 2.2 shows the framework with the critical success factors shown.

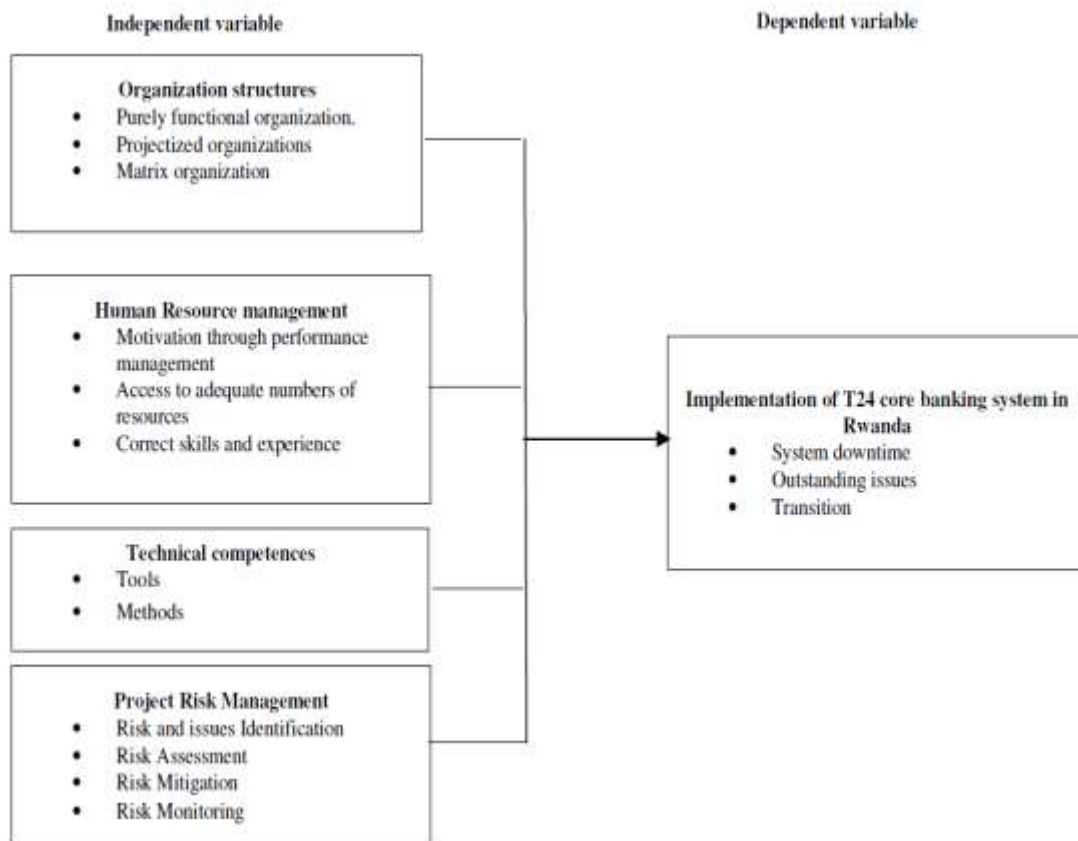


Figure 2-2: Conceptual Framework (Source: Mangwanda et al., 2016)

Schniederjans and Yadav (2013) in their work on successful implementation of ERP presents a conceptual model that defines CSF for implementing an ERP. The writers noted that Technology, Organisation and Environment (TOE) framework are factors that have been a concern for organizations implementing ERPs. The authors show theoretical foundations of the importance of company culture, vitality in change management, regulatory pressure in ERP implementation, importance of trust that exists between organisation implementing ERP, vendor, consultants and trust that exists regarding the system itself. Figure 2-3 shows the conceptual framework and its critical success factors on successful implementation of ERP. The model can also be used in successful CBS implementation.

Though the framework has captured key CSF, it does not address the solution selection processes. It has not taken care of the post implementation support, it does not address the address risk factors and how they can be mitigated.

The following Figure 2-3 shows the framework with the critical success factors shown.

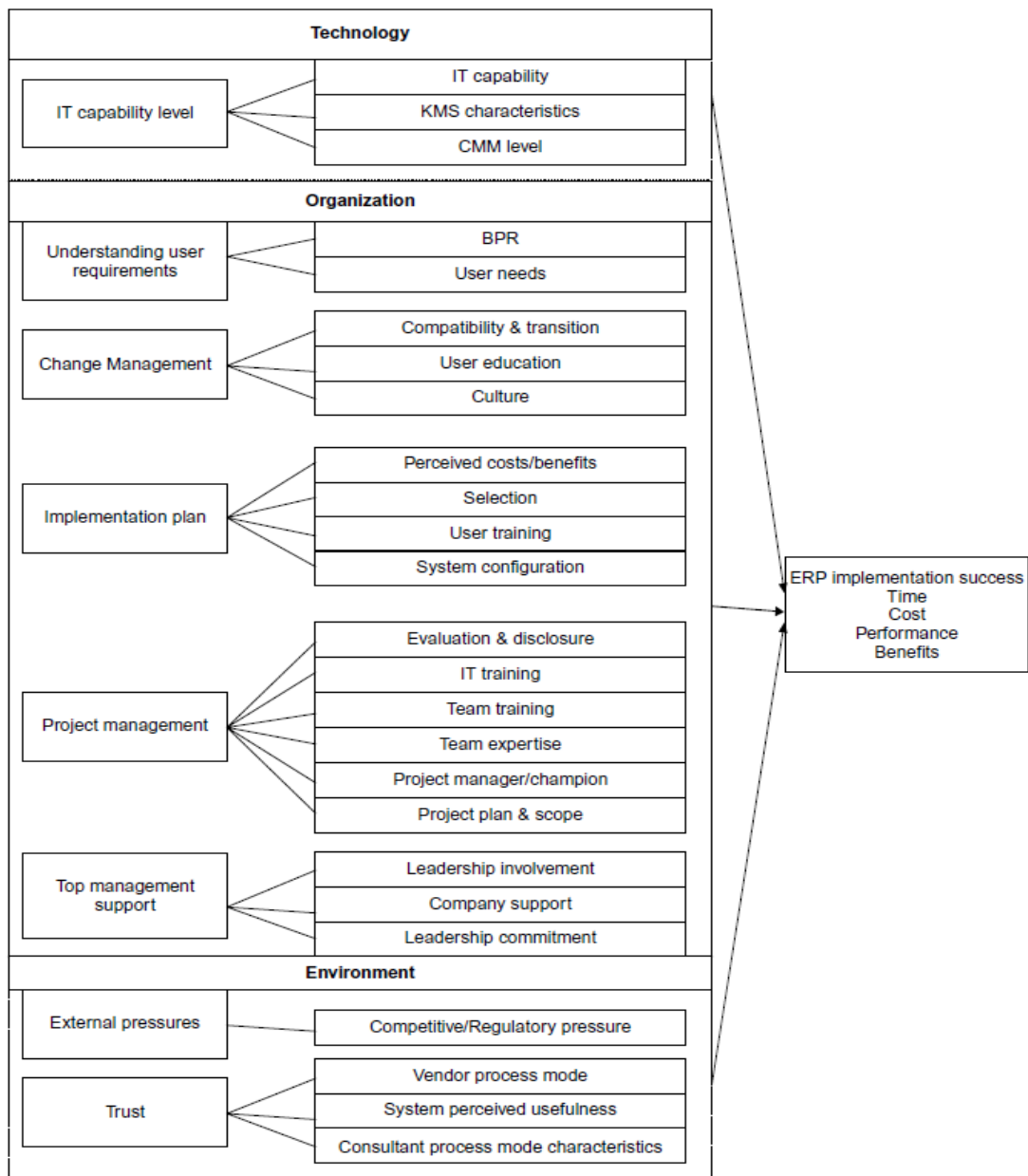


Figure 2.3 Integrative Model (Source: Schniederjans and Yadav, 2013)

From the three models incorporated from the literature review, the critical success factors mostly mentioned are top management support, project management, understanding user requirements, risk assessment, project scope and team capability among other factors.

General CSF's are included in most literature but specific CSF's on implementation plan or Change-Over are missing in most literature. Therefore, the study has included from literature what could be ideal CFS.

2.5 Conceptual Framework

The Conceptual model of critical success factors for successful implementation of core banking system is as shown in Figure 2-4. The arrows indicate information flow. In this study the dependent variable is successful implementation of a CBS while the independent variables are the determinants of implementation of core banking system which are critical success factors that has been categorized as stages: Project formulation, Core banking system selection and acquisition and installation, implementation and operation phases. The variables and their relationships are shown in the following Figure 2-4.

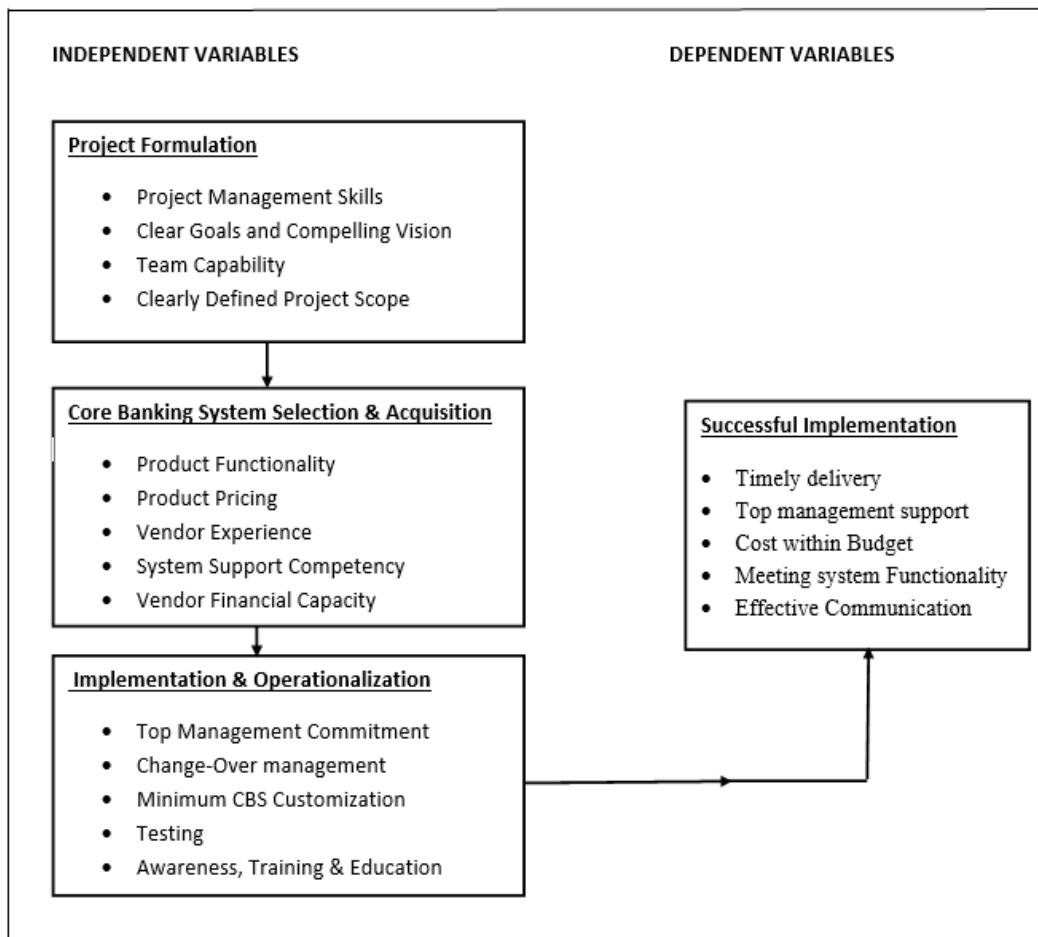


Figure 2-4: Conceptual Framework for CBS successful Implementation (Source: Author)

2.6 Chapter Summary

This chapter reviewed existing literature on the processes involved in implementing a CBS projects, the critical success factors that influence the implementation of CBS and the existing frameworks used in CBS implementation in the region and worldwide. The concepts based on the literature formed the basis of the conceptual framework which is discussed in the chapter.

