Addis Ababa University School of Commerce Graduate Program

Assessment of Enterprise Resource Planning (ERP) Project Implementation: The Case of Commercial Bank of Ethiopia

A Research Project Paper for the Partial Fulfillment of MA Degree Project management

By: Wondwosen Mulugeta

ID No GSD /0615/07

Advisor: Ato Seifu Mamo.

June, 2018

Addis Ababa University School of Commerce

Graduate Program

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Research Advisor	Signature
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Declaration

I, Wondwosen Mulugeta declare that this work entitled Assessment of Enterprise Resource Planning (ERP) Project Implementation: The Case of Commercial Bank of Ethiopia is outcome of my own effort and that all source of materials used for the study have been duly acknowledged. I have produced it independently except the guidance and suggestion of the research advisor. This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Masters of Art in Project Management.

Wondwosen Mulugeta

Signature _____

Date _____

Advisor: Seifu Mamo (Ato)

Signature _____

Date _____

Statement of Certificate

This is to certify that Wondwosen Mulugeta has carried out his research work on the topic entitled Assessment of Enterprise Resource Planning (ERP) Project Implementation: The Case of Commercial Bank of Ethiopia partial fulfillment of Masters of Art in Project Management Addis Ababa University-School of Commerce. This study is an original work and not submitted earlier for any degree either at this University or any other University and it is suitable for submission of Masters Degree in Project Management.

_____

Advisor: Seifu Mamo (Ato)

Acknowledgment

I would like to thank all who have cooperated and contributed for this work. First, I am very grateful to my advisor Seifu Mamo (Ato) for his overall guidance, understanding, reviews of the work and constructive comments.

I also extend my gratitude to all the interview and questionnaire participants for their cooperation and support.

I am also thankful to all my friends and family for their encouragement, and all who have contributed to this work in one way or the other.

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Acronyms

ATM: Automate Teller Machine

BAPI: Business Application Programming Interfaces

BI: Business Intelligence

BPR: Business Process Reengineering

CBE: Commercial Bank of Ethiopia

CSF: Critical Success Factor

ERP: Enterprise Resource Planning

HR: Human Resource

IT: Information Technology

MRP: Material Requirements Planning

PMBOK: Project Management Body of Knowledge

ROI: Return on Investment

SAP; System Application and Products

SCM: Supply Chain Management

SD: Standard Deviation

SPSS: Statically Package of Social Sciences

UAT: User Acceptance Testing

Abstract

The financial institution has been greatly impacted by worldwide trend. In result the banks throughout the world are focusing to enhance performance and efficiency in their work. Therefore the commercial bank of Ethiopia goes moved the system to enterprise resource planning (ERP) to cope up with the needs of changing environment. When implementing an integrated and big ERP packages in to an organization, assessing or investigating the impact of project management knowledge for the success of the implementation and sharing experience is very important. Because ERP systems are complex and need huge budget investment, company re-arrangements and the implementation, success depends on various project management knowledge variables. Commercial bank of Ethiopia is implementing the Oracle ERP into its organization. Focusing on this company, the purpose of this study is to assess or investigate the contribution of project management knowledge on ERP project success. Based on detail review of literatures, the researcher selected and used research model for the study that consists the five project management knowledge areas: top management support and commitment, stakeholders' communication and engagement and training and knowledge transfer and quality of project teams and their impact on project success. In order to achieve the research objectives the researcher used a descriptive and explanatory type of research studies. Data were collected through questionnaire and interview prepared based on various scholars work The purposive or judgmental sampling technique allows researcher to make their own selection study participants based on their judgment considering the research needs and requirements.. The candidates (project teams) selected due to all candidates have involved in implementation of ERP system at all phases and they are all still using the system. A total of 47 questionnaires were distributed to the respondents. Of the total distributed questionnaires, 42 questionnaires were returned which is about 89% response rate. The validity of the instrument was checked and internal consistency of the instrument was measured using Cronbach Alpha and the results statically acceptable. Descriptive statistics based frequency tables were used to provide information on the variables. The results are investigated in terms of descriptive statistics followed by inferential statistics on the variables. The findings obtained indicated that top management commitment and support have a strong and positive impact on project success unlike of the other variables stakeholders' communication and engagement and training and knowledge transfer and quality of project teams. In rank order for their impact one to five as top management commitment, top management support, stakeholder's communication and engagement, project teams qualities and training and knowledge transfer respectively. Furthermore, it provided suggestions to improve project outcome. The Top management and the project manager will give more emphasis to training and knowledge transfer, project team qualities and stakeholder's communication and engagement in order to enhance the project outcome.

Key word: (ERP) enterprise resource planning**,** ORACLE, project management variables**.**

Chapter one

1. Introduction

1.1. Background of the study

Information management is a powerful driver of business performance and sustainable organizational growth. Increased globalization over the past decade has forced firms worldwide to face unprecedented levels of competition and operate in a dynamic business environment. Firms seek to manage such competitive pressures and environmental uncertainties by adopting best business practices, engaging in continuous design improvements, speeding up the product development cycle, ensuring manufacturing flexibility, streamlining sourcing arrangements, and managing myriad logistics channels. Firms are investing heavily in information technology (IT) Systems to effectively integrate and coordinate these activities across their supply chains as well as shape the way they conduct business. In particular, more and more firms around the world are implementing packaged software called enterprise resource planning (ERP) systems.

Enterprise resource planning (ERP) system has been one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business in large organizations. However, not all ERP implementations have been successful. Since ERP implementation affects entire organizations such as process, people, and culture, there are a number of challenges that companies may encounter in implementing ERP systems (Ibrahim, 2010) . Moreover, ERP systems assist to reduce the requirements of employees and help organizations reduce data transfer time (Gupta, 2013). Enterprise Resource Planning implementation is not always smooth as it has its own up and down routes.

Studies that were conducted on the assessment of the implementation of ERP project indicate that about 39% and 41% of the studied projects were suffered from over budget utilisation and delay in completion time, respectively. Moreover, among those organisations whose ERP project implementation was assessed, 53% were challenged by major modification. (Mabert, 2003)

Despite the significant benefits that ERP software packages provide in managing and integrating cross-functional business processes there are several difficulties and barriers that relate to such an implementation. The major challenge is to integrate existing legacy systems and other applications with the ERP system to provide a common interface. Moreover, ERP systems are complex and implementing one of them can be a challenging, time consuming and expensive project for ever organization (Davenport, 1998). Addressing the difficulties, success factors and their impact of ERP implementation helps to plan better and facilitate a more successful ERP implementation (Ibrahim, 2010).

In Ethiopia, some organizations like Ethio telecom, Ethiopian Airlines and Ministry of financé etc implemented ERP in their organizations. Following the footsteps of these organizations, Commercial Bank of Ethiopia has been implementing the ERP project since 2015.

1.2. Statement of the Problem

Commercial bank of Ethiopia has been serving the public for the last 75 years and set its vision to be a world class bank in 2025 in order to be world class bank it is carried out various initiatives like in BPR, T 24 , E payment since 2005 and starting from 2015, ERP project preparation and implemented the system beginning of 2015 as part of its IT transformation project to upgrade and replace the existing back office support systems like the financial, human resource management, supply chain management, business intelligence and Hyperion support systems to improve the efficiency and effectiveness of the bank activities.

The bank has two major corporate strategies that direct its overall business decision namely growth and operational excellence strategies. Both strategies require continuous internal data and performance feedback, market and industry information, accurate customer figures, well-organized workflow and cost efficiency. The bank aims ERP system functionalities such as transaction processing, allowing integrated data management in the bank, a workflow management function controlling the numerous flows that exist in the bank and a decision support function would serve the above expectations.

The importance such comprehensive system is ever growing when striving to increase the competitive advantage of the bank.

Sufficient budget (resource) allocation, competent ERP project team, top management support and engagement in the project , availability of qualified (experienced) consultant, capable employee that utilize the full potential of the system are among the key success factors for successful implementation of ERP project. The stated success factors would enable the bank to gain the expected outcomes primarily enhanced service quality, overall workflow efficiency, Customer satisfaction (internal and external) and cost saving (profitability).

Therefore this study attempt to investigate the contribution of project management knowledge areas on ERP project success of the case organization.

1.3. Research Question

This project paper tries to address the following research question

- ✓ How an effective user training and knowledge transfer does contribute to the project success?
- ✓ How quality of project teams does contribute to the project success of the ERP project in CBE?
- ✓ How management support and speed up ERP project success?

- ✓ How management commitments speed up ERP project success?
- ✓ How does continual stakeholders' communication and engagement support the ERP project success?

1.4. Objective of the Study

1.4.1. General Objective.

The overall (general) objective of this research is to assess or investigate the contribution of project management knowledge areas on ERP project success.

1.4.2. Specific objectives

The specific objectives are

- ✓ To assess the practice of ERP project execution related with project management knowledge area.
- ✓ To see the relationship between project management variables with project outcome.
- ✓ To forward recommendation based on findings to improve the success of the project output.

1.5. Scope of the Study

The scope of this research is conducted using a single-case study to assess the project implementation by considering the case of oracle ERP project at CBE. Even though the results of the study can be extended and applied to other similar organizations and ERP projects, the focus of the study is around the four main ERP modules, which are fully implemented, and being used at CBE. The modules are; human resource management, supply chain management, business intelligence (BI), and finance.

The studies address the five project management knowledge variables; top management support and commitment, stakeholders' communication and engagement and training and quality of project teams' their impact in project success. The reason for selected those variables was due to during preliminary reviews of articles the researcher observed that their findings more weight was given for variables listed above are CSF for ERP project. e.g. (Moon, 2007), (Rajeshwar, 2015) , (A.Kronbichler, 2009) and (Alemu, 2012) , and also the bank management put as success factors in project charter.