The study reviewed three conceptual frameworks these included Factors Influencing Core Banking Project Delivery by Commercial Banks in Kenya: Case of Equity Bank Limited by Ochwoto et al. (2017), Factors Influencing Implementation of Temenos T24 Core Banking System: Case of Banqure Populaire Du Rwanda by Mangwanda et al. (2016) and an Integrative Model for ERP development by Schniederjans et al. (2013). Through these reviews the researcher came up with a framework for successful Core Banking System implementation in Kenya.

Chapter 3: Research Methodology

3.1 Introduction

This chapter aimed to show how the research process was carried out, how the data was collected, the tools and techniques that were used in this study, and the processes in which the data was analyzed. The objective of the study was: To identify the processes involved in implementing of the Core Banking system; To identify the factors influencing the success of implementing the Core banking system and to design a framework for the successful implementation of the core banking system. This study was focused on banks that intends to change their core banking system. This chapter described the research design of the study, population of the study, data gathering tools, data gathering procedures, treatment of data and statistical tools.

3.2 Research Design

According to the book *Social Research* by Sarantakos (2013), research can be described as “a systematic and methodical process of inquiry and investigation that increases knowledge and/or solves particular problems.” It “essentially review and synthesis of existing knowledge, investigation of existing problems and solutions to them, exploration and analysis of more general issues, construction and creation of new systems and procedures and explanation of phenomena and generation of new knowledge”.

There are three main types of research, exploratory, descriptive and explanatory research (Saunders, Lewis, and Thornhill, 2009). The primary purpose of this study was to investigate a framework for implementation of a core banking system. This research used an explorative research design that followed a deductive approach.

3.3 Population and Sampling Design

3.3.1 Population

The study targeted all the 42 banks with total staff population of 28,000 in Kenya. These were selected based on critical departments which interacted with the Core Banking System during their duties or even have participated in development of CBS at one time.

The Tier 1 banks comprises of banks that have been in the market for long with large asset bases valued hundreds of billions and millions of customers. There were six banks in Kenya

namely Co-operative Bank of Kenya, Kenya Commercial Bank, Equity Bank, Barclays Bank, Commercial Bank of Africa and Standard Chartered Bank according to Central Bank of Kenya.

Tier 2 banks are lenders of medium sized banks. There were 15 banks in Kenya namely Family Bank, I & M Bank, NIC Bank, Diamond Trust Bank, Bank of Africa, Housing Finance, Ecobank, Prime Bank, Bank of Baroda, CFC Stanbic Bank, Citibank, Guaranty Trust Bank, Sidian Bank, National Bank and Bank of India.

Tier 3 banks were made up 21 small banks that control approximately 8.4% of the Kenyan market these includes Jamii Bora Bank, ABC Bank, Credit Bank, Paramount Universal, Development Bank, SBM Bank Kenya, Spire Bank, Guardian Bank, Middle East Bank, M-Oriental Commercial Bank, Paramount Universal Bank, Trans-National Bank, Victoria Bank, First Community Bank, Habib A.G Zurich Bank, Gulf Africa, UBA Bank, Consolidated Bank, Mayfair Bank and Development Bank.

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

A sampling frame is a list of all the items in your population. In this research, the study identified a total of 42 banks which formed the sample frame and were based on the three Bank's Tiers in Kenyan banks. These are shown in the following table 3.1.

Most banks have more than one department, however specific departments were chosen which are directly involved with the development of the core banking system directly were included.

On the sampling size, the target population is large and hence the sample frame was based on specific employees working on these departments that had direct usage of the system. Based on the statistical formula a total of 22 banks were chosen and a total of 374 employees were chosen from the banks' three tiers levels and then from each tire some banks were chosen too. The banks chosen were the ones that had undergone changes of their Core Banking Systems or were planning to have their core banking systems changed later.

3.3.2.2 Sampling technique

According to Mugenda and Mugenda (2003), it is noted that purposive sampling allows a researcher to use cases that have the required information with respect to the objectives of the study. It is also known as judgmental, selective or subjective sampling. The researcher relied on his own judgement when choosing the numbers of population to participate in the study. The sampling technique used to identify the respondents resulted to a total of 374 employees from various banks and various departments.

Any survey can be of importance if it is representative and reliable for business. Determining the sample size is not easy. A sample is a selection of respondents chosen in such a way that it represents the entire population as closely as possible (Dessel, 2013).

The researcher established that there are three Tiers within which banks are classified, these included Tier 1, Tier 2 and Tier 3. The determination of a sample size is dependent on the following parameters (Scott Smith, 2018)

- Population size: The total number of people who fit the demographics in question, in this case the total number of employees in banks in Kenya.
- Margin of error (Confidence Interval): Given that no sample will be perfect, there must be room left for error, in most cases it's a margin of error of +/- 5%.
- Confidence level- this is the level of reality reflected on the survey, common confidence intervals are 90% confident, 95% confident and 99% confident.
- Standard of deviation- this is the rate of variance expected in the survey response, the common safe variance used is 0.5. It is considered the most forgiving and ensures a large enough sample size.

$$\text{Sample size} = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N} \right)}$$

Figure 3-1: Sample Size formula (Source: SurveyMonkey website)

Where:

- $Z = Z$ value (e.g. 1.96 for 95% confidence level)
- $p =$ probability of a subject being selected in a sample 0.5
- $1-p =$ probability of a subject not being selected in a sample 0.5
- Population Size = $N = 14,000$
- Margin of error = $e = 5\%$
- z -score = $z = 95\%$ or $CI = 1.96$

From the following Table 3-1, sampling size formula stated previously, the researcher was able to determine the banks sample size.

Table 3-1: The Number of Banks in each Tier (Source: Central Bank of Kenya, 2016)

Bank Tier	Total Population (per Tiers)	Sampling Size (Banks)
Tier 1	6	3
Tier 2	15	8
Tier 3	21	11
Total	42	22

From the various banks, the researcher considered the following departments which were heavily involved in the change development and implementation of the Core banking system. They included: -

1. The ICT Department
2. Operations Department
3. Credit Risk Department
4. Risk and Compliance Department
5. Finance Department
6. Treasury Department
7. Cash Management

The total number of banks selected were 22 based on Cochran’s sampling, this translates to an approximate population of 14,000 or 50% of the entire banking sector employees of 28,000 as of 2015. According to Survey Monkey website and sampling formula, the researcher also derived sample size of 374.

Through the previous Figure 3-1 of the sampling size formula, the researcher derived the sample size 374 as shown in the following Table 3-2

Table 3-2: Target Population (Source: Author)

Department	Population (Frequency)	Sampling size
Information & Technology Department	112	30%
Operations Department	76	20%
Credit Risk Department	56	15%
Treasury Department	19	5%
Risk & Compliance Department	37	10%
Finance department	37	10%
Cash Management Department	37	10%
Total	374	100%

3.4 Data Collection Methods

Data collection techniques allowed the researcher to systematically collect data about study objects. There are various data collection methods which included the following; Observation, Interviews, administering questionnaires, focus groups discussions and using available information.

Observation involves systematically selecting, watching and recording your findings. There are also two types of observations, participative and non-participative observations. Interviewing technique involves questioning of the respondents either as a group or as an

individual, answers are then recorded by writing or by electronic media or by combination of both.

Focus groups discussions, allows a group to freely discuss issues with the guidance of facilitator.

Use of available information involves researching a data collection by reading data that has been collected by other. This could be in form of journals, books or through the web and Internet. Thereafter the research can go and analyse them.

According to Sarantakos, Social Research (1993), a personal interview is a face to face, interpersonal role situation in which an interviewer asks respondents questions designed to elicit pertinent to the research questions.

Administering written questionnaires involves written questions which are answered by respondents through writing. Questions can be sent via e-mails or online form where the respondents reply by filling out the forms. Questionnaires can also be hand delivered. The researcher chose the questionnaire data collection method to collect the data for this research. This is because of the limited budget and time available for the research.

The survey was planned and carried by use of questionnaires. List of questions were prepared and sent through online means. By use of e-mails and Google forms, the researcher easily distributed and collected data for recording and analysis.

3.5 Research Procedure

Based on existing literature reviews the researcher was able to identify gaps in the design of localized frameworks that could be used for the successful implementation of core banking systems. To address these gaps, data collection tool was designed and administered to banks that had implemented core banking systems in the recent past. The researcher identified a total of 22 banks and in each bank the researcher also identified key 9 departments. A total of 374 questionnaire were used to collect the data, these were despatched over the e-mail communication. The researcher prepared a form from the Google application and shared or e-mailed it through electronic form. Once the interviewee received the questionnaire in electronic form and the respondent filled it. The questionnaire was self-descriptive, and the respondents easily understood and filled all the required

questions. Once the forms had been filled, the respondents would then submit, and the researcher would get instant feedback from the response in the form of one consolidated spreadsheet.

The researcher used structured questionnaire which allowed for the preparation of questions prior to any interview to ensure that the desired information was collected from the respondents. From the questionnaire, all the responses were made anonymous hence the fear of respondents being identified was eliminated.

This research was designed in a way that would enable the researcher to identify directly the respondents to interview. The data collected was analysed to identify critical successful factors in the implementation of CBS. From the results obtained the researcher was able to design a model that can be used when acquiring a CBS to reduce the chances of failure.

3.6 Data Analysis Methods

The two main methods the researcher dealt with are the qualitative and quantitative research. According to DeFranzo (2011) qualitative research is mainly exploratory research, seek to explore phenomena well as insights into the problems be faced. The output helps understand hypotheses about phenomena. Quantitative research deals mostly on numerical data which may be utilized for statistical benefits. Data is collected in a more structured means and there are various methods which can be used including face to face, telephone, online means and some specialized software.

The data was analysed using quantitative methods and statistically analysed using percentages and correlations. Findings were analysed and presented using tables and for ease of interpretation. Statistical tools considered and used to analyse data collected were SPSS and Microsoft Excel 2016.

3.7 Ethical Considerations

During the data collection by use of questionnaire, ethical issues were well considered. The questionnaire was designed in a manner that the users was first introduced with the full purpose of the study or data collection. This ensured that the respondent was free to complete knowing the intended purpose for the study. It was also clearly made to the

respondents that information was voluntarily and if they were uncomfortable, there were free to decline.

Assurance was given as well that the information gathered were going to remain anonymous and would be used in for the intended purpose. In addition, the researcher sought for approval from United States International University – Africa for data collection and the banks.

3.8 Chapter Summary

In conclusion, this chapter highlighted the researcher's detailed mode of data collection and the treatment done to analyse the data and subsequently formulate information, relevant to the research's objective. The researcher described the research designed used, population sampling design and the sampling frame. The researcher described various sampling techniques which included observation, interviews, administering questionnaires, focus groups discussions and using available information.

The study is quantitative and qualitative in nature with the main aim being to qualitatively analyse the association between identified independent variables and the dependent variable.

Chapter 4: Model

4.1 Introduction

This chapter addresses the studies part of the third objective which was to design active framework for the successful implementation of the CBS. There is need for a framework which can accommodate future providers offering new services and technologies. To further help in highlighting this, the chapter is broken down into various sub-chapters, each of which focuses on a specific area in relation to the model as follows: Section 4.2 Analysis describes the analysis of data by the researcher. Section 4.3 describes the modelling and design of the model. It analyses the objectives, uses of model, components of the model and the model diagram itself. Section 4.4 shows the proof of concept/testing of the model. Finally, Section 4.5 summarizes what has been achieved in this chapter.

4.2 Data Analysis

A comprehensive literature review helped in coming up with major phases that are deemed important in implementation of CBS. The phases are project formulation phase, Core Banking system selection and Acquisition and Installation, implementation and operation phases. In each phase critical success factors were identified by the researcher based on the literature review in Chapter 2. Questionnaires were developed, and respondents gave their opinion on various critical success factors and the extent to which they influence successful implementation.

Questionnaires were developed and sent to respondents who in turn filled in data. The data was analysed using SPSS (Vs21) and the output analysed using frequencies and correlations. The findings of the data as shared in Analysis section 4.2. In summary, top management support, end user training and involvement are key for successful implementation of Core banking system.

4.2.1 Data Analysis using frequency Tables

Additionally, the data was analyzed using frequency tables. On project formulation phase, the respondents agreed that system requirement planning process is important and end - user requirements to be included in requirement elicitation. In requirement gathering phase, studying old systems and documentation would be of help. The implementation team to ensure that adequate documentation, user manuals and training be available for better

adoption and adaptability of the system. On project management, 80% respondents felt that appointment of a qualified project manager was key coupled with project management skills. The company should have a clear business objective and vision. Top management support is equally important. Findings on vendor, software and hardware selection noted that cost of CBS implementation, functionality, hardware support was important for CBS implementation among other factors.

4.2.2 Pearson's correlation Analysis

On influence of implementation process, several factors were put to the respondents. The factors included involvement of end users in system requirements, system requirement planning processes, budget provision for CBS, adequate testing and reporting.

The findings showed there exists a statistically significant relationship between the initial system requirements and analysis and the successful implementation of the Core Banking System as per Pearson correlation analysis. Pearson correlation is a measure of the strength of linear relationship between two variables. Pearson's r can range from -1 to 1. An r of -1 indicates a perfect negative linear relationship between variables, an r of 0 indicates no linear relationship between variables, and an r of 1 indicates a perfect positive linear relationship between variables (Lane, 2007).

On the Influence of effective Project management and resources, the study sought to determine to what extent the bank conducted Project Management activities during the core banking system change-over. Several factors were also put forward to the respondents. The factors included selection of effective steering committee, adequate training of end users, skill and experience of implementation team, involvement of top management in the project among other factors. The findings showed there exists a strong and significant relationship between the Project management and resources and the Successful implementation of the Core Banking System as per Pearson correlation analysis.

On the influence of effective Vendor, Software and Hardware acquisition, the study sought to find what extent the bank conducted selection of Vendor, Software and Hardware during the acquisition of the Core banking system. The findings showed there exists a very strong and significant relationship between the selection of Vendor, Software and Hardware and

the Successful implementation of the Core Banking System as per Pearson correlation analysis.

4.3 Modelling and Design

According to O'Brien and Marakas (2011), conceptual modeling, an early on activity of the software development process, is closely related to requirements engineering as it tries to gather, organize, and classify the relevant, general information of a domain.

4.3.1 Objective and Framework

The main objective of the research was to develop and test a framework that will be used by Kenyan banks in implementation of their Core Banking System. The project scope targeted the Kenyan banks. The other objectives include to identify the processes involved in CBS implementation and to identify the factors influencing the success of implementing a Core Banking System.

4.3.2 Components of Framework

The framework components were derived from review of literature. From literature the implementation phases included business justification, hardware and software acquisition and evaluation, customization, testing of programs and procedures, conversion of data resources, and a variety of conversion alternatives, training and education of end users. The many phases were narrowed down to three major phases of project formulation phase, Core banking system selection and acquisition phase and installation, implementation and operation phase. The major phases are made up of critical success factors that have been identified through literature review in Chapter 2.

4.3.3 Use of Framework

The phase involves describing the intended uses of the framework. It shows the critical success factors of the various phases of CBS implementation and its relationship to implementation success. In the study, the independent variables are the determinants/critical success factors that have been categorized in phases. The factors include project management skills, clear goals and compelling vision, team capability, project scope, product functionality, pricing, vendor experience, system support, vendor financial

capacity, top management commitment, change over management, minimum customization, testing and training.

The dependent variable is successful implementation of Core Banking System which is measured in terms of project being implemented on time, within budget, top management support, meeting functionality and effective communication.

The following Figure 4-1 shows the conceptual model that was developed and tested for successful implementation of CBS.

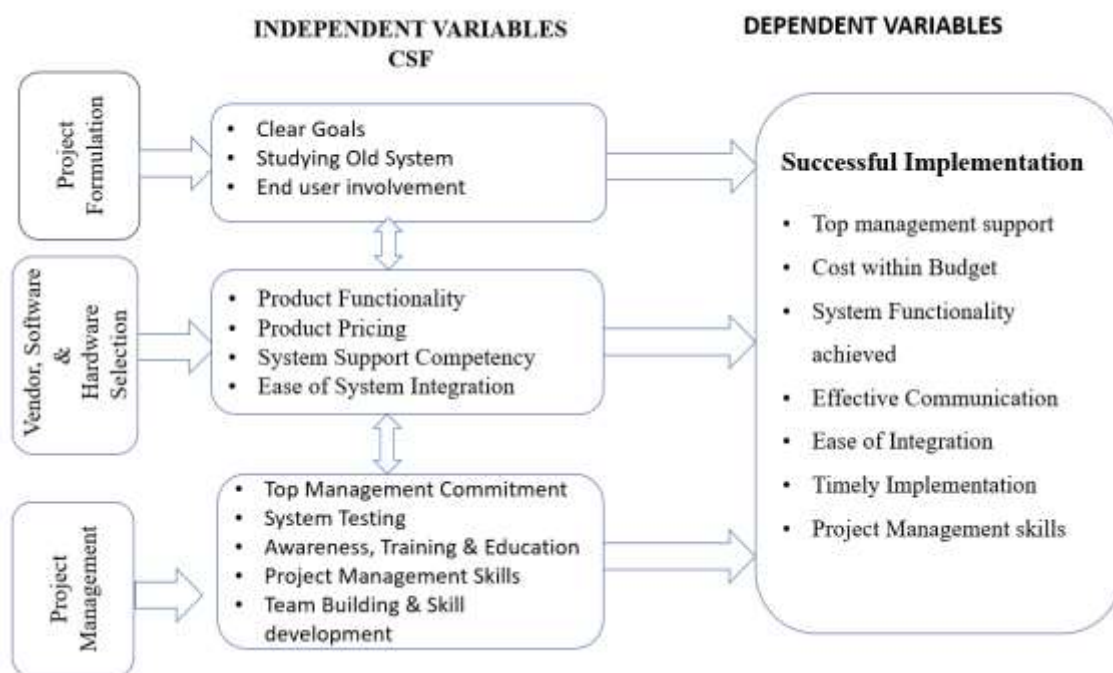


Figure 4-1: Conceptual Framework (Source: Author)

4.4 Proof of Concept

The framework was tested by using a focus group. The researcher shared the framework back to specific users in Kenyan banking sector who were part of the initial respondents of questionnaire and they indicated that the framework would work well for the successful development of the Core Banking System. Specifically, the researcher focused on the key banking personnel in ICT manager, IT system Implementers, System administrator, system testers, Operations and Risk departments who interact and the key decision makers in the operations of the any Core Banking system in Kenya. The respondent's opinion agreed that

system functionality was achieved during the implementation, upper management support and the project team and users were pleased with CBS results. The project team kept regular communication with the users and there was vendor involvement in system customization.

Upper management support was felt during the entire system development. In the end, the system was delivered within the intended duration, a system which was easily integrated with other systems and a system within the budgeted amounts.

4.5 Chapter Summary

The chapter has described the analysis of the model, model and design and proof of concept. The outcome of analysis has also been discussed to support the conceptual model. The chapter also discussed how the researcher validated the proposed framework for the successful implementation of the core banking system. The chapter also discussed factors that were key for the successful CBS implementation which included project management skills, clear goals and compelling vision, team capability, project scope, product functionality, pricing, vendor experience, system support, vendor financial capacity, top management commitment, change over management, minimum customization, testing and training.

The next chapter shows the results that were obtained within the given system questionnaires these were presented on tabular format as well as use of correlation model outputs to test the various research objectives.

Chapter 5: Results and Findings

5.1 Introduction

This chapter analysed the findings, interprets and presents data in line with the objectives of the study. The data obtained is presented in tables, graphs and charts. The analysis was done as per questionnaires that were used to collect data. The findings of the study were presented according to the research questions.

5.2 General Information

5.2.1 Questionnaire Return Rate

The Table 5-1 indicates the response rate was at 84.2% which is far above the 40% that Mugenda and Mugenda (2003) notes is acceptable for this kind of research. Out of the 374 questionnaires distributed and the researcher received 315 responses.

Table 5-1: Questionnaire Return Rate

Return Rate	Frequency	Percentage
Response	315	84.2
Non-Response	59	15.8
Total	374	100.0

5.2.2 Demographic Information

This section sought to identify the respondents' age, gender, duration in the banking industry, the application system they are most familiar with and their role as the system users.

5.2.2.1 Distribution of Respondent by Gender

In the study, the researcher sought to establish the gender distribution of the employees of the various banks and thus asked respondents to indicate their gender on the questionnaires. The results thereof are summarised in Table 5-2. Findings are presented in Table 5-2 and they indicate that 115 (36.5%) of the respondents were female while 200 (63.5%) were male.

Table 5-2: Respondents' Gender Distribution

	Frequency	Percentage
Female	115	36.5
Male	200	63.5
Total	315	100.0

5.2.2.2 Distribution of Respondents' by Age

The study requested the respondents to indicate their age. Their responses appear on Table 5-3. The respondents were requested to indicate the brackets where their ages fall.

Table 5-3: Age of Respondents

Age of Respondents	Frequency	Percentage %
Below 25 Years	21	6.7
26-30 years	94	29.8
31-35 years	70	22.2
Above 35 years	130	41.3
Total	315	100.0

From the findings, majority of respondents were above 35 years which made up 41.3 % of the respondents. The respondents aged between 26-30 years made 29.8% of the respondents followed by respondents between 31-35 years. The respondents below 25 years made 6.7% of the respondents.

5.2.2.3 Respondents' Years of experience in the Current Bank

The study sought to know for how long the respondents had worked in the current bank. Their responses are presented in the following Table 5-4.

Table 5-4: Years of Experience in the Current Bank

	Frequency	Percentage
Less than 2 years	52	16.5
3-6 years	102	32.4
7-10 years	96	30.5
Above 11 years	65	20.6
Total	315	100.0

As Table 5-4 shows that all the respondents' year of experienced was near even distribution with years between 3-6 years at 32.4% and 7-10 years at 30.5%.

Classification of Respondent Duration where CBS has been operational

The study sought to know how long the Bank had been using their CBS. Their responses are recorded in following Table 5-5. The Table indicated the number of years various CBS have been in operational within the bank.

Table 5-5: Duration in Years CBS has been operational

	Frequency	Percentage
Less than 2 years	68	21.6
2-5 years	107	34.0
6-9 years	96	30.5
More than 10 years	44	14.0
Total	315	100.0

From the findings, majority of the respondents indicated that the CBS has been operational in their respective bank for 2-5 years which had a percentage of 34% followed by those who indicated it had been operational between 6-9 years. 21.6% had their CBS operational for less than 2 years and the remaining 14% noted that their CBS was operational for more than 10 years.

5.2.2.5 Respondents CBS Suitability to Dynamic Business Environment

The study sought to find out if Core Banking System is suitable enough to keep pace with dynamic business environment. The findings are recorded in the following Table 5-6. The Table also showed the suitability of the CBS with the current business usage.

Table 5-6: CBS Suitability to Dynamic Business Environment

	Frequency	Percentage
No	35	11.1
Not Sure	83	26.3
Yes	197	62.5
Total	315	100.0

From the findings, majority respondents (62.5%) agreed that their CBS was suitable enough to keep pace with the changing business environment. Other respondents (26.3%) were not sure as to whether the CBS was suitable and a group of respondents (11.1%) felt that CBS was not suitable.

5.2.3 Distribution of respondents by Primary Role they play in the organization

The study sought to find out from the respondents to what department they report to at the bank. The findings are recorded in the following Table 5-7. The table showed the distribution from major departments which normally interacts with Core banking Systems.

Table 5-7: Respondents’ distribution per Departments

		Frequency	Percent
Valid	Cash Management	35	11.1
	Credit Risk	46	14.6
	Finance	41	13.0
	ICT	105	33.3
	Operations	46	14.6
	Other	2	0.6
	Risk & Compliance	25	7.9
	Treasury	15	4.8
	Total	315	100.0

From the findings, majority of the respondents (33.3%) are reporting to ICT department. Respondents from Cash Management were (11.1%), Credit Risks, Finance were (13%), Operations were (14.6%), Risk and Compliance respondents were (7.9%), Treasury respondents were (4.8%) and Other respondents (0.6%) listed as different departments.