1.6. Significance of the study

Since the study is noncommissioned and done purely academic purpose it is free from interference of any one that may have interest. However CBE can accept the finding and recommendation fully, in partially or can reject totally.

Notwithstanding the above mentioned ideas if CBE accept the finding and recommendation of the study could also used as an input for other ERP modules deployment which is planned to be implemented in the future. In addition to the above factors the study could also used as a reference

for researches in the area and project manager and practioner used as an input to proactively to plan , implement the project.

1.7. Limitation of the Study

Like any other research, this study encountered the following limitations and constraints; Limited or no literature and research on ERP in Ethiopian context for reference, the overall time constraint of the research program and limited availability and access to documents related to the ERP implementation project from the case company.

1.8. Organization of the Study

The research has five chapters. The first chapter contains introduction; which is consists of background of the study, statement of the problem, research question, and objective of the study, significance of the study, scope and limitation of the study. Chapter two contains related literature review which has a detailed literature related to the content of the study. In chapter three the research design and methodology presented. The result and finding of the study would be presented on chapter four. Final chapter of the study which is chapter five have summary of major findings, conclusion, recommendation, limitation and areas of further investigation.

Chapter two

2. Related Literature review

2.1. Theoretical literature

This chapter presents the review of related literatures and empirical facts. It includes the conceptual understanding of what ERP mean, and the benefits to be obtained through ERP implementation, the historical background of the system and its related evolutional stags, the Prons and cons of ERP, benefits, conceptual understanding of critical success factors, project management knowledge , related work of ERP and conceptual framework respectively.

2.1.1. Definition of ERP

ERP has been defined by researchers and practitioners in different ways. The Gartner Group coined the term ERP in the early 1990s to describe a collection of applications that can be used to manage all of a firm's business activities. Minahan (1998) defines ERP as a complex software system that ties together and automates the basic processes of a business. Al-Mashari and Zairi (2000) indicate that ERP represents an optimal enterprise-wide technology infrastructure. Researchers also refer to ERP systems as enterprise resource management (ERM) systems, enterprise systems (ES), and business systems respectively (Slater, 1999; Davenport, 1998; 2000). ERP systems are further described as applications that integrate functional areas and allow functions to share a common database and business analysis tools (Chen, 2001; Mabert, Soni, &Venkataramanan, 2001a), backbone of business intelligence for an organization, giving management a unified view of its processes (Yick, 2011), a coordinating business processes; focus on efficient management of resources and customer service (Mohammed Reza, 2010)

The discussion in the preceding paragraphs indicates that various terminologies and descriptions are used to define ERP systems. Though studies suggest that the definition and scope of ERP has changed over time, the phrase enterprise resources planning and its abbreviated term ERP has become the most common terminology used by researchers and practitioners to denote integrated business application packages. This research study also uses the phrase enterprise resource planning and its abbreviated term ERP to denote a broad and universal "umbrella" system, which includes all value chain business applications that are integrated into a firm's ERP-based information system (IS) infrastructure.

According to (OdhiamboOtieno, 2010) ERP systems are developed by vendors who draw on their existing sources of knowledge, resources and norms. These would include the developer organizations own business strategy and prevailing norms about what constitutes best practice.

O'Leary (2000: 37); defined Enterprise Resource Planning (ERP) as a computer-based system designed to place companies' major activity areas: planning, production and customer service under an umbrella. ERP system is a software package of different modules such as fixed assets management, controlling, financial accounting, manufacturing, human resources, planning and development and so forth. Each module is business process specific. Generally, companies choose

one ready-made package available for their industry but it is also common to select the modules that best meet their needs.

According to Fiona (2002:1), Enterprise Resource Planning (ERP) refers to large commercial software packages that promise a seamless integration of information flow throughout an organization by combining various sources of information into single software application and a single database.

In literature, many authors have defined enterprise resource planning indifferent ways, based on literature (Holland and Light,1999;Esteves and Pastor,2001;Davenport, 1998; Markusetal,2000; Kumaretal,2000; Shanks,2000; ShangandSeddon,2002;andNahetal,2001)

In general ERP can be defined as extensive software that comprised of multiple configurable modules Integrated in a single system. As a result of that ERP system connects an organization's strategy, business processes and structure with information technology.

2.1.2. Enterprise Resource Planning Systems Overview

Enterprise resource planning systems went through a range of development cycles since its beginning in1970s as shown in Figure1. In1960, manufacturing systems were introduced in companies for the inventory management. In1970s, the focus in most organizations was shifted to material requirements planning (MRP) systems. Material Requirement Planning were the most base computerized information systems.

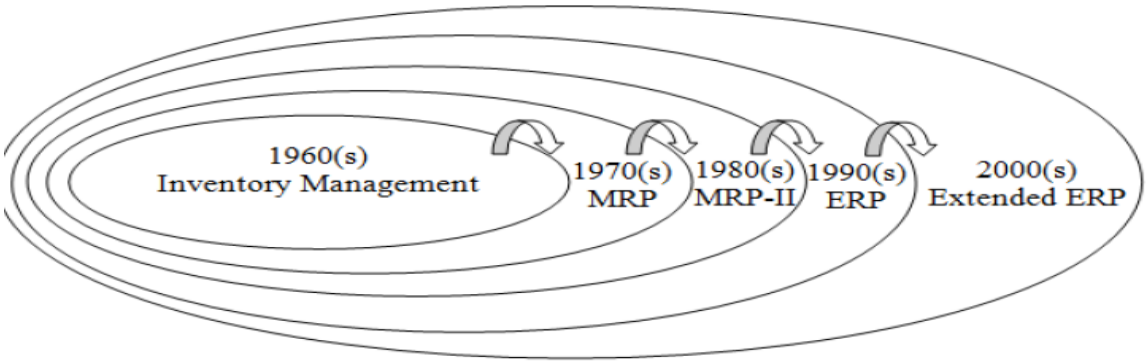

Figure 1: The Evolution of ERP

In1980s, MRP systems extended and shifted to its second phase whereby Manufacturing Resources Planning (MRPII) developed for organizing manufacturing processes and distribution management activities (Abdinnour-Helmetal, 2003). This was a completely different approach as compared with the previous MRPs (Kakouris and Polychronopoulos, 2005).

As early as the1990s, MRP-II started over laying in business, engineering, finance, human resources and project management, and covered other larger areas in business; this extension of MRP-II is now known as the ERP.

Today, a new generation of ERP systems is introduced. These are termed as extended ERP systems. These systems are more advanced and more efficient in processing of order processing,

procurement, sales, human resources, manufacturing, finance, accounting, sales, operations planning, customer relationship management, materials management and inventory management.

2.1.3. Pros and Cons of ERP Systems

There are different initiatives and reasons for acquiring ERP systems. ERP systems have the advantage of seamless integration between all parts and processes of a company, and this in turn gives the possibility of proper control (Chung, 2007). They are used to control and reduce data redundancy and accuracy. Redundant tasks will be removed and the efficiency of the company increases.

The other advantage of ERP systems is that easier and timely reports functionality. Users can get self services of data needs and access. They can run their own reports and have better access to their data and the ability to manipulate and report on this data.

The advantages of ERP systems are summarized as here below.

- Integrate financial information of different sources such as revenues, sales and cost
- Standardize Human Resources information for simple tracking of employees' time.
- Standardize and speed up operating processes.
- Reduce inventory and lower costs.
- Integrated, on-line, secure, self-service processes for business.
- Eliminate costly mainframe / fragmented technologies.
- Empower and enable employees, partners, customers and suppliers as clearly.

In general, compared to the traditional functional IT systems, ERP systems provide different benefits to a company and these benefits can be viewed in different dimensions as operational, managerial, strategic, IT infrastructure and organizational. According to (Seddon P, 2002), the benefits of an ERP system can be classified into five different dimensions:

- Operational benefits: ERP system can automate business processes sand enable process changes. It is expected to provide the benefits in terms of cost reduction, cycle time reduction, productivity improvement, quality improvement and customer service improvement.
- Managerial benefits: ERP system may help the organization to achieve better resource management, improved decision making and planning, and performance improvement indifferent operating divisions.
- Strategic benefits: ERP system can help the organization with the benefits of supporting for business growth and business alliance; building business innovations, cost leadership and external linkages; and generating product differentiation.

- IT infrastructure benefits: ERP system provides business flexibility for current and future changes; IT costs reduction, IT infrastructure capacity improvement.
- Organizational benefits: ERP system may be expected to improve working patterns, change work patterns, facilitate organizational learning, empower workers and build common vision.

According to (Yizehe, 2007) ERP system can provide different kinds of benefits other than financial ones, and these benefits are related to enterprise process efficiency.

2.1.4. Limitations of ERP systems

- Cost and length of implementation

Even if ERP systems can save costs in long term, initial implementation is too expensive. This cost depends on the scope and number of ERP modules which are selected and installed, size of the company, use of consultants, software license and hardware and length of the implementation time. As ERP systems are integrative and complex, it takes long time to implement these systems. ERP implementation costs millions of dollars and takes 1-3 years of time. (Syed M. Ahmed)

- Business process re-engineering and customization

ERP systems are developed based on industry best practices. If these best-practice solutions in the ERP system do not match the business processes, then organizations are required to re-engineer their business processes to fit these best practices. However, changing all processes may lead to a loss of competitive advantage. Strategic processes which give competitive advantage to a company should not be changed. In this case, the ERP system must be customized and configured properly to fit the business processes.

Configuration refers to setting and filling of parameters and tables in the system whereas customization is changing the code of the system. On the other hand, customization of the ERP software is limited and major change is not allowed. In addition, customization has problems related to upgrading. When the ERP software is upgraded by the vendor, all customizations may have to be re-checked. So, there should be clear and prior decision about the processes to be preserved and those to be re-engineered.

- User interface and usage

ERP systems can be difficult to use. They are too restrictive and rigid (highly controlling) and do not allow much flexibility in implementation and usage. Moreover, users may have to go through many screens in order to maintain a single data set. This is because screens are developed based on the program flow and logic. It is when they are used more and more that ERP systems are appreciated by users.

- Interoperability and interface

The system can suffer from the weakest-link problem. Inefficiency in one department or at one of the partners may affect other participants. So, the integrated links need high accuracy in other

applications to work effectively. There are frequent compatibility problems with the various legacy systems of the partners.

- Responsiveness

ERP systems have low response time to user actions and information requests. Due to the complexity and user interface screens, ERP systems usually take long time to respond to data entry and report generation processes.

2.1.5. ERP Implementation Strategies

There are two distinctive ways of implementing an ERP found in the literature. These phases are termed the' phased' implementation and the 'Big Bang' approaches (O'Leary, 2000). Depending on the Organizational structure, the complexity of the Organization, economical issues, strategic partners, time constraints and geographical locations, the appropriate implementation approach should be selected.

The Big Bang approach requires simultaneous implementation of multiple modules of an ERP package, while a phased implementation consists of designing, developing, testing and installing different modules of the same ERP package.

The' Vanilla' implementation approach is another implementation approach that focuses on minimal customization of the ERP package (Holland, 1999)

2.1.6. ERP Implementation Phases

A typical ERP implementation is complex with the high cost. Organizations might have difficulties in integrating the ERP software with the hardware, operating systems, database management systems, and telecommunications suited to their organizational needs (Markus &Tanis, 2000)

Implementing an ERP system is generally an extensive challenge. Performance of the enterprise will often get worse before it gets better and enterprises are expected to encounter the resistance throughout the phases of ERP system implementation. Several researchers have developed different ERP project life cycle (Bancroft, 1998) have presented five implementation phases:

Focus: Setting up the steering committee, selecting and structuring project team, developing project guiding principles, and creating project plan.

As is: Analyzing current business processes, installing ERP system, mapping the business processes, and training the project team.

To be: Entailing high level design, detailed designing subject to user acceptance, Interactive prototyping and constant communicating with users.

Construction and testing: Developing comprehensive configuration, populating the test instance with real data, building and testing interfaces, writing and testing reports, system and user testing.

Actual implementation: Building networks, installing desktops, managing user training and support.

(Ross, 1999) Illustrates the path of an ERP implementation consisting of five phases:

Design: Companies need to decide whether to change their business processes. Usually, ERP software is a readymade package and no such kind of software is exactly to meet all companies' needs. Therefore, many companies have used this aspect as a chance to change their business processes and reengineer the entire organization. Or some companies have chosen to customize the software to fit their processes. The process change is inevitable with an ERP because of the process standardization procedures.

Implementation: This phase requires continuity and commitment to a new method of doing business. Training is needed to understand how ERP will change business processes. A fundamental decision which implementation strategy: step by step and big bang being the most common ones, will be used to implement ERP systems is based on the aspects such as organization size, complexity and structure, resources, attitude toward change and distance between the various production facilities.

Stabilization: After going live there is the period that typically takes up to 12 months to get back to where they started. During the stabilization period, the processes that were planned are now in use. People need to adjust to the new environment, data has to be cleaned up, implementation teams needs to remain to support the users and close collaboration with vendors and consultants is necessary to resolve software bugs. Companies need to evaluate the success of the implementation. Benefits are analyzed either based on cost benefit duration analysis or on original ERP choice rationales.

Continuous improvement: This phase is a time when major operating benefits are created. Functionality of the ERP system is increased by adding new modules and other improvements such as electronic data interchange, sales automation, warehousing and transportation capabilities, sales forecasting and similar. This is also time for redesigning processes, structures and roles to leverage the system.

Transformation: ERP offers companies an opportunity to transform themselves. By changing organizational boundaries, redefining organizational decision making processes, becoming more customer and process oriented and being increasingly connected to their suppliers, partners and customers companies progress continuous improvement and transformation that lead to a constant change, new organizational environment and management, and toward the long term vision of the ERP implementation. Few organizations ever reach the transformation phase, although most plan to.

Markus and Tanis have described four ERP implementation phases: as follows

Chartering: Decisions defining the business case and solution constraints. The chartering phase comprises decisions leading to funding of the ERP system project. Key players in the phase include vendors, consultants, company executives, and IT specialists. Key activities include initiation of idea to adopt ERP, developing business case, decision on whether to proceed with ERP or not, initiation of search for project leader/champion, selection of software and implementation partner, and project planning and scheduling.

Project: Getting system and end users up and running. The project phase mainly consists of system configuration and rollout. Key players include the project manager, project team members (mainly from business units and functional areas), internal IT specialists, vendors, and consultants. Key activities include software configuration, system integration, testing, data conversion, training, and rollout. In this phase, the implementation partners must not only be knowledgeable in their area of focus, but also work closely and well together to achieve the organizational goal of ERP implementation.

Shakedown: Stabilizing, eliminating "bugs", getting to normal operations. The shakedown phase refers to the period of time from "going live" until "normal operation" or "routine use" has been achieved. Key activities include bug fixing and rework, system performance tuning, retraining, and staffing up to handle temporary inefficiencies. In this phase, the errors of prior causes can be felt, typically in the form of reduced productivity or business disruption.

Onward and upward: Maintaining systems, supporting users, getting results, upgrading and system extensions. The onward and upward phase refers to ongoing maintenance and enhancement of the ERP system and relevant business processes to fit the evolving business needs of the organization. It continues from normal operation until the system is replaced with an upgrade or a different system. Key players include operational managers, end users, and IT support personnel when upgrades are concerned. Key activities include continuous business improvement, additional user skill building, upgrading to new software releases, and post implementation benefit assessment (Shanks G, 2000) produced a four phase implementation phase.

The planning phase includes both the business concentration of Markus and Tanis' chartering phase and technical concentration of Ross 'design phase. The following two phases, improvement and transformation, are directly taken from the Ross model. The improvement phase includes both incremental and radical improvements to business process corresponding to the Markus and Tanis' onward and upward phase.

2.1.7. Key Players in ERP Project

- ✓ **Top Management**

These are the executive organ of the organization who will involve on key and strategic decision making process. Sustained management support and management's active involvement in monitoring the progress of the project and providing directions to project teams are essential throughout the implementation project.

- ✓ **Steering Committee**

The steering committee consisting of senior management from different corporate functions, senior project managers and system end users ensures their active involvement and is critical for the success of the project and hey make an intense and close follow up during the entire project time. Their impact is highest at the initiation, adoption, adaptation and acceptance stages a at the project life cycle.

- ✓ **Implementation Consultants**

Companies rely on outside expertise for set-up, installation and customization of their software systems. However, consultants' role declines in the last stages of the implementation when the system becomes operational.

- ✓ **Project Team**

The project team's business and technological competence determines either the success or failure of the project. Their expertise needs to compensate the team members' lack of knowledge. Project team's role is more important during the earlier stages of the implementation and less important after post-installation.

- ✓ **Vendor - Customer Partnerships**

A close relationship between the software buyer and vendor has a positive impact on the success of ERP project and is critical at the earlier stages of the implementation.

- ✓ **Vendor's Tools**

Rapid implementation technologies and programs such as business process modelling tools, industry specific solutions, bundling server hardware with ERP software, support services and the like can substantially reduce the cost and time of ERP implementation. These tools provided by the vendors have a central role during adoption and adaptation stages.

- ✓ **Vendor Support**

Implementing an ERP system is a life-long commitment and requires continuous investments in adding new modules and upgrading the system. Thus, vendor support, for instance, technical assistance, emergency maintenance, updates, user training and the similar is essential through post-implementation stages.

2.1.8. Critical Success Factors (CSF)

Because of its complexity and high cost, various researchers studied the critical success and failure factors. Critical Success Factors are defined as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization" Another researcher defined CSF as "the factors needed to ensure a successful ERP project."

(Yick, 2011) In literature various researchers defined critical success factors: according to Bruno and Leidecker CSF are "those characteristics, conditions or variables that, when properly sustained, maintained, or managed, can have a significant impact on the success of a firm competing in particular industry" (Bruno, 1984)

According to Holland and Light CSF are divided in to strategic and tactical factors. These two can further be divided: strategic factors in to legacy systems, business vision, ERP strategy, top management support, project schedule and plans and tactical factors will also be subdivided in to client consultation, personnel, BPC and software configuration, client acceptance, monitoring and feedback, communication, fault-finding.ERP as Business strategy and enabling software, integrate

manufacturing, financial and distribution functions to dynamically balance and optimize enterprise resources. ERP software suites include integrated manufacturing, distribution and financial applications. ERP can enable enterprises to optimize their business processes and analysis capabilities for improved speed and efficiency (Mohammed Reza, 2010)

Nah and Lau studied prior researches in order to identify the CSFs in ERP implementation. They categorized CSFs based on Markus and Tanis's four stages ERP implementation model. They specified CSF for each phase. Eleven factors are identified, including of: "ERP Team of implementation maker and its composition", "Top management support and championship", "Business plan and vision", "Effective Communication", "Project management", "Project Champion", "Appropriate business and Legacy system", "Change management program and culture", "Business Process Reengineering(BPR) and minimum customization", "software development, testing and troubleshooting" and "monitoring and evaluation of performance" (Lau, 2001).