5.2.4 Distribution of Respondents by User Roles in the System

The study sought to find out the respondents’ roles in the Core Banking system within the Bank. The findings are recorded in the following Table 5-8. The table showed the distribution of key roles within the bank.

Table 5-8: Distribution of Respondents by users' roles

	Frequency	Percentage
Technical Support	87	27.6
Transaction processing	66	21.0
User Support	56	17.8
Supervisor	25	7.9
Transaction View and Report Use	23	7.3
Security Management and Audit	17	5.4
Credit Risk	16	5.1
Risk Management	16	5.1
Customer	6	1.9
Module development and integrations	3	1.0
Total	315	100.0

From the findings, majority of the respondents (27.6%) were roles relate to Technical support, another 21% were in transaction processing, 17.8% were from User support, 7.9% were supervisors, 7.3% were transaction view and report use, 5.4% were Credit risk and Risk management, 1.9% were Customer care and 1% were Module development and integrations.

5.3 Findings on Implementation Processes of Core Banking Systems

The study sought the respondents' opinion of the extent to which the following activities were conducted during acquisition of the current System. The respondents' opinions are tabled in the following Table 5-9 it shows the respondents' ratings on the extent to which the identified processes were conducted during implementation.

From the findings the study established that most of the processes were conducted. 76.5% of the respondents felt that system requirement planning process was done this agrees with Aggarwal (2006). Notably to point is that 21% of the respondents felt that it was Not done at all that all user requirements had been taken care of in the design and modelling of CBS. By studying the old system and documenting its features for further analysis is a factor that was somewhat thoroughly to 68.9% of the respondents.

Table 5-9: Distribution of Respondents on Implementation Processes Used.

	Not at All (%)	Partially (%)	Not sure (%)	Somewhat Thoroughly (%)	Thoroughly (%)	Total %
System requirement planning process of the CBS before implementation	13.3	5.4	4.8	26.3	50.2	100
End-users of the system involved in determining CBS requirements	13.3	5.4	4.8	26.3	50.2	100
Budget provision for the system Change-Over and related activities including Training and Hardware being provided	14.6	6.3	6.0	32.7	40.3	100
Studying the old system and documenting its features for further analysis	12.7	6.7	11.7	27.3	41.6	100
Having an Effective and rounded model of the System being tested	14.9	5.4	8.6	37.8	33.3	100
All users Requirements being taken care of in the design and modelling of the proposed CBS system	9.5	12.4	7.3	36.8	34.0	100
Clear indication in the system or manuals as to how the CBS system is operated	12.4	9.5	10.2	32.4	35.6	100
Input errors being highlighted	14.3	8.3	7.6	34.9	34.9	100
Any features provided with the software to help track down processing problems	13.3	6.7	11.4	41.9	26.7	100
Reports availability for users to identify all master file changes	17.1	10.2	10.8	31.1	30.8	100
Ease of Use of the proposed system	13.0	6.0	6.3	26.3	48	100

On end-users of the system involved in determining CBS requirements, 76.5% of respondents felt it was thoroughly a factor as it leads to ease of use of the proposed system that 74.3% felt was thoroughly done.

Documentation of a system is equally important. The factor of clear indication in the system or manuals as to how the CBS system is operated is important factor to over 68% of the respondents. Over 74% of the respondents noted that budget provision for the system Change-Over and related activities including Training and Hardware is important.

Input errors being highlighted are Somewhat Thoroughly conducted to 65.8% of the respondents, this concurs with Gargeya and Brady (2015) who notes that organizations should invest in testing tools and tracking of testing process. The findings also showed that 68.8% of respondents agree that having software with tracking features was thoroughly done. On Reports availability for users to identify all master file changes factor, 61.9% of respondents found it to be Somewhat thoroughly done. Another factor of having an

effective and rounded model of the system being tested was noted as being thorough conducted by 71.1% of the respondents.

In summary, the above factors deem important during the processes involved in implementing a CBS to over 60% of the respondents during the initial system requirements and analysis.

5.4 Findings on Factors Influencing Successful CBS Implementation

5.4.1 Vendor, Software and Hardware Selection

The study sought to find out to what extent the following factors on Vendor, Software and Hardware selection were conducted. The results are tabulated in Table 5-10

Table 5-10: Distribution of Respondents on CSF relating on Vendor, Software and Hardware Selection

No.		Least Important (%)	Not Important (%)	Not Sure (%)	Important (%)	Very Important (%)	Total (%)
1	Number of years the vendor has been in business	5.4	11.1	7.3	44.4	31.7	100
2	Number of clients the vendor has implemented CBS	5.1	14.6	8.9	41.0	30.5	100
3	Global rating of the vendor	3.5	14.0	12.5	40.6	29.5	100
4	Financial position of the CBS vendor	3.8	9.8	7.9	39.4	39.0	100
5	Cost of the CBS Project	2.9	7.3	8.6	30.8	50.5	100
6	System support and availability of online support	3.5	7.6	7.9	28.9	52.1	100
7	Ease of software integration	3.8	7.9	13.7	33.3	41.3	100
8	Cost of post implementation support	6.0	5.7	10.5	38.4	39.4	100
9	Software product Costing	3.5	7.6	8.3	23.5	57.1	100
10	Product Functionality	4.1	7.0	6.0	22.9	60	100
11	Software Product Reliability	4.1	7.5	7.3	33.0	49.8	100
12	Product customizability	5.4	9.8	7.0	38.4	39.4	100
13	Cost of Hardware	4.4	8.3	10.2	29.5	47.0	100
14	Availability and support for Hardware	5.7	5.7	9.5	25.5	53.7	100
15	Hardware support and compatibility	3.5	8.3	6.3	41.9	40.0	100

From the findings, the number of years the vendor has been in business was important at 76.1%. It also indicated that number 76.1% response showed vendor experience was important, Global rating of the vendor by 70.1% and Financial position of the CBS vendor were deemed important by 78.4% of the respondents.

Additional findings indicated the CBS project costing was important at 81.3%. Also, from the findings, having good system support and availability of online support by 81% was deemed important. Ease of system integration by 74.6%, cost of post implementation support by 77.4%, product costing by 80.6%, Product functionality by 82.9% were found to be important as well.

The study findings also noted that Product Reliability by 82.8% and product customizability by 77.8% were deemed to be important factor on vendor, software and hardware selection influence Core Banking System Implementation by respondents.

5.4.2 Project Management

The researcher sought to establish to what extent did the bank do during the core banking implementation as put on the questionnaire questions on the following critical success factors were conducted on project management that influences the success of Core Banking system implementation.

Table 5-11: Distribution of Respondents on CSF on Project management

		Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree	Total (%)
1	Selection of an effective and efficient ICT Steering Committee Team	3.2	4.4	10.5	31.7	50.2	100
2	Appointment of well verse Project manager	4.1	8.6	7.6	27.6	52.1	100
3	Having a clear Business objective to facilitate CBS change-over	4.1	4.4	8.9	33.7	48.9	100
4	Availability of adequate personnel Resources	6.0	3.5	7.3	30.2	53.0	100
5	Availability of an effective Strategy in place	3.2	8.3	7.3	29.5	51.7	100
6	Skills and Experience	3.2	7.3	7.3	35.6	46.7	100
7	Tools to support the project	2.9	6.3	9.5	37.5	43.8	100
8	Proper and adequate end user training	4.1	3.5	10.5	27.0	54.9	100
9	Proper involvement of ICT and Project management team	3.2	6.0	6.0	29.2	55.6	100

10	Team Building and skill development activities	3.5	7.0	14.9	39.7	34.9	100
		Strongly Disagree (%)	Disagree (%)	Not Sure (%)	Agree (%)	Strongly Agree (%)	Total (%)
11	Recognition of service and reward for work done	7.0	6.0	7.6	52.4	27.0	100
12	Top Management Support as a determinant of CBS change-over phase	3.2	4.4	6.0	30.8	55.6	100
13	Top management keeps a close eye on CBS project and quick to intervene supporting the project manager when things start going wrong.	3.8	5.1	9.5	28.6	53.0	100
14	Top management consistently provides all the tools and resources required to successfully deliver all the approved IT projects.	5.1	3.5	7.9	37.1	41.3	100
15	User Acceptance Tests were conducted for all the modules before the Go-Live date	4.1	4.4	8.3	33.3	49.8	100
16	The IT staff involvement in the product Customization	1.9	7.6	15.9	30.5	44.1	100
17	If changes are introduced in the middle of IT projects, are they compared against the initially signed off requirements/ objectives	2.9	4.1	16.2	38.7	38.1	100
18	User training performed for all users	3.5	5.4	13.3	40.6	37.1	100
19	The level of end user involvement during the requirements definition process was facilitated by System vendors	3.2	4.4	8.3	33.7	50.5	100
20	Enough training to allow you utilize the CBS system with ease	3.5	14.3	9.5	41.3	31.4	100

From the findings of project management, appointment of a well verse project manager was agreed by 79.7% of the respondents as having been conducted. This included selection of an effective ICT steering committee team that respondents strongly agreed at 81.9%. Skills and experience were agreed by 82.3% to be available and utilized and by having proper involvement of ICT and project management team was affected by 84.8% of the banks membership, this confirms with the author Ochwoto and Ogolla (2017).

Clear business goals during CBS change-over by 82.6% of the respondents agreed that lead to successful implementation. Likewise, 83.2% did agreed that availability of adequate personnel resources while 81.2% respondents agreed that availability of an effective strategy in place resulted in successful CBS implementation. The findings also indicated that right skills and experience by 82.3%, and having tools to support the project by 81.3%, having proper and adequate end user training by 81.9% respondents strongly agreed.

Proper involvement of ICT and Project management team by 84.8% respondents agreed that it contributed to successful implementation.

From the findings it showed that Team Building and skill development activities were agreed by 74.6% of the respondents and recognition of service and reward for work done agrees by 79.4% of the respondents.

It was strongly agreed that top management support as a determinant of CBS change-over phase by 86.4% of respondents. Performing user acceptance tests before go-live was agreed by 83.1% respondents as critical success factor. IT staff involvement in the product Customization by 74.6% was also agreed by the respondents.

A further 76.8% of respondents agreed that if changes were introduced in the middle of IT projects were compared against the initially signed off requirements. User training performed for all users by 77.7% was strongly agreed.

5.5 Findings on Framework for Successful Implementation

The study sought the respondents' opinion on the success of Implementation of Core Banking System in your company. The respondents' opinions are tabled in the following Table 5-12

Table 5-12: Distributions of Respondents on Successful CBS Implementation

No.		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	System Functionality Achieved after implementation	3.8	6.3	12.2	39.4	40.3
2	System Operational as per the scheduled time	2.9	10.8	10.2	48.6	27.6
3	Cost being Within Budget after CBS Implementation	2.9	7.3	10.2	41.6	38.1
4	Project team and the users Pleased with the CBS results	3.1	7.3	8.6	40.3	40.6
5	Keeping regular Communications to the Users	2.5	7.0	9.5	35.2	45.4
6	Getting Management Buy-In	2.5	7.3	12.4	35.2	42.5
7	Vendor involvement in system customization	3.5	7.3	10.8	32.1	46.3
8	Engagement with all Users	3.5	6.3	14.0	32.7	43.5
9	Users continue to be pleased with the system thereafter	1.9	7.0	9.8	34.0	47.3

10	Ease of integration to other Systems	3.2	5.4	9.2	36.5	45.7
11	Top management commitment and Involvement	1.9	8.6	12.7	30.5	46.3
12	All functions implemented	7.9	4.8	3.8	42.9	40.6

From the finding, most of the respondents agreed and strongly agreed that system functionality was achieved after implementation by 83.5%. It also showed that project team and the users were agreed with the CBS results by 80.9%, they also agreed keeping regular communications with users by 80.6%. The findings also showed that respondents agreed that getting management buy-in by 77.7%.

Vendor involvement in system customization was agreed by 78.4% respondents while getting engagement with all Users by 76.2% was also agreed. The findings also showed that 81.3% of users strongly agreed that were pleased with the system thereafter implementation.