2.1.9. PMBOK framework to ERP projects

One of the recommendations of the (PMI, 2000) is that although the PMBOK is generally accepted and there is widespread consensus regarding the value and usefulness of the nine knowledge areas, it does not mean that the knowledge and practices described should be applied uniformly on all projects. Ultimately, "the project management team is always responsible for determining what is appropriate for any given project" (PMI, 2000, p.3). Therefore, one issue of importance in PMBOK framework is immediately applicable to ERP projects. It is useful to consider to what extent ERP implementations are like or unlike other IS projects. Prima facia, most of the salient points (either good or bad) that have been reported about ERP projects in the literature, either in terms of case studies or in terms of critical success factor (CSF) research, seem to fall naturally within these categories. Thus, we can argue that there is a good fit between the PMBOK "traditional" framework and ERP projects. As per PMBOK the Following are the CSF of ERP project.

- ✓ **Project integration management/project quality management**:

An ERP system involves a serious transformation process that requires fundamental change in the way business processes are designed and conducted. Various methodologies have been put forward to ensure the package is implemented in a manner that ensures the quality of the final system, i.e. that the system is implemented in an efficient way and the objectives are met (Minahan, 1998; Stefanou, 2000). Most of these methodologies insist on preparing properly and thoroughly from the chartering phase itself prior to acquiring or implementing any technologies. The problem inherent in such ideas is that this is precisely the stage in a project where managers' awareness levels are at their lowest and when they are least able to make key choices, hence the recourse to external parties which, unfortunately are rarely independent and un-biased

- ✓ **Project communications management**

It has been observed that organisations find it very difficult to communicate internally, each department viewing its information as its own and being reluctant to share it (Scott and Kaindl,

2000). Indeed, implementation team members discovered that it was easier to learn and share experiences with people from outside their organisation than within intra-organisational teams. This is where the primary benefit of using consultants to aid implementation is apparent as they add value to the project by facilitating meetings and the open discussions of requirements, prioritising issues and avoiding conflicts. Thus, consultancy agencies are important in ERP projects despite the possible lack of technical experience or knowledge (Wood, 2001) because they facilitate open and productive communication

- ✓ **Project scope management**

Again, this aspect of ERP projects pertains to how well organisations are prepared when they embark on their implementations. (Davenport, 1998) States that the single biggest reason that ERP projects fail is because companies are unable to reconcile the technological necessities of the system with their own business needs. A lack of understanding of the scope of the system may result in a conflict between the logic of the system and the logic of the business.

- ✓ **Project time management/project cost management**

Depending on the size of the organisation and the scope of the project, implementing an ERP system may take years because of the need to be rolled out across multiple sites, lines of business and countries.

- ✓ **Project human resource management**

An ERP implementation is a major undertaking, which requires management to assemble the best possible team to plan, execute and control the project. This implies reassigning the few people who are most likely to be missed from their duties to the ERP project team on a full time basis (Mhaer, 1999). It is not rare to find functional areas reluctant to sacrifice their best resources to the project. However, this is a difficulty which must be overcome (Bingi, 1999). The fact that teams must be cross-functional is an added difficulty especially in organisations with no culture of working across functional areas and no experience of such large projects. Frequently, companies do not fully comprehend the impact of choosing the internal employees with the correct skill set. The right employees for the team should not only be experts in the company's processes but also be knowledgeable of the best business practices in the industry

- ✓ **Project risk management/project procurement management**

Implementing an ERP system requires a radical change in the business processes of organisations, radical change means risks and risks mean more time and money. ERP systems are complex and they require reliance on many different types of expertise, which may also need to be sourced outside the organisation. Good, experienced consultants are difficult to find, thus employing a consultancy firm is no guarantee that the project will be a success. Organisations, which have trained their employees in the art of ERP implementation, stand a great risk of losing their investment because personnel with such experience are in great demand by consulting agencies.

In general Studies by different researchers such as Bhagwani (2009), Esteves and others have identified and discussed different ERP critical success factors in different contexts. Some of these generic ERP implementation CSFs which are referred in literature are listed below and used as a benchmark. This study also tests these generic factors.

- ✓ **Dedicated senior management support**:

Executive management support and sponsorship is important for accomplishing project goals and objectives and aligning these with strategic business goals. Both top and middle level management must themselves involve in the project and be willing to allocate required organizational resources. Two ERP project roles directly related to top management are the roles of project steering committee and project sponsor. Steering committee is a group of members from executive management and the project manager who reviews and decides on the progress and issues of the project. Project sponsor is the one who approves and funds the budget for the project

- ✓ **Good project scope management**;

This includes both scope definition and subsequent scope management and control. Some components of this factor are scope of business processes and business units involved, ERP functionality implemented, technology to be replaced and data interfaces. Project scope change must be managed properly as it may cause delays, cost and even conflicts between the company and the implementation consultants. Senior management must be informed of, decide and ensure any project scope changes such as delays in the schedule or requests for additional budget are managed and documented in a formal manner.

- ✓ **Effective organizational change management and business process re-engineering,**

ERP implementation can cause changes to some or all processes and potentially changes to job roles, responsibility, departmental boundaries and organizational structure. Any initiative which requires or brings about change carries with it a risk that the change will not be accepted by the organization and employees or customers for various reasons and as a result will prevent full realization of the planned project benefits. So, organizational, human resource and business process issues associated with an implementation must be considered and managed properly.

- ✓ **Project champion role**,

This is the role of project sponsor or project manager. The project sponsor is devoted to promoting the ERP project and has the ownership and responsibility to obtain the project resources. The project manager is required to plan, lead and control the project on the run in its several tasks.

- ✓ **Project team composition**:

Project team should incorporate all competences and skills that are expected to be necessary during the project. This might imply that the project team is composed of people with various education backgrounds, skills and professional experiences. ERP projects typically require some combination of members from business, information technology, vendor and consulting support. The structure of the project team has a strong impact in the implementation process.

Formalized plan and schedule It is necessary to have a well-defined plan and schedule for all the activities involved in the ERP implementation with an appropriate allocation of budget and resources. Usually, projects fail to finish the activities on time and within budget. To ensure the project completion per budget, plan and schedule, there should be close monitoring and controlling of time and costs.

- ✓ **Adequate training program**:

The training plan should take into consideration both technical staff and end-users. Training scope will depend on the type of implementation approach selected. Some organizations use an in-house training approach (trainer employees) while others prefer using training consultants

- ✓ **Strong communication inwards and outwards**,

All stakeholders of the ERP project must be communicated well so that they can be aware of any changes. They must assess how they will be impacted by changes in processes, policies, and procedures.(Bhagnawi, 2009) mentioned that one of the reasons for ERP implementation failures is poor communication between the team members. Poor communication includes failure to announce the reason for the efforts and activities required in the project and continuing to advise the organization about the progress and importance of the ERP implementation.

- ✓ **Usage of appropriate consultants Avoid customization,**

Consultants should have the knowledge of the ERP modules being implemented and be well experienced in the industry in which the client company operates. This is used to prevent costly mistakes from occurring which could have been avoided otherwise. The number of staff, how and when to use external consultants appropriate to the ERP implementation needs must be determined and decided. The usage of external consultants will depend on the internal know-how that the organization has during the project time. Mostly, ERP systems are implemented with the help of consultants.

- ✓ **Adequate infrastructure and interfaces**

IT infrastructure must be reliably available well in time both for the pre-implementation and the post-implementation stages of ERP. On the other hand, usually ERP systems do not provide all the functional requirements of an organization. Therefore ERP vendors have a complete program of interfacing with third-party (other non-ERP products) products to allow organizations having special expertise and products. So, interfaces must be configured well and tested according to the user's needs.

- ✓ **Adequate legacy systems knowledge**,

Legacy systems are the old business and IT systems prior to the ERP that contain the existing business processes, organizational structure and culture, and information technology. These are the main source of information for ERP implementation. When implementing an ERP it is necessary to decide which legacy systems will be replaced and the need to interface with those

legacy systems for which the ERP does not provide an adequate replacement. However, it is not appropriate to imitate the logic of the legacy systems by modifying the new ERP system.

- ✓ **Empowered decision makers**:

Project team members must be empowered to make prompt decisions and there will be no project delays. Since delays, small or large, can have an impact on these long-term ERP projects, organizations should attempt to make decisions as rapidly as possible

- ✓ **User involvement and testing**:

User participation refers to the behavior and activities that users perform in the system implementation process. Users participate in the defining of business requirements, help in the analysis of the ERP system configuration and in conversion/migration of data and testing of the system.

- ✓ **Appropriate ERP implementation strategy**:

A good implementation strategy is required for a successful ERP project. A poor implementation strategy will not only result in higher implementation cost but may also lead to a product that can break the company processes. Management must decide how the software package is to be implemented. There are different approaches to ERP implementation strategy such as big-bang (all at once end to end), skeleton or phase-wise which are incremental and module-wise. The advantages and disadvantages of these approaches should be assessed and decided. In the case of the study company in addition to finding out new and contextual factors.

2.2. Related Works

There are many research works and literature conducted about ERP implementation all over the world and from different countries perspectives. Most of these works are about the failure factors of ERP systems. (R.Goshu, 2012) is one of such studies which tried to see ERP failures. Gordon (2010) has surveyed key issues in ERP system implementation. IDG News Service has listed and detailed 10 biggest ERP software failures and related financial loss in 2011.

(Bangawani, 2009) has tried to review critical success factors in relation to implementation methodologies based on only assessment of previous research articles. Bhagwani has suggested extending such researches to case studies. Esteves has a research work which is about defining and analyzing critical success factors (Esteves). The research was based on only one case study and in Spanish context.