Also, the respondents strongly Agreed that ease of integration to other systems by 82.2% and top management commitment and involvement indicated that they strongly agreed by 76.8%. The findings also noted that the respondents agreed to system operational as per the scheduled time by 76.2% respondents and cost being within budget after CBS implementation by 79.7% respondents and all functions implemented by 83.5% respondents.

5.5.1 Correlation between Implementation Processes and Successful Implementation.

The study sought to find out the correlation between Implementation processes and Successful implementation this is presented on the following Table 5-13. Its showed that there was a positive correlation between the implementation process variables and the successful implementation of the Core Banking System as most of the CSF are above .201** which is positive.

Table 5-13: Correlation Analysis between Implementation Processes and Successful Implementation

Correlations Between Initial System Requirement & Analysis with Successful Implementation.

		System Functionality	System Operational as per the scheduled time	Cost being With in Budget	Project team and the users Pleased	Keeping regular Communications to the Users	Getting Management Buy In	Vendor involvement in system customization	Engagement with all Users	Users continue to be pleased with the system thereafter	Ease of integration to other Systems	Top management commitment & involvement	All functions implemented
System requirement planning process of the CBS	Pearson Correlation	.440**	.377**	.326**	.339**	.324**	.327**	.305**	.324**	.413**	.359**	.369**	.602**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
End users involved in determining CBS requirements	Pearson Correlation	.510**	.398**	.359**	.472**	.451**	.370**	.401**	.386**	.491**	.446**	.393**	.546**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Provision for the system ChangeOver activities	Pearson Correlation	.433**	.330**	.252**	.362**	.344**	.352**	.264**	.314**	.331**	.337**	.261**	.515**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Studying Old systemand	Pearson Correlation	.416**	.354**	.337**	.364**	.298**	.316**	.331**	.350**	.391**	.329**	.377**	.545**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Having an Effective and rounded model of the System	Pearson Correlation	.406**	.313**	.298**	.371**	.334**	.359**	.323**	.248**	.412**	.358**	.301**	.565**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
All users Requirements being taken care of in the design	Pearson Correlation	.470**	.355**	.309**	.355**	.367**	.361**	.356**	.272**	.417**	.387**	.383**	.487**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Clear indication in the system or manuals as to how the CBS is operated	Pearson Correlation	.469**	.388**	.361**	.394**	.360**	.399**	.442**	.373**	.497**	.425**	.406**	.631**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Input errors being highlighted	Pearson Correlation	.459**	.303**	.371**	.403**	.365**	.343**	.368**	.303**	.418**	.326**	.346**	.527**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Any features provided with the software to help track down pro	Pearson Correlation	.509**	.363**	.354**	.433**	.380**	.383**	.399**	.369**	.454**	.387**	.419**	.566**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Reports availability for users to identify all master file changes	Pearson Correlation	.364**	.244**	.277**	.297**	.298**	.241**	.275**	.251**	.336**	.263**	.256**	.502**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315
Ease of Use of the proposed system	Pearson Correlation	.481**	.336**	.371**	.424**	.396**	.389**	.378**	.402**	.477**	.408**	.428**	.515**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	315	315	315	313	306	315	315	310	315	313	315	315

** . Correlation is significant at the 0.01 level (2-tailed).

The finding in the previous Table 5-13 showed that there is statistically strong positive correlation of (0.602) between system requirement planning process of the CBS before implementation and all CBS functions implemented, it also showed there is a strong

positive correlation of (0.631) between indication in the system or manuals as to how the CBS system is operated and all CBS functions implemented.

These meant that the management of banks needs to have proper systems requirements planning and provision of user manuals during CBS implementation.

The findings also noted that there is strong positive correlation of (0.566) between any features provided within the software to help track down processing problems and the all CBS functions being implemented successful. The management should ensure to provide tools which tract and analyze data during the processing, this would therefore eliminate future possibilities of errors being repeated.

Its note also that there is strong and positive relation of (0.515) between the Ease of Use of the proposed system and all CBS functions being implemented. This is agreeable in that for ease of use of CBS there is tendency of having an effective system which users appreciate.

There is generally weak positive correlation between other independent variables of the Initial System Requirements and Successful Implementation as we can see the Pearson correlation coefficients are ranging between 0.3 and 0.5 meaning that there are not important for successful CBS implementation.

5.5.2 Correlation between Vendor, Software, Hardware and Successful Implementation

The research sought to find out the correlation between Vendor, Software, Hardware and Successful Implementation this is presented on the following Table 5-14.

The findings showed there was a strong positive correlation between these variables ranging from Vendor, Solution and the hardware selection and acquisitions and having a successful implementation of CBS as indicated from the following Table 5-14

Table 5-14: Correlation Analysis between Vendor, Software, Hardware and Successful Implementation

		Correlations												
		System Functionality Achieved after Implementation	System Operational as per the scheduled time	Cost being Within Budget after CBS Implementation	Project team and the users Pleased with the CBS results	Keeping regular Communications to the Users	Getting Management Buy In	Vendor involvement in system customization	Engagement with all Users	Users continue to be pleased with the system thereafter	Ease of integration to other Systems	Top management commitment & Involvement	All functions implemented	
Number of years the vendor has been in business	Pearson Correlation Sig. (2-tailed) N	.565** .000 315	.487** .000 315	.411** .000 315	.590** .000 315	.500** .000 315	.527** .000 315	.479** .000 315	.394** .000 315	.525** .000 315	.510** .000 315	.491** .000 315	.418** .000 315	
Number of clients the vendor has implemented CBS	Pearson Correlation Sig. (2-tailed) N	.519** .000 315	.505** .000 315	.333** .000 315	.491** .000 315	.371** .000 315	.467** .000 315	.406** .000 315	.377** .000 315	.497** .000 315	.457** .000 315	.556** .000 315	.496** .000 315	
Global rating of the vendor	Pearson Correlation Sig. (2-tailed) N	.429** .000 315	.473** .000 315	.329** .000 315	.374** .000 313	.446** .000 306	.371** .000 315	.374** .000 315	.385** .000 310	.447** .000 315	.439** .000 313	.410** .000 315	.451** .000 315	
Financial position of the CBS vendor	Pearson Correlation Sig. (2-tailed) N	.538** .000 315	.502** .000 315	.462** .000 315	.507** .000 315	.528** .000 315	.500** .000 315	.417** .000 315	.393** .000 315	.519** .000 315	.568** .000 315	.407** .000 315	.500** .000 315	
Cost of CBS Project	Pearson Correlation Sig. (2-tailed) N	.529** .000 315	.491** .000 315	.307** .000 315	.468** .000 315	.519** .000 315	.408** .000 315	.292** .000 315	.357** .000 315	.515** .000 315	.563** .000 315	.445** .000 315	.531** .000 315	
System support availability of online support	Pearson Correlation Sig. (2-tailed) N	.572** .000 315	.596** .000 315	.402** .000 315	.525** .000 315	.524** .000 315	.500** .000 315	.426** .000 315	.464** .000 315	.612** .000 315	.614** .000 315	.521** .000 315	.542** .000 315	
Ease of system integration	Pearson Correlation Sig. (2-tailed) N	.636** .000 315	.597** .000 315	.389** .000 315	.499** .000 315	.459** .000 315	.474** .000 315	.384** .000 315	.395** .000 315	.446** .000 315	.499** .000 315	.439** .000 315	.470** .000 315	
Cost of post implementation support	Pearson Correlation Sig. (2-tailed) N	.621** .000 315	.620** .000 315	.448** .000 315	.515** .000 315	.556** .000 315	.544** .000 315	.472** .000 315	.412** .000 315	.592** .000 315	.577** .000 315	.483** .000 315	.430** .000 315	
Product Costing	Pearson Correlation Sig. (2-tailed) N	.556** .000 315	.525** .000 315	.402** .000 315	.588** .000 315	.613** .000 315	.490** .000 315	.446** .000 315	.444** .000 315	.626** .000 315	.614** .000 315	.536** .000 315	.484** .000 315	
Product Functionality	Pearson Correlation Sig. (2-tailed) N	.591** .000 315	.533** .000 315	.463** .000 315	.516** .000 315	.539** .000 315	.442** .000 315	.423** .000 315	.415** .000 315	.636** .000 315	.600** .000 315	.528** .000 315	.450** .000 315	
Product Reliability	Pearson Correlation Sig. (2-tailed) N	.615** .000 315	.510** .000 315	.478** .000 315	.595** .000 315	.563** .000 315	.529** .000 315	.451** .000 315	.406** .000 315	.591** .000 315	.626** .000 315	.526** .000 315	.451** .000 315	
Product customizability	Pearson Correlation Sig. (2-tailed) N	.546** .000 315	.499** .000 315	.397** .000 315	.532** .000 315	.428** .000 315	.483** .000 315	.382** .000 315	.349** .000 315	.439** .000 315	.449** .000 315	.389** .000 315	.305** .000 315	
Cost of Hardware	Pearson Correlation Sig. (2-tailed) N	.588** .000 315	.513** .000 315	.439** .000 315	.571** .000 315	.510** .000 315	.556** .000 315	.426** .000 315	.392** .000 315	.548** .000 315	.571** .000 315	.460** .000 315	.372** .000 315	
Availability and support for Hardware	Pearson Correlation Sig. (2-tailed) N	.550** .000 315	.491** .000 315	.409** .000 315	.611** .000 315	.552** .000 315	.563** .000 315	.424** .000 315	.436** .000 315	.534** .000 315	.587** .000 315	.439** .000 315	.377** .000 315	
Hardware support and compatibility	Pearson Correlation Sig. (2-tailed) N	.540** .000 315	.521** .000 315	.518** .000 315	.620** .000 315	.651** .000 315	.628** .000 315	.505** .000 315	.567** .000 315	.624** .000 315	.703** .000 315	.579** .000 315	.372** .000 315	

** . Correlation is significant at the 0.01 level (2-tailed).

The finding showed that there is statistically strong positive correlation of (0.565) between the Number of years the vendor has been in business and System functionality being achieved after implementation.

A positive correlation of (0.519) between number of clients the vendor has implemented CBS and System functionality being achieved after implementation. Generally, the management should counter check on the volumes of vendors' implementation sites to ascertain their capabilities of perform the CBS development.

The findings also showed strong positive correlation of (0.538) between Financial position of CBS vendor and system functionality being accomplished. Management should also check the vendors financial position for effective project management.

Data showed a positive correlation of (0.529) between the Cost of the CBS project and functionality being achieved. Cost factor is very critical for any system development as it needs to be contained and within the budget figures.

There is also strong positive correlation of (0.636) of ease of system integration, cost of post implementation support of (0.621); product functionality of (0.591); product reliability of (0.615) and System functionality being achieved after implementation.

From the findings, it is also noted that there is positive correlation of (0.611) of availability and support for hardware, positive correlation of (0.620) of hardware compatibility to the Project team and the users pleased with the CBS results successful implementation. The results depict strong correlation between ease of integration to other Systems of (0.703) and Hardware support and compatibility.

There is a strong positive correlation between Vendor, Software, Hardware and Successful Implementation variables as we can see the Pearson correlation coefficients are ranging between 0.5 and 0.7 meaning that these are very important for successful CBS implementation.

5.5.3 Correlation between Project Management and Successful Implementation

The study sought to find out the correlation between project management and the successful Implementation which is presented on the following Table 5-15.