In Ethiopian context, there is very limited literature and research about ERP systems regardless of many ERP research works globally. The first attempt in this regard is the work of (G.Rufael, 2007) which just only discusses about the concept and design of ERP frame work and its implementation guideline at Gafat Engineering Company. This is just about ERP framework and it has no experiences of actual ERP implementation success and failures.

The second ERP literature from Ethiopian perspective is that of (Jorge, 2012). This study has discussed about a successful ERP Implementation in another Ethiopian private limited engineering company. The ERP system mentioned by the author is Microsoft Dynamics which has less market share and it is not well known and deployed as SAP and Oracle. In addition, the authors have not mentioned the detail factors encountered as challenges. They have just mentioned that problems encountered are cultural, business and technical.

They have proposed for more studies and reports on ERP implementations related to Ethiopian context for better experience sharing. The last study on ERP system in Ethiopia is the work of (Agonafir, 2013) which is a case study at Ethio-telecom on Oracle ERP. Derese's study was a frame work for successful ERP project. He has tried to list critical success factors along pre-implementation, implementation and post-implementation phases of Oracle ERP. This was a framework for high level implementation guide. He rather suggested to further study the contextual factors in other organizations and with other ERP systems relating them with ERP implementation methodologies.

This study is in line with suggestions of many previous research works in the study area. As the type and management of critical success factors is different in context, a critical success factors approach is necessary. So, this study will try to attempt or investigate the contribution of project management knowledge areas on ERP project success to make ORACLE implementation methodology as a reference.

2.3. Conceptual Framework

The conceptual framework explains the key concepts used in the study and how they are linked to one another to produce the final outcome. The model formulated to illustrate association between project management knowledge areas as an independent variables and success of project outcome as a dependent variable. The following conceptual frame work has been adopted from Abbas (2015) with slight modification by the researcher.

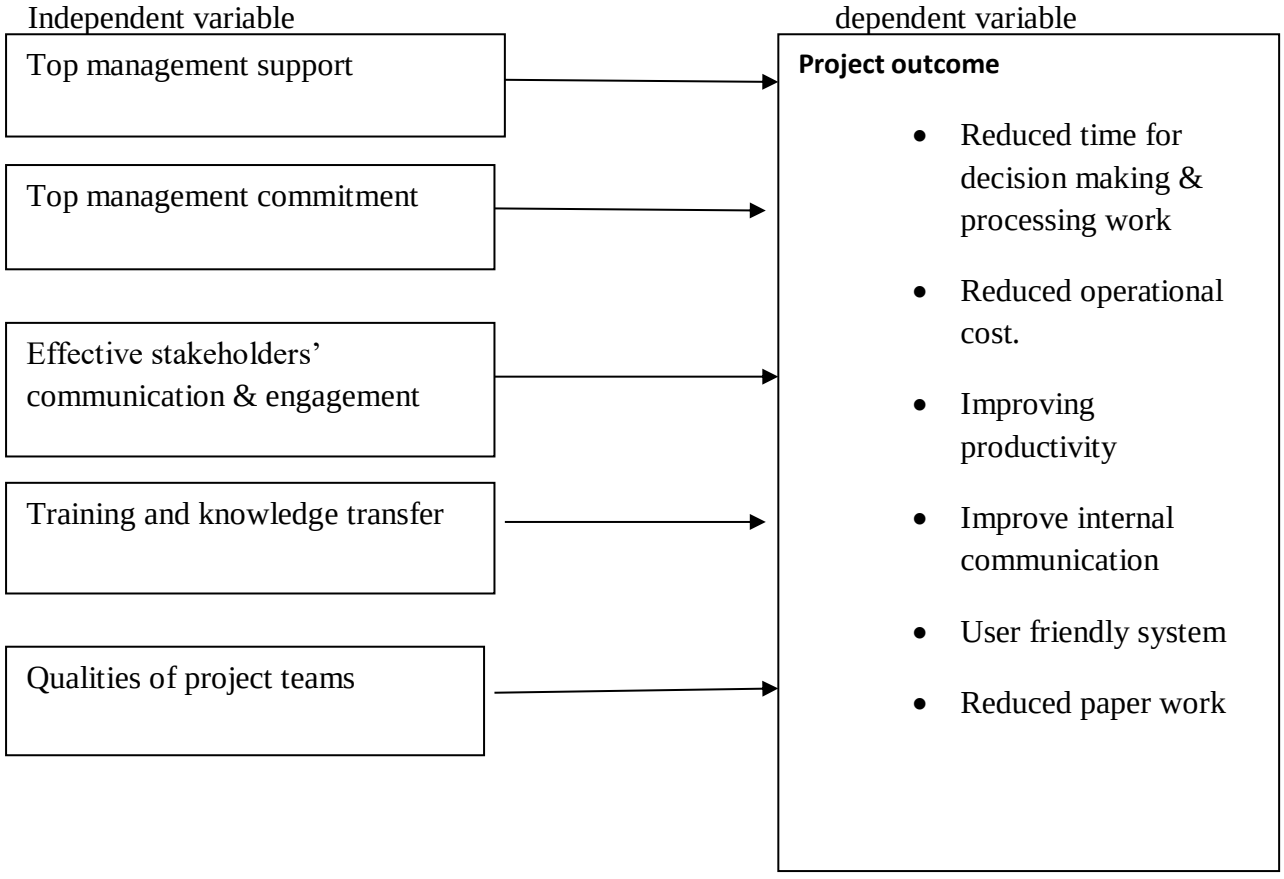

Figure 2.2 conceptual framework model source (Abbas, 2005) causes and effect of independent and dependent variable.

Chapter Three

3. Research Methodology

3.1 Research approach

The study followed a case approach; the researcher was collect information needed in order to see if the reality is in accordance with the theories. In order to answer the research question the researcher was considered a mixed approach to be the most useful in gathering information. For analyzing data gathered from questionnaire the researcher used quantitative approach. However data gathered from interview, document analysis, direct observation, open ended questionnaire, the researcher used qualitative approach.

3.2 Research Design

The intention of the research is to attempt or investigate the impact of project management knowledge areas on the ERP project success. In order to achieve this objective the researcher used a descriptive and explanatory type of research using case studies. The reason for selected descriptive type is that the researcher has no control the variables rather he only report what is happened in the area where the research is conducted. According to Kothari (1990) the major purpose of descriptive research is to describe the state of affairs as it exists at present.

As defined (Yin, 2003), a case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context especially when the boundaries between phenomenon and concept are not clearly evident the researcher then chosen to make a single- case study on a particular phenomenon in one organization.

Accordingly, this study is concerned to assess or investigate the impact of project management knowledge specifically top management support and commitment, stakeholders' communication and engagement and adequate training and knowledge transfer and qualities of project team's impact to the project success.

3.3 Population and Sample selection

Commercial bank of Ethiopia will be selected as a case for this study based on two reasons. First, CBE is the pioneer bank implementing Oracle ERP system in Ethiopia. Second, business experiences and services of CBE are multi-functional, which different banks and other organizations in Ethiopia can share. Due to the above reasons, CBE is the appropriate choice for this. The purposive or judgmental sampling technique allows researcher to make their own selection study participants based on their judgment considering the research needs and requirements. Purposive or judgmental sampling technique, which is non-probability method, is used for selection of study participants for this research.

Regarding the survey the table 3.1 shows the researcher distributed and returned the questionnaire from project team members (business and technical) 47 and 42 respectively and 5 questioners not

returned but all returned questioners are valid. . The candidates selected due to all candidates have involved in implementation of ERP system at all phases and they are all still using the system.

Project teams	Questioner distributed	Questioner returned
Finance	8	5
Procurement and sourcing	7	5
Human resource (HR)	8	8
Business intelligence(BI)	5	5
Technical teams	19	19

Table 3.1 Source self constructed based on (CBE) data collected

3.4 Data Collection Tools

The data collection instrument that used in this study is structured interview, closed ended questionnaire and a one open ended questionnaire in order to get detail explanation about project implementation related to project management knowledge areas and its effect in business process challenges of implementation, and their possible solution to improve success of project implementation. The questions that used to measure the project implementation variables will be adopted from previous research works (Madapusi, 2008). To insure the validity of the structured interview and questionnaire the researcher did a pilot test and feedback was gathered from the advisor and experts. The data that was collected through questionnaire are measured using 5-point likert scale ranging from 1=strongly disagree to 5= strongly agree with the sets of statements. There are also demographic questions to test relationship between variable. In addition to this the researcher used document analysis to gather data from the case study company (CBE) official website, ERP project implementation charter.

3.5 Source of Data

Primary and secondary sources was used to collect data throughout the research

Primary source

According to evidence from case studies primary data can come from six sources: documents, archival records, direct observation, participant-observation, and physical artifacts (Yin, 2003). Thus in this study primary data was collected through self-administer closed ended questionnaire with a one open ended question, structured interview and direct observation.

Secondary source

According to Ghauri (1995), another major advantage of collecting secondary data is that they give general idea on how to conduct the research and the best method to be used. However, there are shortcomings to it regarding the reliability, accuracy, and integrity. The certainty of the facts contained: the age of the data and the issue of bias from the author and place where it was written. Though, having the fact of the shortcomings, this research project was employed the secondary data from the case study company (CBE) official website, ERP project charter etc.

3.6 Data Collection Procedure

The researcher was adopted three steps in collecting the data for the study. First, relevant literature will review to get adequate information on the topic. Second, objectives and research questions were formulated to show the direction of the study. Third, data gathering tools was developed and pilot test was implemented.

Furthermore, the structured interview and questionnaire was conducted by the researcher himself. The questionnaire designed to gather quantitative and qualitative data. After data was collected using interview; it was checked for its consistency and completeness before analysis made.

3.7 Validity and reliability

3.7.1 Validity test

According to Kothari, (2004), Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure. Validity can also be thought of as utility. In other words, validity is the extent to which differences found with a measuring instrument reflect true differences among those being tested.

In order to ensure the quality of this research content validity of the research instrument was checked. The content validity was verified by the advisor of this research, who looks into the appropriateness of questions and the scales of measurement. Peer discussion with other researchers was also conducted since it is another way of checking the appropriateness of questions. Moreover, copies of the questionnaire were distributed to 5 respondents as a pilot test. This was done to find out whether the developing instruments measures what it meant to measure and also to check the clarity, length, structure and wording of the questions. This test was also helping the researcher to get valuable comments to modify some questions.

3.7.2 Reliability

The test of data reliability is another important test of sound measurement. A measuring instrument is reliable if it provides consistent results,

(Kothari, 2004). Moreover, reliable measuring instrument does contribute for validity. Hence, to prove reliability of the instrument, the researcher has distributed some questionnaires as a pilot test and then makes some adjustments accordingly.

Regarding the Interviews was scheduled for project manager, team leader's vendor and consultant. They had background knowledge, which was important to ensure that information they share is reliable. Interviews were set at their offices, to ensure that a certain comfort zone was maintained. The interviews were conducted in English and Amharic through note taking.

3.8 Methods of Data Analysis

Statistical Package for Social Sciences (SPSS) ver. 20 software was used to analyze the data. After collecting the data, it was entered in this software and the output was analyzed based on descriptive

statistics. Demographic characteristics are summarized using frequencies and percentages for all variables including: age, sex, work experience, departments and educational level Moreover, since the likert scale data is an ordinal data mean for central tendency and standard deviations for variability was analyzed. In addition some data analysis procedures appropriate for interval scale items like Pearson's **r**, and regression procedures were used to analysis the effect top management support and commitment, stakeholders communication and engagement, training and quality of project teams related to project success

3.9 Ethical consideration

In research paper, the researcher was informed the participants of the study on the selected bank about the objectives of the study before the research was conducted, and the researcher was also consciously considered ethical issues in seeking consent, avoiding deception, maintaining confidentiality, respecting the privacy, and protecting the anonymity of all respondents. A researcher must consider these points because the law of ethics on research condemns conducting a research without the consensus of the respondents for the above listed reasons. Concerning references, all the materials and sources was properly acknowledged.

Chapter Four

4. Data Analysis

4.1. Survey data result

In this section the returned data through questionnaires presented, analyzed and interpreted 47 questionnaires were distributed to the ERP project teams (business and technical).42 were filled properly and returned a s result the overall response rate was 89% response rate which is satisfactory.

First, the researcher presented the demographic distribution of the respondents; descriptive statistics under consideration of the variables presented. Second the researcher tested the inferential statistic, reliability of the items through Cronbach's alpha analysis based on SPSS version 20. Finally, correlation analyses have been done and the results have been clearly presented.

4.2. Demographic Data

The demographic information of respondent gathered for this study were gender, age, education level, years of service and respondent department worked.

Table 4.2.1 Demographic profile of respondents is presented and analyzed as shown below. From the total respondents 71.4 % are males and 28.6% were females. The respondents work experience in the bank shows that 47.6% have been working in the bank for less than 5years, 35.7 % have been working in the bank from 6 to 10 years and 11.79% have worked in the bank for more than 11 years. This shows the project office has been organized with more experienced staffs for decision making and mapping requirement with the new system and attaining the banks overall goals. These experienced staff has also been assisted by education as the data shows, more than 57% of the respondents have their first degree and 42.9% have their masters' indifferent discipline. The respondents are selected from five different departments as shown below so that their respective departments' processes are well addressed by the new system

Table 4.2-1 Demography data

Demographic Characteristics		Frequency	Percentage
Respondent's Gender	Male	30	71.4%
	Female	12	28.6%
Respondents Age	<25	7	16.7%
	26-35	28	66.7%
	36-40	7	16.7%
Respondents Educational Qualification	BA/BSc Degree	24	57.1%
	Master's Degree	18	42.9%
respondent Total service year	1-5 Years	20	47.6%
	6- 10Years	15	35.7%
	11-15 Years	5	11.79%
	16-20 years	2	4.8%
Respondents department.	Finance	5	11.9%
	Procurement and sourcing(SCM)	5	11.9%
	Human resource (HR)	8	19%
	Business intelligence(BI)	5	11.9%
	Technical teams	19	45.2%

(Source: Researcher's Survey Result, 2018)

4.3. Descriptive Statistics result to independent variables and dependent variables

Top Management Support, Top Management commitment, stakeholder's communication and engagement, Training and knowledge Transfer and Project Team Qualities

Table 4.3-1 Top Management Support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	2.4	2.4	2.4
	2.00	5	11.9	11.9	14.3
	4.00	24	57.1	57.1	71.4
	5.00	12	28.6	28.6	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Top management support included 4 items (questions) related to top management support for avail the resource on time, follow-up of the project outcome and project priority given by the management.

As shown in the table above top management support during project execution 12(29%) of the respondent strongly agree that there was strong top management support, 24(57%) agree, with the management support while 5(12%) respondents fall disagree and the remaining 1(2) respondents strongly disagree. From this we can deduce that majority of the respondent confirm that there was strong management support during project execution phase.

Table 4.3-2 Top Management commitment

Likert scale		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	2.4	2.4	2.4
	2.00	6	14.3	14.3	16.7
	3.00	5	11.9	11.9	28.6
	4.00	25	59.5	59.5	88.1
	5.00	5	11.9	11.9	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Top management commitment: this section include 5 items (questions) related to identifying project goals to team members ,effort personally to achieve the project goal and their prompt decision making made issues escalated for the top management decision

As shown in the table above top management commitment during project execution 5(12%) of the respondent fall strongly agree, 25(60%) respondent fall in agree category. While 5(12%) respondents fall neutral which was no idea, and 6(14%) respondent disagree, the remaining 1(2%) of the respondent fall in strongly disagree. From this we can deduce that majority of the respondent confirm that there was top management commitment during project execution phase to achieve the project objectives.

Table 4.3-3 Stakeholders communication and engagement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	9.5	9.5	9.5
	2.00	7	16.7	16.7	26.2
	3.00	7	16.7	16.7	42.9
	4.00	24	57.1	57.1	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Stakeholder's communication and engagement composed of 6 items (question) which was related to communication between of the project teams, project stakeholders about the project activities goals, accomplishment, and deliverables of each milestone.

With regard to stakeholder's communication and engagement 24(57%) respondent fall in agree category, 7(17%) fall in neutral, no idea, 7(17%) fall in disagree category and the remaining 4(9%) fall in strongly disagree. From this we can draw that even if there was good stakeholders communication and engagement during the project execution phase the 43% gaps shows that more emphasis given by the top management and the project managers to enhance the use or the success of the project.

Table 4.3-4 Training and knowledge transfer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	5	11.9	11.9	11.9
	2.00	15	35.7	35.7	47.6
	3.00	4	9.5	9.5	57.1
	4.00	16	38.1	38.1	95.2
	5.00	2	4.8	4.8	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Training and knowledge transfer composed of 4 items (questions) discuss about functional and technical training, deployment of knowledgeable trainers and knowledge transfer from vendor to project teams and project teams to end users.

Regarding training and knowledge transfer from vendor to project team, consultant to project team and project team to end users 2(12%) fall in strongly agree category, 16(38%) fall in agree category and the remaining respondent 24(55%) fall between neutral to strongly disagree category. from this we conclude that training and knowledge transfer were given less attention so the top management the project manager must exert their effort to everyone get training for ERP modules.

Table 4.3-5 Project Team Qualities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	7.1	7.1	7.1
	2.00	12	28.6	28.6	35.7
	3.00	8	19.0	19.0	54.8
	4.00	15	35.7	35.7	90.5
	5.00	4	9.5	9.5	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Project team qualities consists of 5 items (question) related to knowledge, experience, their dedication and support within project team members.

As shown the table above regarding the project team qualities 4(9%) of the respondent fall in strongly agree category, 15(36%) of the respondent fall agree category and the remaining respondent 23 more than half fall between neutral –strongly disagree .we can deduce that still in project team qualities there is gap like that of training and knowledge transfer and the top

Management and the project managers carefully identify the issues lead to this gap and by giving more emphasis can get the best result of the project.

Table 4.3-6 Project outcome

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	4.8	4.8	4.8
	2.00	3	7.1	7.1	11.9
	3.00	5	11.9	11.9	23.8
	4.00	25	59.5	59.5	83.3
	5.00	7	16.7	16.7	100.0
	Total	42	100.0	100.0	

(Source: Researcher's Survey Result, 2018)

Project outcome section consists of 7 items (questions) related to their perception what brings the project in terms of cost, time, and reduction of paper work, facilitate communication etc.

From the above table 26(77%) of the respondent fall in between strongly agree and agree category and the rest fall between neutral –strongly disagree category. From this table we can conclude that

the top management and the project managers exert maximum effort regarding to training, to build up project team technical skill and facilitates smooth communication between project stakeholders this 77% accomplishment increase to above 90%.