The findings showed there was a positive correlation between the variables of project management and having a successful implementation of CBS as indicated in the following

Table 5-15: Correlation analysis between project manager and successful implementation

		Correlations											
		System Functionally Achieved after Implementation	System Operational as per the scheduled time	Cost being Within Budget after CBS Implementation	Project team and the users Pleased with the CBS results	Keeping regular Communications to the Users	Getting Management Buy In	Vendor involvement in system customization	Engagement with all Users	Users continue to be pleased with the system thereafter	Ease of integration to other Systems	Top management commitment & involvement	All functions implemented
Selection of an effective and efficient CT Steering committee	Pearson Correlation Sig. (2-tailed) N	.364** .000 315	.420** .000 315	.425** .000 315	.480** .000 315	.512** .000 315	.543** .000 315	.401** .000 315	.442** .000 315	.506** .000 315	.525** .000 315	.437** .000 315	.344** .000 315
Appointment of well versed Project manager	Pearson Correlation Sig. (2-tailed) N	.510** .000 315	.503** .000 315	.506** .000 315	.484** .000 315	.569** .000 315	.596** .000 315	.424** .000 315	.527** .000 315	.561** .000 315	.549** .000 315	.377** .000 315	.380** .000 315
Having a clear Business objective to facilitate CBS changeover	Pearson Correlation Sig. (2-tailed) N	.415** .000 315	.416** .000 315	.369** .000 315	.522** .000 315	.500** .000 315	.525** .000 315	.426** .000 315	.348** .000 315	.551** .000 315	.516** .000 315	.451** .000 315	.314** .000 315
Availability of an effective Strategy in place	Pearson Correlation Sig. (2-tailed) N	.347** .000 315	.403** .000 315	.425** .000 315	.567** .000 315	.592** .000 315	.508** .000 315	.386** .000 315	.490** .000 315	.555** .000 315	.571** .000 315	.433** .000 315	.306** .000 315
Availability of adequate Resources	Pearson Correlation Sig. (2-tailed) N	.338** .000 315	.295** .000 315	.274** .000 315	.411** .000 315	.439** .000 315	.365** .000 315	.226** .000 315	.437** .000 315	.443** .000 315	.466** .000 315	.359** .000 315	.268** .000 315
Skills and Experience	Pearson Correlation Sig. (2-tailed) N	.563** .000 315	.483** .000 315	.527** .000 315	.609** .000 315	.634** .000 315	.589** .000 315	.428** .000 315	.603** .000 315	.553** .000 315	.608** .000 315	.455** .000 315	.296** .000 315
Tools to support the project	Pearson Correlation Sig. (2-tailed) N	.461** .000 315	.427** .000 315	.512** .000 315	.555** .000 315	.566** .000 315	.520** .000 315	.427** .000 315	.603** .000 315	.596** .000 315	.555** .000 315	.487** .000 315	.281** .000 315
Proper and adequate end user training	Pearson Correlation Sig. (2-tailed) N	.414** .000 315	.372** .000 315	.539** .000 315	.517** .000 313	.527** .000 306	.510** .000 315	.434** .000 315	.568** .000 310	.538** .000 315	.530** .000 315	.394** .000 315	.327** .000 315
Proper involvement of CT and Project management team	Pearson Correlation Sig. (2-tailed) N	.425** .000 315	.398** .000 315	.454** .000 315	.714** .000 315	.678** .000 315	.653** .000 315	.529** .000 315	.535** .000 315	.680** .000 315	.688** .000 315	.539** .000 315	.307** .000 315
Team Building and skill development activities	Pearson Correlation Sig. (2-tailed) N	.514** .000 315	.410** .000 315	.591** .000 315	.623** .000 313	.646** .000 313	.568** .000 313	.494** .000 313	.634** .000 313	.601** .000 313	.574** .000 313	.497** .000 315	.259** .000 315
Recognition of service award for work done	Pearson Correlation Sig. (2-tailed) N	.180** .001 315	.201** .000 315	.337** .000 315	.372** .000 315	.245** .000 315	.344** .000 315	.295** .000 315	.242** .000 315	.273** .000 315	.365** .000 315	.202** .000 315	.025** .653 315
Top Management Support as a determinant of CBS changeover	Pearson Correlation Sig. (2-tailed) N	.459** .000 315	.391** .000 315	.478** .000 315	.604** .000 315	.611** .000 315	.616** .000 315	.419** .000 315	.581** .000 315	.631** .000 315	.698** .000 315	.473** .000 315	.330** .000 315
Top management keeps a close eye on CBS project and quick to	Pearson Correlation Sig. (2-tailed) N	.443** .000 315	.409** .000 315	.359** .000 315	.471** .000 315	.440** .000 315	.439** .000 315	.375** .000 315	.494** .000 315	.507** .000 315	.443** .000 315	.386** .000 315	.211** .000 315
Top management consistently provide all the tools and resource	Pearson Correlation Sig. (2-tailed) N	.337** .000 315	.242** .000 315	.262** .000 315	.460** .000 315	.392** .000 315	.517** .000 315	.317** .000 315	.503** .000 315	.497** .000 315	.540** .000 315	.371** .000 315	.162** .004 315
User Acceptance Tests were conducted for all the modules before	Pearson Correlation Sig. (2-tailed) N	.479** .000 315	.390** .000 315	.553** .000 315	.583** .000 315	.574** .000 315	.567** .000 315	.543** .000 315	.532** .000 315	.571** .000 315	.572** .000 315	.515** .000 315	.339** .000 315
The IT staff involvement in the product Customization	Pearson Correlation Sig. (2-tailed) N	.403** .000 315	.274** .000 315	.476** .000 315	.546** .000 315	.530** .000 315	.558** .000 315	.440** .000 315	.543** .000 315	.548** .000 315	.550** .000 315	.441** .000 315	.214** .000 315
If changes are introduced in the middle of IT projects	Pearson Correlation Sig. (2-tailed) N	.384** .000 315	.216** .000 315	.499** .000 315	.461** .000 315	.525** .000 315	.357** .000 315	.396** .000 315	.461** .000 315	.398** .000 315	.394** .000 315	.458** .000 315	.244** .000 315
User training performed for all users	Pearson Correlation Sig. (2-tailed) N	.319** .000 315	.300** .000 315	.462** .000 315	.476** .000 315	.383** .000 315	.479** .000 315	.371** .000 315	.450** .000 315	.459** .000 315	.446** .000 315	.370** .000 315	.209** .000 315
The level of end user involvement during the requirements definition	Pearson Correlation Sig. (2-tailed) N	.476** .000 315	.371** .000 315	.510** .000 315	.656** .000 315	.599** .000 315	.645** .000 315	.391** .000 315	.607** .000 315	.642** .000 315	.639** .000 315	.544** .000 315	.329** .000 315
Sufficient training to allow you to utilize the CBS system with ease	Pearson Correlation Sig. (2-tailed) N	.580** .000 315	.559** .000 315	.547** .000 315	.534** .000 315	.508** .000 315	.608** .000 315	.534** .000 315	.486** .000 315	.480** .000 315	.517** .000 315	.456** .000 315	.321** .000 315

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

From the study, it showed that there is statistically strong positive correlation of (0.609) and (0.634) between user Skills and experience to Project team and the users being pleased with the CBS results and Keeping Regular Communications to the Users respectively.

There is also a strong correlation of (0.714) depicted by having proper involvement of ICT and project management team and the Project team and the users Pleased with the CBS results. Also noted is strong correlation of (0.678) of having good involvement of ICT and project management to Keeping Regular Communications to the Users. During CBS development banks need to find ways of involving all users.

There is also strong statistical correlation of (0.604), (0.611), (0.616) between Top Management Support as a determinant of CBS changeover phases and (1) Project team and the users being pleased with the CBS results. (2) Keeping regular Communications to the Users. (3) Getting Management Buy In respectively. Management should pay attention to users, project teams being pleased with the CBS, they also need to regular communications as well as getting top management support. There is a strong positive correlation between all project management to the successful Implementation variables as we can see the Pearson correlation coefficients are ranging between 0.5 and 0.7 meaning that this is very important for CBS implementation.

5.5.4 Evaluation of the Successful Implementation Framework

The research framework was evaluated through focus group, the findings from the focus group showed research focused on the key banking personnel in ICT, Operations and Risk departments who interact and the key decision makers in the operations of the any Core Banking system in Kenya. The respondent's opinion agreed that achieving system functionality during the implementation needs upper management support and the project team and users being please with CBS results. Having the project team keeping regular communications with the users and the vendor involvement in system customization.

All the framework critical success factors would provide a successful core banking implementation as captured in model. The focus group gave positive feedback that it supports ease of integration, the cost would be within budget amounts and would result is timely implementation. Upper management support was felt during the entire system development. In the end, the system was delivered within the intended duration, a system which was easily integrated with other systems and a system within the budgeted amounts.

5.6 Chapter Summary

This Chapter has presented the finding of the study. The study undertook and analysed the responses of a total of 315 bank employees from 22 banks in Kenya. The findings were presented in tables for ease of understanding and critical information's have been analysed which can be used for management, development of a successful information systems, the case of Core Banking systems in Kenya.

Out of the 374 expected sample size the researcher received 315 responses. Being an online questionnaire, some responses were received late when the analysis had already begun. Findings presented indicated that 115 (36.5%) of the respondents were female while 200 (63.5%) were male. This is an indication that both genders were involved in this study and thus the finding of the study did not suffer from gender partiality. Most of the respondents in the various banks were above 35 years, that was an indication that respondents were well distributed in terms of their age. The perception that advance age goes with experience and the banks has committed well experienced banking staff to CBS implementation projects.

End-users of the system involved in determining CBS requirements, 76.5% of respondents felt it was thoroughly a factor as it leads to ease of use of the proposed system that 74.3% felt was thoroughly done. The study findings also noted that product reliability by 82.8% and product customizability by 77.8% were deemed to be important factor and agreed as well by Gartner Industry Research Note (2011) in factors on Vendor, Software and Hardware selection influence Core Banking System Implementation by respondents.

Cost of hardware by 76.5% of the respondents, Availability and support for Hardware by 79.2% were found to be very Important in hardware selections whereas Hardware support and compatibility by 81.9% was found to be important by respondents. The study has highlighted the CSF which can be adopted for the success of implementation of the CBS. Some of the CSF for CBS implementation includes: - system functionality achieved after implementation, system operational as per the scheduled time, cost being within budgeted amounts after CBS Implementation and project team and the users being pleased with the CBS results. Detailed findings were presented in this chapter while summaries and conclusion has been discussed in the following Chapter 6.

Chapter 6: Discussion, Conclusions and Recommendations

6.1 Introduction

The chapter presents the summarized data findings for the research “An Approach for successful information system development: A case of Core Banking Systems in Kenya”. The conclusions and recommendations are documented in this chapter.

The study then recommends the factors that the frameworks for a Successful Core Banking development should consider. The chapter therefore is structured into summary, conclusions, recommendations, limitations and areas for further research.

6.2 Summary

6.2.1 Purpose of the Study

The purpose of the study was to identify the critical success factors that are involved in the process of the development and the successful setup of the core banking system and finally come up with a framework for future CBS development in banks in Kenya.

6.2.2 Research Objectives

The following were the main research objectives

- i. To identify the processes involved in implementing of the Core Banking system
- ii. To identify the factors influencing the success of implementing the Core banking system
- iii. To design a framework and test for the successful implementation of the core banking system

6.2.3 Summary of the Research Methodology

The research was carried out among Kenyan banks employees. Research questions were designed and shared electronically to over 374 respondents, based on the Cochran’s sampling technique, it was recommended that a sampling size of 22 banks in Kenya be used from the total population of 42 banks in Kenya. The researcher used a questionnaire tool for the data collection. A total of 315 of 374 were able to respond to the questionnaire shared which was 84.2% response rate and which was way above the 40% that Mugenda (2003) says is acceptable for this kind of research.

The research carried Data analysis using the SPSS (Vs21) application and data were tabulated in various frequencies and correlation using tables then presented. The study was quantitative and qualitative in nature with the main aim being to qualitatively analyse the association between identified independent variables and the dependent variable.

The study established that the factors critical in the successful development of a new core banking included the following factors; System requirement planning process of the CBS before implementation; End-users of the system involved in determining CBS requirements; Budget provision for the system Change-Over and related activities including Training and Hardware being provided; Studying the old system and documenting its features for further analysis; Having an effective and rounded model of the System being tested; All users Requirements being taken care of in the design and modelling of the proposed CBS system. The researcher made this conclusion based on the figures tabulated from the frequency tables and results derived from the correlation analysis of CSF.

This research detailed that project resources and formulation was very key for a successful development of a core banking system. Study detailed that's selection of an effective and efficient ICT steering committee team was critical to the management of the system implementation. Having appointment of a well verses project Manager, having clear business objectives to facilitate CBS change-over, availability of adequate personnel resources to manage the changeover was also very idea. Having the rights skill and experienced in system change was also noted. Training was very important to the overall success of the CBS changeover.