Table 4.3-7 Descriptive Statistics Result of independent variable

		Top Management Support	Top Management commitment	stakeholders communication and engagement	Training and knowledge Transfer	Project Team Qualities	Project outcome
N	Valid	42	42	42	42	42	42
	Missing	0	0	0	0	0	0
Mean		3.9762	3.6429	3.2143	2.8810	3.1190	3.7619
Median		4.0000	4.0000	4.0000	3.0000	3.0000	4.0000
Std. Deviation		.99971	.95818	1.04848	1.19353	1.15193	.98301

(Source: Researcher's Survey Result, 2018)

As shown the above table we can see that effect of project management knowledge areas (independent variable) to the project outcome based on their degree of respondent response, top management support, top management commitment, stakeholders communication and engagement, project teams qualities and training and knowledge transfer respectively from rank 1 to rank 5 for their effect to the success of the project ascending order.

4.4. Inferential Statistics

4.4.1. Reliability Analysis

The reliability of scale shows how free the data is from random error. Therefore, it is always advisable to select that scale that is reliable. One of the most commonly used scales of reliability is internal consistency. Internal consistency refers to "the degree to which the items that make up the scales are all measuring the same underlying attributes (i.e. the extent to which the items "hang together") (Pallant, 2005) . There are number of ways in which internal consistency can be measured, the most commonly used statistics is Cronbach's coefficient alpha. Cronbach's alpha is a test reliability technique that requires only a single test administration to provide a unique estimate of the reliability for a given test (Joseph A. g. and Rosemary R. G. 2003). According to the author, cronbach's alpha is the average value of the reliability coefficients one would obtain for all possible combinations of items when split into two half-tests.

Cronbach's alphas were calculated to examine the reliability of each variable of the study. The two variables in the study were project management knowledge areas (31 items) five independent variable, and project outcomes (7 items) one dependent variable .

According to Joseph A. g. and Rosemary R. G. (2003), cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The

closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale.

More (Malery, 2003)provide rules of thumb. According to their rules; reliability coefficients should be at least '.70' and the higher the better. Furthermore, as suggested by the author, if scale item were to exhibit an item to total correlation of < .5 – unacceptable or less the item should not be included in further analysis. Reliability coefficient for items in each variable (Cronbach's alpha) is greater than .7 which showed higher reliability of the items used in measurement of the variables. Accordingly Cronbach's alpha for project management knowledge variable Top management support which is Top management commitment Project teams qualitiesStakeholders communication and engagement Training and knowledge transfer and Project outcome is found to be which is more than 0.7 therefore it is statistically acceptable. The Cronbach's alpha value for all items suggested that the data collected through questionnaires is reliable and can be used for further statistical analysis.

Table 4.4.1-1 Cronbach's Alpha for Measures of the Variables

Variables	**Cronbach's alpha(r)**
Top management support	0.953
Top management commitment	0.958
Project teams qualities	0.988
Stakeholders communication and engagement	0.963
Training and knowledge transfer	0.975
Project out come	0.941

(Source: Researcher's Survey Result, 2018

Overall total Cronbach's Alpha is 0.959

4.4.2. Correlation analysis

The Pearson's Product Movement Correlation Coefficient was computed to determine the relationships between Top Management Support, Top Management commitment, stakeholders' communication and engagement, Training, knowledge Transfer and Project Team Qualities to project outcome

Correlation analysis is a useful way of exploiting relation (association) among variables. The value of the coefficient (r) ranges from -1 to +1. The value of coefficient of correlation (r) indicates both the strength and direction of the relationship. If r = -1 there is perfectly negative correlation between the variables. If r = 0 there is no relationship between the variables and if r = +1 there is perfectly positive relationship between the variables.

For values of r between +1 and 0 or between 0 and -1, the different scholars have proposed different interpretations with slight difference. For this study diction rule given by (Bartz, 1999) was used and described the strength of association among variables as mentioned in Table below.

Table 4.4.2-1 Interpretation of r value

Value of r	**Description**
0.80 or higher	Very high
0.6 to 0.8	Strong
0.4 to 0.6	Moderate
0.2 to 0.4	Low
0.2 or Lower	Very Low

Source: Bartz. (1999)

Correlation between Top Management Support, Top Management commitment, stakeholders communication and engagement, Training , knowledge Transfer and Project Team Qualities to project outcome.

Table 4.4.2-2 correlation analysis.

		Top Management Support	Top Management commitment	stockholders communication and engagement	Training and knowledge Transfer	Project Team Qualities	Project outcome
Top Management Support	Pearson Correlation	1	.857**	.726**	.774**	.765**	.888**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	42	42	42	42	42	42
Top Management commitment	Pearson Correlation	.857**	1	.806**	.772**	.835**	.917**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	42	42	42	42	42	42
stockholders communication and engagement	Pearson Correlation	.726**	.806**	1	.684**	.746**	.784**
	Sig. (2-tailed)	.000	.000		.000	.000	.000

	N	42	42	42	42	42	42
Training and knowledge Transfer	Pearson Correlation	.774**	.772**	.684**	1	.933**	.765**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	42	42	42	42	42	42
Project Team Qualities	Pearson Correlation	.765**	.835**	.746**	.933**	1	.801**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	42	42	42	42	42	42
Project outcome	Pearson Correlation	.888**	.917**	.784**	.765**	.801**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	42	42	42	42	42	42

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

The above table shows that their relationship is strong between independent and dependent variables it varies depending on the degree of their impact to the change in project outcome. Significant correlation existed between top management support with project outcomes ($r=0.88$, $p<0.01$). This implies that top management support and change in project outcome has a very strong relationship. Top management support in project positively influences the outcome of the project.

Moreover, the correlation analysis indicates that there is a very strong positive correlation between top management commitment and project outcome ($r=0.917$, $p <0.01$). Stakeholders communication and engagement has significant and positive relation with project outcome ($r=0.784$, $p<0.01$). From this correlation we can observe that strong communication platform was established by the top management and project managers for all project stakeholders this reaction lead to have a high impact on project outcome like the top management commitment.

The correlation of Training and knowledge transfer with success of project outcome is ($r=0.765$, $p<0.01$), which is lower than other variables even if it has a (very strong) positive and significant relation with the dependent variable and correlation of project team qualities with project outcome is ($r=0.801$, $p<0.01$). In general from this relationship we understood that if there is a good training program for all project teams' members and end users regularly the project brings a very strong relationship between the independent variable and dependent variable respectively and shows a better change in project success which is better than the current position.

4.4.3. Multiple Regression Analysis

Multiple regression analysis applied to find out whether there was statistically significant relation between the dependent variable (project outcome) and the independent variables (Top Management Support, Top Management commitment, stakeholders communication and engagement, Training, knowledge Transfer and Project Team Qualities. Multiple regression also tells that how much of the variance in the dependent variable can be explained by independent variables. It also determines the statistical significance of the results, both in terms of model and the individual independent variables (Pallant, 2005) one of the purposes of this study is to find the impact of independent variable to dependent variable. Multiple regressions allow using the independent variables as a predictor for dependant variable. Therefore it is appropriate for this kind of study. The regression model of the study is:

$Y= a+ \beta 1x1+ \beta 2X2+ \beta 3X3+\ldots\ldots\ldots\ldots \beta nXn+u$

Y= Dependent variable (project outcome)

a= constant

β= Regression Coefficient

X= independents (Top Management Support, Top Management commitment, stakeholders communication and engagement, Training, knowledge Transfer and Project Team Qualities)

U= Residual factor

According to Saunders (2012), the strength of relationship between one dependant variable and one or more independent variables is determined by coefficient of determination r^2 (also called regression coefficient). The regression coefficient varies between -1 and +1. -1 represents complete negative relationship while +1 represents perfect relationship.

Table 4.4.3-1 Model summery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.940[a]	.884	.867	.35787

A Predictors (Constant), Project Team Qualities, stakeholders communication and engagement, Top Management Support, Top Management commitment, Training and knowledge Transfer.

The above table shows the model summery regarding to case, R =.940a indicate that there is a strong and positive correlation between the dependent variable (project outcome) and the set of five independent variables (Project Team Qualities, stakeholders communication and engagement,

Top Management Support, Top Management commitment, Training and knowledge Transfer). The R Square value represents the Percentage of variance accounted for in the dependent variable (project outcome) by the set of five independent variables In other words; approximately 88.4% of the variance or changes in Project outcome can be accounted for by the influence of the five independent variables. The value of the adjusted r square (regression coefficient) is 0.867 indicating that how much of the variance in the dependent variable (project outcome) is explained by the model (which includes Project Team Qualities, stakeholders communication and engagement, Top Management Support, Top Management commitment, Training and knowledge Transfer).

Table 4.4.3-2 Coefficient table for regression model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.092	.246		.376	.709
	Top Management Support	.358	.118	.364	3.020	.005
	Top Management commitment	.522	.149	.509	3.513	.001
	stakeholders communication and engagement	.078	.093	.083	.835	.409
	Training and knowledge Transfer	.001	.140	.001	.008	.993
	Project Team Qualities	.030	.162	.035	.184	.855

a. Dependent Variable: Project outcome

According to pallant (2005), in order to find the contribution of each independent variable to dependent variable included in the model it has to be noticed that the value of standardized coefficient (beta)

The greater value of beta and less value of significant level ($p<0.05$) of each independent variable will show the strongest contribution to dependent variable (Pa, thus the largest beta coefficient is top management commitment which is .509 at a significant level .001($p<.01$) meaning that top management commitment makes the strongest contribution to explaining project outcome (dependent variable) as compared to top management support. But unlike the two the other three variables stakeholders communication and engagement, qualities of project team and training and knowledge transfer are less contribution to project outcome.