This work also revealed that team building, and skills development activities was necessary for successful CBS development. Top Management Support as a determinant of CBS change-over phase; Top management keeps a close eye on CBS project and quick to intervene supporting the project manager when things start going wrong; Top management consistently provide all the tools and resources required to successfully deliver all the approved IT projects; User Acceptance Tests were conducted for all the modules before the Go-Live date and User Training was key for efficient and smooth system change-over.

From the study; Vendor, Software and Hardware selection processes and final adoption are key to successful development of core banking. Some of the key factors to check on vendor selection included; Number of years the vendor has been in business; Financial position of the CBS vendor; System support and availability of online support; Cost of post implementation support are key to features to investigate while selecting the appropriate vendor.

Correct Software selection is critical for the successful CBS system implementation. This calls for identifying effective Product costing, accurate product functionality; Product that is reliable is also CSF for any implementation. Keeping regular communications with users, the study revealed is also key to the success or the system development. The study revealed also that having achieved the designated system functionality is key, having a CBS which is operational as per schedule and cost being within the budget during the entire processes of implementation is ideal as well.

6.3 Discussion of the Study

6.3.1 Influence on System Implementation Processes

The study sought to determine to what extent the banks conducted initial system requirements during the acquisition of the core banking system. Several factors were put forward to the respondents.

Having clear goals in any system implementation is important for it to be successful. The business should have discussed and listed all needs for a given system change-over, without which there would be new deviations during the development stages which will lead to costs escalation or the objectives not being achieved. Changes in goals can as well lead to the additional times and hence longer system time deliverables would be encountered.

With involvement of the end users in the entire implementation stages made core system implementation became smoother. End users being involves also shorten the process of achieving many objectives which includes: - shorter times later in training since there are already aware of some processes, better understanding the business needs, end users also facilitated quicker UAT processes and improved communications across the entire CBS implementation team. Involvement of end users encouraged them in the appreciation of the new CBS system.

Study also found that studying and understanding the old system facilitated better data conversion and data migrations into the new CBS system and hence have a successful core banking system implementation. Without knowledge of the old system, there are some data which may be missed and may result in wrong conversion or duplication of some data. Clear study of the old system also helped the solution vendors in data conversion and migration. Having correct data is critical for this essential system implementation which needs zero margin of error and high accuracies.

A formalized project support and methodology should be put in place, have rollout strategies, continual communications with all parties including customers is key for the successful CBS implementation. The findings showed there exists a statistically significant relationship between the Initial System requirements and analysis and the Successful implementation of the Core Banking System of .538** as per Pearson correlation analysis.

6.3.2 Critical Success Factors

This section provides a discussion on the critical success factors for the successful implementation of core banking systems in banks in Kenya. A discussion on the factors influencing vendor selection, solution and hardware selection and effective project management is given here.

6.3.2.1 Influence of Vendor, Software and Hardware Acquisition

The researcher also sought to find out to what extent the bank conducted selection of Vendor, Software and Hardware during the acquisition of the Core banking system. This is essential for the CBS successful implementation.

Product functionality is key in the implementation. A solution is needed which can provide support for the entire business needs for the whole departments, having CBS which partially support some departments is not desirable as it would not serve the needs of the bank and therefore a complete solution is needed.

Pricing is a major factor for a complete CBS change or implementation. Banks should provide budget for the system change and well as have manage the cost of all the related activities which includes the cost of solution to the vendor, the cost of services to be

rendered by the vendor during implementation, the cost of licensing for databases needed and the cost of hardware to be purchased.

Core banking systems which don't interface well to the other systems are not desirable. There is need to have CBS which can be easily integrated to external systems which relies on the CBS data. These systems include mobile banking systems, Internet based systems, ATM and even integration to other regulatory bodies including systems to Central Bank of Kenya and government related authorities such as Kenya Revenue Authority and Immigration.

The findings showed there exists a very strong and significant relationship between the selection of Vendor, Software and Hardware and the Successful implementation of the Core Banking System of .756** as per Pearson correlation analysis.

6.3.2.2 Influence on Effective Project Management and Resources

The researcher also sought to determine to what extend the bank conducted Project Management activities during the core banking system change-over. Several factors were also studied in the literature review section.

Support from top management for implementation is most important factor, lack of support from top management can lead to project failure. There is need for weekly meetings by both project team and top management, this is important in ensuring long-term vision and interaction to facilitate successful implementation (Hailu and Mesfin, 2016).

System testing process ensures the product meets the demands of users and business. Any software needs internal quality controls, ensuring the codes is free from errors and proper parameterization is achieved. There is need to address issues immediately before the CBS system is put into production and therefore jeopardizing the accuracy in integrity of data.

Awareness training and education, having users who are involved in the design and implementation of CBS often leads to user acceptance and thus the desired transformation and adoption of the new CBS (Rhaman and Hailu, 2012).

Having successful training being conducted with the help of manuals and hands-on training lead to successful system implantation. Employees must be trained on the new system to be ready during the final go-live.

Project management skills by project manager is critical for the overall success of the implementation of the system. Project manager coordinates the entire processes of the system change. A successful CBS implementation needs detailed planning and accurate delivery and these needs coordination by an equally skilled project manager. Enforcement of project plan which includes job responsibilities, timetables for major milestones and financial budget are well carried by the project manager. The findings showed there exists a strong and significant relationship between the Project management and resources and the Successful implementation of the Core Banking System of .792** as per Pearson correlation analysis.

6.3.3 Proposed Framework for CBS Implementation

The study proposed the following implementation framework for adoption in successful Core Banking system implementation.

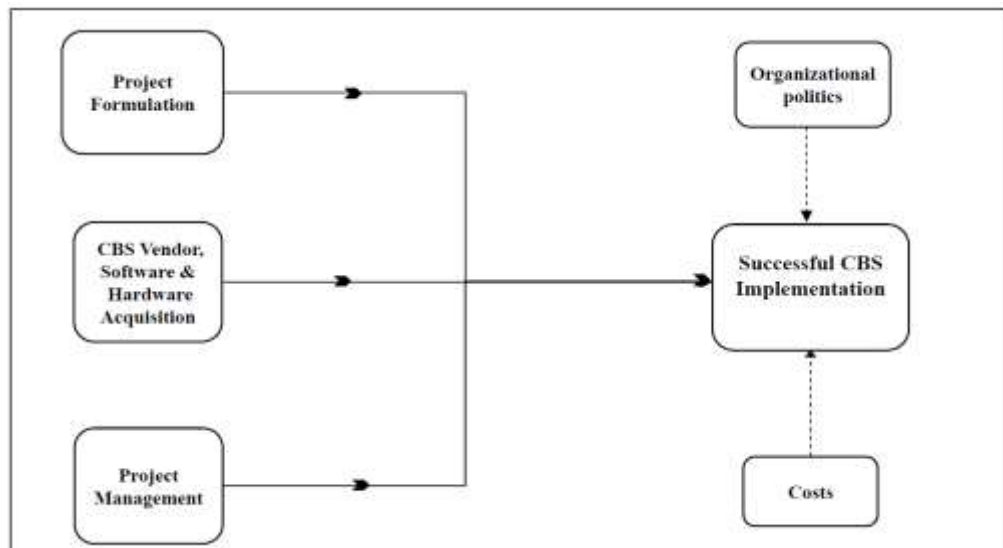


Figure 6-1: Proposed Implementation Framework (Source: Author)

From the framework, the key research items indicate having clear project formulation before implementation of the core banking system is essential for a successful CBS development. Without have a good planning of what is needed for the system would not

result in successful system implementation. The researcher notes and from the framework that plans should be facilitated for the CBS vendor selection, the solution or software to be acquired and hardware to be purchased. All these should be done, and various standards being followed to achieve the best from the various selections.

Project management is also very critical, without proper and experience project manager, the entire process of system development would not be satisfactorily done. Project manager coordinates various functions of the systems from the vendors and business processes, various business rules as well as users would form critical components in operation and usage of the system.

6.4 Conclusions

This section provides conclusions on the critical success factors for the successful implementation of core banking systems in banks in Kenya. Conclusion on influences for a successful implementation have been provided here. Project management, Vendor, Software and hardware selection and factors for successful CBS implementations have also been provided.

6.4.1 Influences for Successful System Implementation

The research reveals that system requirement planning is an important process because it is here that the system needs, business objectives and desired outcomes are identified. This will aid in selecting the best core banking system.

The end users should also be involved in determining the user requirements which in the long run have an advantage of acceptability of the system. By studying the old system and documenting its features is important in elicitation of system requirements. Having clear and well written user manuals will assist users to operate the system with ease and thereafter improve on its user acceptance which in turn leads to project success.

There is need to spend more time on focusing the CSF variables because the other lesser variables would however be resolved during implementation times (Andre, Pretorius, & Pretorius, 2008). Andre et al (2008) found that hiring few talented users with higher pay would be better than hiring many average users, which is in line with the findings of the

study. The researcher found that effective user management was critical to the success of CBS implementation.

6.4.2 Project Management, Vendor, Software and Hardware Selection

The study established that the project management critical success factors in the implementation of core banking system included; appointment of a well-versed project manager to steer the implementation process. The project manager skills and experience are important for successful implementation. Use of experienced project manager would complementary to the use of a process or method, looking at the knowledge transfer is critical as well and this would be delivered by having a quality project manager (Andre, Pretorius, & Pretorius, 2008).

The project team should possess necessary skills to perform the tasks and their knowledge will be vital in the various operational areas. Enough training of the project team and users will be vital for faster adaptability of the system.

The top management support is key for the success of project. They should make available the resources needed to implement the system. The project team needs to be motivated through performance management processes and supported by top management.

Training of end users will aid in impacting the knowledge to the user and thereafter helps the user gain more confidence of the system which affects their attitude positively towards their system.

The study established that the vendor, solution and hardware selection is critical success factors in the implementation of core banking system included. Vendor selection involves a plan that determines how to deliver the system. The number of years the vendor has been in business gives him the needed experience to deliver.

The cost of implementations should be within the banks budget and the vendor should be available for online and system support. The vendors' financial stability should be solid with high global ratings.

From the findings, the study underlines the following as key factors in choosing core banking systems hardware and software: product costing, functionality, reliability,

customizability, ease of integration, cost of hardware and hardware support and compatibility are core factors that leads to success of implementation of CBS.

6.4.3 Successful Implementation Factors

As a measure of successful implementation of CBS, the system should be delivered on time, within budgets meeting the intended functionality with top management support. From the findings, top management commitment by holding meeting with project team and general overseeing ensures long term vision and interaction to facilitate successful implementation.

Quality assurance would ensure that the product meets the demands of the users. It includes adequate testing and validation of the system. This ensures that the CBS has full functionality as to the expected business requirements of the bank. Banks need to consider the return on investment and additional aspects when measuring product costs such as strategic alignments, risk architecture and competitive advantage.

The framework was subjected to focus group who provide positive feedback that indeed the model works well for a successful implementation of core banking system. It captured very useful critical success factors from the project formulation, vendor, solution and hardware selection processes. It also captures all the project management activities needed for success CBS implementation.

6.5 Recommendations and Future Work

This section provides recommendations and future work on the critical success factors for the successful implementation of core banking systems in banks in Kenya. It recommends initial system reviews, influences on the successful of implementing the Core banking system and proposed framework. It also gives recommendations for further studies for CBS implementation.

6.5.1 Initial System Reviewing Recommendation

Its recommended that reviewing of the old system is keys for the banks to be able to capture the entire business processes which are needed to be implemented or migrated in the new CBS. There is need to formulate the business case before any proposed CBS change, the need to defines the problem, its impact, and performs a cost benefit analysis of the proposed

solution. Identify any other possible alternative solutions and then align the project with the organisational strategic plans. There is need to describe how the desirable results will be achieved while moving forward with the project and determine what priorities are needed for implementation.

Ensure data migration strategies are implemented well, it can be complex especially if the old data sources are inconsistent or incomplete. Create a coherent data migration strategy will help reduce risk. Use industry models for analytics and insights and can accelerate deployment and reduce costs.

Performance testing is key, this needs to be undertaken to validate the speed and performance of the hardware and software. There is need to check on the response time and the end user experiences. Perform various testing including unit test, module test and penetration testing to validate that no external loopholes exist in the system. It would be wise to also test the system on internet access too (Ramkumar, 2016). The project manager should work keenly with the implementation team to ensure that the testing, functionality and performance of the CBS meets the banks objectives (Hailu and Mesfin, 2016).