4.4.4. Qualitative analysis

This analysis section used to analyze the open-ended questions provided to respondent to write their point of view on any issues that they observed in relation to ERP implementation and utilization accordingly some of them replied problems on data cleanings, problems in users' adoptability and system performance and network Interruption. the modules was bought without

first evaluating their relevance and benefit to the bank, no pressure is made by the bank management when consultants are not working as expected and also, they need technical training,

Chapter five

5. Summery, conclusion and recommendation

5.1. Summary of findings

This study aimed to assess or investigate the effect of project management knowledge areas on project success of ERP project in CBE. Based on interviews, document analysis and the researcher put the under listed findings. During project execution phase major challenges faced are data cleanings, problems in users' adoptability and system performance and network Interruption .in addition to during project execution phase the following challenges exhibits luck of system and network interruption, longtime taken by interface issues, inadequate training has given to users project team members, end users, on time training and coordination and late response by consultant for raised issues.

From the survey result regarding the independent variable (top management support, commitment, stakeholders communication and engagement ,training and knowledge transfer and project team qualities there effect towards the success of the ERP project .the result of the central tendency shows that the most important indicator of the project success is top management support and commitment mean 3.97 and 3.64 respectively the other variables even shows positive result it needs more emphasis by the top management and project management office specially training and knowledge transfer, project team qualities and communication respectively.

Result from Pearson product moment correlation coefficient and as per BartzA,E (1999) interpretation of '**r'** value were used to discuss the relation between independent variables(top management support, commitment, stakeholders communication and engagement ,training and knowledge transfer and project team qualities) and dependent variables of project outcome. The relationship in table 4.4.2-2 shows that there is statically significant relationship between variables of independent and dependent variables. The strong relationship is found in top management commitment and top management support which shows 0.917 and 0.888 unlike the other variable of stakeholders' communication and engagement 0.784, training and knowledge transfer 0.765 and project team qualities 0.801 respectively.

5.2. Conclusion

Based on the findings of the study the following conclusion drawn. Business organizations consider ERP system as an essential information system solution to serve and cope up with competitive business environment. CBE is one of business organizations driven by this force to implement ERP into its company in order to facilitate decision making, real time process integration, improve internal communications, etc. However, when implementing an integrated and big ERP packages, assessing or investigate the project management knowledge areas effect on project success is very important.

Because ERP systems are complex, need huge budget investment, company re-arrangements and the implementation success depends on the nine project management knowledge areas. In this study, CBE was selected as a case organization to assess or investigate the contribution of the independent variable (top management support, commitment, stakeholder's communication and engagement, training and knowledge transfer and project team qualities) and dependent variables of project outcome.or project success.

In order to accomplish the objective of the study we used a mixed approach case study (interview, document analysis and survey) to collect data. After deep review of literatures, research model was defined consisting of the independent variable to their effect to project outcomes. Based on the research model survey and interview questions were adopted from literatures and modified according to the context. The triangulation of data obtained through questionnaire, interview and document analysis.

Generally the result of the study shows that the ERP implementation of the case organization is successful in achieving the organizational objective in terms of reducing transaction processing time, cost reduction, improve wide interdepartmental communication, reduce paper work and facilitating decision making by implementing the project management knowledge areas.

5.3. Recommendations

As we have discussed earlier, this objective is to assess and investigate the contribution of project management knowledge variables towards the project success by identifying and analyzing variables and their influence ERP Implementation., To ensure the sustainability and enhance the successful implementation the organization must learn how to use the project management knowledge areas in ERP project implementation and effectively to ensure the promised benefit can be realized by addressing the recommendation of the study as follows ;

- ✓ The top management and project manager should be taken this result as a lesson learned and for further module deployment the top management and project manger give more attention in selecting their team members; those have the knowledge of their business, courage and dedication.
- ✓ Training should be properly planned and defined, the management or the project manager give more emphasis and put a platform to make aggressive training programs provide for both end-user as well as super users to bring the required level of skills on the System and brings system adoptability easily by the end user.
- ✓ Regarding the knowledge transfer the top management put a control mechanism for the vendor to what extent handover their knowledge to the project teams as required by the project. And continuous follow up the vendors and consultant regarding this issues and counter check about their performance with the project teams' members.

- ✓ Due attention should be given to documentation and knowledge transfer, the top management should be aware that the main purpose of using external consultants or vendors should be knowledge transfer and in this regard they must be series.
- ✓ Appropriate user guide, manuals and support documents should be delivered by the consultant and approved by the bank for completeness.
- ✓ In order to get the best result of the ERP project the top management or the project manager should have put Clear communication plan between all stakeholders between project management to top management, between project management and members of the team etc should be set when, how, What and who should be communicated those directly or indirectly influenced by the ERP implementation.
- ✓ Regarding the top management support and commitment still the management exert their maximum effort to the success of the project by closely follows the day to day progress and give direction for the issue raised promptly.
- ✓ The management should further enhance the System performance and solve the Network Interruption by communicating to the concerned organization**.**
- ✓ Commercial bank of Ethiopia can also use this study as a post project lesson assessment. Used as input for other ERP modules deployment which is planned to be implemented in the future?

5.4 Limitation of the study and further research

The study has some limitation like any research or approach, the first is the choice of the implementation variables examined, the sample taken was limited to project team and due to time constraint not interviewed consultant and vendor even though included in sample. Nevertheless, this research still valid and analyzed with the available information. In addition to most areas of research the study require further development for instance training and knowledge transfer should be studied in detail to understand how to affect ERP project outcome and end users perception about the ERP system implementation of the organization.

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APPENDICES

Appendix 1: General Interview Guiding Questions

Questions which are used to guide the semi-structured interviews and lead to finding out the impact of the project management knowledge areas for project success

- In your understanding, what are the intensions and objectives of the company to implement the ERP system?
- How the applicability of project management knowledge areas regarding to the project success?
- How is the overall practice of ERP project execution in CBE?
- What do you think should be fulfilled for ERP success from your experience in CBE context to other?
- Any ideas and comments of your experience on this project.

ADDIS ABABA UNIVERSTY SCHOOL OF COMMERCE
MASTER OF PROJECT MANAGEMENT

Dear respondents

The main purpose of this questionnaire to gather information about an assessment of ERP (Oracle) project implementation in commercial bank of Ethiopia for the partial fulfilment of the requirement for masters for project management at Addis Ababa University. The outcome of this study will be used for academic purpose only.

Therefore your genuine response to the question is vital for the quality and successful completion of the study. The accuracy of the information you provide highly determine the reliability of the study.

Contact address
WondwosenMulugeta @ cbe.com.et

Thank you in advance for your unreserved cooperation.

Part I: Demographical Information - Please put '**X**' in the box

GENERAL INFORMATION

1.1. Gender

Male

Female

1.2. Age Group:

≤25

26 – 35

36 – 40

41 and above

1.3. Educational Status:

Diploma

BA/BSC

Masters & Above

Other please specify _____

1.4. Your service year:

1-5

6 – 10

11 – 15

16 – 20

21 and above

1.5. Which Project Teams ERP Project Implementation Are You Working In?

Finance

Business intelligence

Sourcing & Facilities

Human Resource

Technical team

Part II: Issues Related with the study area

Please **circle** the alternative of your choice, the numbers below has been defined with their Respective equivalent meaning to ease the questionnaire for each respondent. Hence;

1 = strongly disagree 2=disagree 3=neutral 4=agree 5 =strongly agree

Statement	**Strongly dis agree**	**disagree**	**neutral**	**Agree**	**Strongly agree.**
Top management support					
1. Top management publicly and explicitly identified ERP (oracle) implementation as top priority.					
2. There was Strong support of upper level management for the successful implementation of ERP (oracle) project.					

3. Top management allocated appropriate resources for the project.					
4. A cross functional steering committee periodically reviews the ERP (Oracle) project process.					
Top management commitment					
1. Clearly identify project goals for project management team to achieve.					
2. Ensure continuous effort in enhancing the quality of project. works					
3. Involve frequently in the project management process.					
4. Personally involved in the project management process.					
5. Prompt decision making was made on issues escalated for top management decision					
Stakeholders' communication and engagement.					
1. There was Regular communication of expectations and challenges deadlines, milestones as to what achieved by what date for all concerned stakeholders.					
2. Users are asked if they have questions and opinions related to the ERP system during its project execution.					
3. There was Consistent, timely and honest two way communication of requirements and expectations between project teams and end users.					
4. Communication is ongoing process among all employees throughout the ERP project execution.					
5. I have no difficulty telling others about the benefits and expectations the ERP system.					
6. Managing users input in the communication process results in greater understanding of organizational needs and quicker acceptance of the ERP (oracle) project.					
Training And Knowledge Transfer					
1. There was Conducted extensive functional and Technical training for employees.					

2. There was Deployment of knowledgeable and experienced trainers during project execution.					
3. ERP (ORACLE) system training review sessions are scheduled on an ongoing base.					
4. There was effective knowledge transfer from vendors to project teams' members and to end users respectively.					
Project Team Qualities					
1. There was Careful selection of team members with end to end business process knowledge and experience.					
2. There was Careful selection of technical experts with dedication during project execution.					
3. Deploy a team of experienced and knowledgeable technology and business experts.					
4. You get Reliable and on time technical support provided by the vendor during implementation.					
5. There was Quality of technical support and deliverables by the consultants during implementation.					
Project outcome					
1. Users' interface of the system is easily understandable.					
2. ERP (oracle) system assists the organization to reduce operation costs.					
3..ERP (oracle) system assist the organization by shortening processing time					
4. ERP (oracle) systems minimize the paper work.					
5. ERP (oracle) system reduced cycle time for decision making.					
6. ERP (oracle) systems assist users in improving productivity.					
7. ERP (oracle) system Improves organizational-wide communication.					

If there is any issues that you observed in relation to ERP implementation and utilization pleases write down here

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