Ensure all activities involved the implementation are done before go-live. Have a checklist before the go-live and post go-live support listing, by cross checking against the two will ensure that there is smooth system change-over being performed.

6.5.2 Influencing Success of Implementing Core Banking System

Project management skills in many instances is the primary driver in the replacement project of any Information Technology system. Most successful projects, the prominent role is played by the project Leader. A successful sponsor should ensure that the requirements are documented well by the business and technical groups and should actively be involved in the solution selection process, project manager should seek full management support for the project team in terms of budget and resources. The manager should also seek utmost cooperation of the business users and ensure their full involvement.

By having clear objectives, outcomes, benefits and goals expected would aid in purchasing of the right hardware and software (Matthias, Balve, and Spang, 2017). There is need to project missions established and having a proper project definition, clarity of goals and

general direction of the project, these missions should be related to business needs, be clearly stated, and the goals identified and effectively tracked (Kornkaew, 2012).

Avoid scope creep, this can occur where software projects grow beyond their original bounds. The project manager should try to avoid scope creep so that the project can be delivered on time and on budget (Ochwoto and Ogolla, 2017) and (Kornkaew, 2012).

Mapping all banks functionality to the CBS is not only important aspect of selection. There is need to focus on the future aspects of the application which includes future marketing and business initiatives, there need for the application to adapt to the business and not the reverse. Banks need to concentrate on the efficiency and effectiveness that will empower the business (Gartner, 2011).

Perform due diligence on the vendors project management abilities, unchecked program management may exponentially rise the costs of the project implementation. Their plans should be reviewed to ensure that each task has clear inputs, processes and definable outputs as well as measurable targets. Banks management should be able to maintain higher controls over the vendor in the management of the entire.

Evaluate the Vendor and come up with good evaluation criteria which involves size, financial stability and reputation of a vendor. A criterion for software looks at functionalities specific to front-end interfaces, user friendliness, system integration, performance and security (Ramkumar, 2016).

With the above being observed, the CBS implementation would be successful delivered which meets bank's objectives and scope. This will enable the project to be completed in time and within stipulated budget (Hailu and Mesfin, 2016). Measures of implementation of ERP success should be based on time, cost, performance and benefits (Schniederjans & Yadav, 2013).

6.5.3 Framework for Successful Implementation of Core Banking System

Top management of the Kenyans Banks should be fully involved and committed in the implementation of the CBS, they should fully support system change-over. Having users who are fully engaged in requirements elicitation and user acceptance testing for better adaptability. There is need to select a system which is easily integrated to other systems,

there is need to select a project team which will steer the system implementation process, and the team should be capable in handling the entire processes. Effective communication to the entire staff members of the bank is equally critical for the success.

There is need to implement all the functionalities of a given system, have a system which produces the expected results. There is need to contain the costs within budgeted figures for successful system development.

There is need to use Factor Analysis method as better way to evaluate the framework, it would describe large numbers of CSF and their variability and further correlate these factors into fewer number of factors for ease of research studies.

6.5.4 Recommendations for Further Studies

The researcher faced on some challenges, bank employees were only focused for the feedback, however, it would have been better if there was an opportunity to focus other banking stakeholders such as the board of directors of banks, the banks customers as well as the banking sector regulator Central Bank of Kenya. This can be incorporated in the future research as they can form important inputs and findings for successful implementation.

This research project would contribute to an important framework to the successful implementation of Core Banking Systems in the banking sector. It will aid in avoiding the various pitfalls that arose during implementation of Core Banking Systems by enhancing the delivery of this critical project on time, within budget and of the right quality and functionality.

As Banks move through dynamic IT infrastructure changes in the future, the banks are under pressure to evolve technologically while preparing to emerge with a competitive advantage. The core banking implementation framework will have to include additional critical success factors which are considerate of challenges brought by future technologies.

The Cloud computing, the future of core banking systems being implemented through this on demand computing, the banks need to explore and setup measures which will enabled them to deploy their core banking systems through cloud environment. These would enable them to enjoy the benefits derived through the cloud computing setup which includes high

productivity, reduced implementation cost and be able to quickly deploy their cloud core banking systems in Kenya. Evaluate further on how the sizes of the bank (Tier) or market share influences the successful implementation of core banking systems. Banks are ranged into three tiers, though the research consolidated all these, there is need to find out exactly how the different tiers handles their implementations.

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Appendix I: Commercial Banks in Kenya

The following is list of registered Commercial Banks in Kenya:

ABC Bank, Bank of Africa, Bank of Baroda, Bank of India, Barclays Bank of Kenya, Chase Bank Kenya, Citibank, Commercial Bank of Africa, Consolidated Bank of Kenya, Cooperative Bank of Kenya, Credit Bank, Development Bank of Kenya, Diamond Trust Bank, Dubai Islamic Bank, Ecobank Kenya, Equity Bank, Family Bank, First Community Bank, Guaranty Trust Bank Kenya, Guardian Bank, Gulf African Bank, Habib Bank AG Zurich, Housing Finance Company of Kenya, I&M Bank, Imperial Bank Kenya, Jamii Bora Bank, Kenya Commercial Bank, Mayfair Bank, Middle East Bank Kenya, National Bank of Kenya, NIC Bank, Oriental Commercial Bank, Paramount Universal Bank, Prime Bank, SBM Bank Kenya, Sidian Bank, Spire Bank, Stanbic Bank Kenya, Standard Chartered Kenya, Trans National Bank Kenya, United Bank for Africa and Victoria Commercial Bank.

Appendix II: Questionnaire

AN APPROACH FOR SUCCESSFUL INFORMATION SYSTEM DEVELOPMENT: A CASE OF CORE BANKING SYSTEMS IN KENYA

SECTION A: Demographic Data

1. **Gender:**
 - a. Male
 - b. Female
2. **What is your Age?**
 - a. Below 25 Years
 - b. 26-30 years
 - c. 31-35 years
 - d. Above 35 years
3. **Years of experience in the current bank**
 - a. Less than 2 years
 - b. 3-6 years
 - c. 7-10 years
 - d. Above 11 years
4. **Please tell us how long the company has been using the specified Core Banking System?**
 - a. Less than 2 years
 - b. 2-5 years
 - c. 6-9years
 - d. More than 10 years
5. **Is your CBS suitable enough to keep pace with dynamic business environment?**
 - a. Yes
 - b. No
 - c. Not Sure
6. **Which department within the bank do you report to?**
 - a. IT
 - b. Operations
 - c. Finance
 - d. Risk & Compliance
 - e. Treasury
 - f. Cash management
7. **What is your role as the user of the system?**
 - a. User Support
 - b. Technical
 - c. Transaction processing
 - d. Transaction View and Report Use
 - e. Security Management and Audit
 - f. Supervisor
 - g. Risk Management

SECTION B: INITIAL SYSTEMS REQUIREMENTS AND ANALYSIS

To what extent did you conduct the following activities during acquisition of the current system?

Please indicate your level of agreement or disagreement with each of the following statements by placing a tick (√) in the appropriate box.

No.	CHARACTERISTIC	IMPORTANCE CHARACTERISTIC				
		Not at all	Partially	Not Sure	Somewhat Thoroughly	Thoroughly
1	System requirement planning process of the CBS before implementation					
2	End-users of the system involved in determining CBS requirements					
3	Budget provision for the system Change-Over and related activities including Training and Hardware being provided					
4	Studying the old system and documenting its features for further analysis					
5	Having an Effective and rounded model of the System being tested					
6	All users Requirements being taken care of in the design and modelling of the proposed CBS system					
7	Clear indication in the system or manuals as to how the CBS system is operated					
8	Input errors being highlighted					
9	Any features provided with the software to help track down processing problems					
10	Reports availability for users to identify all master file changes					
11	Ease of Use of the proposed system					

SECTION C: PROJECT MANAGEMENT CRITICAL SUCCESS FACTORS

To what extent were the following factors conducted on Project Management?

Please indicate your level of agreement or disagreement with each of the following statements by placing a tick (✓) in the appropriate box.

N o.	CHARACTERISTIC	IMPORTANCE OF CHARACTERISTIC				
		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	Selection of an effective and efficient ICT Steering Committee Team					
2	Appointment of well-versed Project manager					
3	Having a clear Business objective to facilitate CBS change-over					
4	Availability of adequate personnel Resources					
5	Availability of an effective Strategy in place					
6	Skills and Experience					
7	Tools to support the project					
8	Proper and adequate end user training					
9	Proper involvement of ICT and Project management team					
10	Team Building and skill development activities					
11	Recognition of service and reward for work done					
12	Top Management Support as a determinant of CBS change-over phase					
13	Top management keeps a close eye on CBS project and quick to intervene supporting the project manager when things start going wrong.					
14	Top management consistently provide all the tools and resources required to successfully deliver all the approved IT projects.					
15	User Acceptance Tests were conducted for all the modules before the Go-Live date					
16	The IT staff involvement in the product Customization					
17	If changes are introduced in the middle of IT projects, are they compared against the initially signed off requirements/ objectives					
18	User training performed for all users					
19	The level of end user involvement during the requirements definition process was facilitated by System vendors					
20	Enough training to allow utilize the CBS system with ease					

SECTION D: VENDOR, SOFTWARE AND HARDWARE SELECTION

To what extent were the following factors conducted on Vendor, Software and Hardware selection?

Please indicate your level of agreement or disagreement with each of the following statements by placing a tick (√) in the appropriate box.

No.	CHARACTERISTIC	IMPORTANCE OF CHARACTERISTIC				
		Least Important	Not Important	Not Sure	Important	Very Important
1	Number of years the vendor has been in business					
2	Number of clients the vendor has implemented CBS					
3	Global rating of the vendor					
4	Financial position of the CBS vendor					
5	Cost of the CBS Project					
6	System support and availability of online support					
7	Ease of system integration					
8	Cost of post implementation support					
9	Product Costing					
10	Product Functionality					
11	Product Reliability					
12	Product customizability					
13	Cost of Hardware					
14	Availability and support for Hardware					
15	Hardware support and compatibility					

SECTION E: SUCCESSFUL IMPLEMENTATION

How would you rate the success of the following aspects for the implemented Core Banking System in your bank?

No.	CHARACTERISTIC	IMPORTANCE OF CHARACTERISTIC				
		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	System Functionality Achieved after implementation					
2	System Operational as per the scheduled time					
3	Cost being Within Budget after CBS Implementation					
4	Project team and the users Pleased with the CBS results					
5	Keeping regular Communications to the Users					
6	Getting Management Buy-In					
7	Vendor involvement in system customization					
8	Engagement with all Users					
9	Users continue to be pleased with the system thereafter					
10	Ease of integration to other Systems					
11	Top management commitment and Involvement					
12	All functions implemented					

Appendix III: Research Project Schedule

PARTICULARS	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18
Problem Identification and documentation									
Literature Review									
Research Methodology									
Data collection									
Developing a model for Proposed System									
Data Analysis and Findings									
Documentation									
Results and Findings									
Conclusions									

Appendix IV: Permission to Conduct Research



TO WHOM IT MAY CONCERN.

11th April, 2018

Dear Sir/Madam,

REF: PERMISSION TO CONDUCT RESEARCH – GARFIELD KIPRUTO SETTIM
STUDENT ID. NO. 642334

The bearer of this letter is a student of United States International University (USIU) -Africa pursuing a Master of Science in Information Systems and Technology.

As part of the program, the student is required to undertake a dissertation on the “**Strategy for Successful Information System Development: A Case of Core Banking Systems in Kenya**” which requires him to collect data.

Please note that information provided will be treated with utmost confidentiality and will only be used for academic purposes.

Kindly assist the student get the appropriate data and should you have any queries contact the undersigned.

Yours Sincerely,

A handwritten signature in blue ink, appearing to read "A. Njuguna", with a stylized flourish at the end.

Prof. Amos Njuguna,
Dean – School of Graduate Studies, Research and Extension
Tel: 730 116 442
Email: amnjuguna@usiu.ac.ke