ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

Analysis of Critical Success Factors affecting Enterprise Resource Planning (ERP) Project Implementation: the case of Commercial Bank of Ethiopia

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Approval page

This MA thesis entitled with "success factor in Enterprise Resource Planning (ERP) project implementation the case of commercial bank of Ethiopia" has been approved by the following examiners in partial fulfillment of the requirement for the degree of Master of Art in project management.

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This is to certify that this research work “success factor in Enterprise Resource Planning (ERP) project implementation the case of commercial bank of Ethiopia” undertaken by Daniel Getachew for the partial fulfillment of Master of Art in project management at Addis Ababa university is an original work and not submitted earlier for any degree either at this university or any other university.

Research advisor

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ACRONYMS

CBE	Commercial Bank of Ethiopia
CSF	Critical Success Factor
DBMS	Data Base Management System
EIS	Executive Information System
ERP	Enterprise Resource Planning
IT	Information Technology
MRP	Materials Requirement Planning
MSI	Master System Integration
OUM	Oracle Unified Methodology
PI	Process Integration
PMO	Project Management Office
RFP	Request for Proposal
RQ	Research Question
UAT	User Acceptance Testing

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Abstract

ERP projects are complex purposes which influence main internal and external operations of companies. The success of the project directly influences the performance of the organization. Recent research has methodically collected plausible data in the field of critical success factors (CSFs) within ERP projects. The overarching objective of the study is to identify and describe the main CSFs and how they can be ranked according to the importance to success of the project. Because of the influence of CSFs to ERP-projects in general, the term "ERP project" is used in the further parts of this paper. Both primary and secondary data were used to meet the objective of the study. A total of 24 project managers and project team members were interviewed with triangulation of data from desktop sources. Data was analyzed descriptively. In terms of result, it is found out twenty critical success factors from literatures for successful implementation of ERP systems and from them the important critical factors are ranked in order of importance. Factors such as project planning and strategy, top management support, project management and leadership, capability of consultants, change management and communication, and overall knowledge transfer are among the factors identified as critical for ERP system implementation in Commercial Bank of Ethiopian. This study will be significant to project managers, especially in organizations that have recently implemented or are in the process of implementing the ERP systems.

Keywords: Critical success factors (CSF), ERP, and project implementation.

CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

There are a wide variety of tools and systems that have been developed to enable organizations to become more competitive, one of these tools is enterprise resource planning (ERP). ERP systems are all about ensuring that operational systems being used by an organization are fully integrated. The purpose of using ERP is to improve and simplify the internal business processes, which typically requires re-engineering of current business processes (Huang et al., 2004).

Enterprise Resource Planning (ERP) system is one of the very complex information systems for the organization (Umble & Umble, 2003). It integrates all departments with the organization and automates all processes. ERP system implementation is a big challenge for every organization. Different factors influence positively or negatively on the successfulness in implementation of ERP system. These factors are known as critical factors. Critical success factors (CSFs) become the reasons of successful implementation of ERP system.

An Enterprise Resource Planning (ERP) is packaged software which is used by many companies to integrate business functions and disseminate ordinary information and processes throughout organization (Seddon et al. 2003). ERP software integrates enterprise-wide information and business activities e.g. production, human resource, distribution, sales and marketing. ERP software enables the company to manage its resources efficiently and effectively. ERP gained popularity in early 1990s and became one of the best software to manage business processes (Holland & Light, 1999).

A standard must be established by which to define and measure project success. Fundamentally, project success is the delivery of the required product, service, or result on time and within budget. To meet these objectives is to deliver a quality project. PMI illustrates project quality through the concept of the triple constraint—project scope, time and cost. Project quality is affected by balancing these three interrelated factors. “The relationship among these factors is such that if any one of the three factors change, at least one other factor is likely to be affected.”

Critical Success Factors are the key area where satisfactory results can give the business competitive edge (Rockart, 1979). In order to get desired output, company must exert efforts to its fullest (Pinto &Slevin, 1987). Dadashzadeh (1989) defines CSF as the important aspects which a manager should highlight as their objectives and then a certain criteria must be set to attain these objectives. The core fundamentals of ERP deployments includes the basic transaction procedures and applications to support the centralized database which can be designed by the organization or the vendor and some other tools which are necessary for the smooth working of ERP.

Success of the ERP implementation is very critical because ERP system is very costly and expensive especially for the large scale organization. The requirement of ERP system includes proper **hardware gadgets**, **connectivity media** and other power backup resources. Initially ERP system was designed for the manufacturing industries and financial sector, now it becomes the need for all other sector as well due to advanced features added up in this system (Markus and Tanis, 2000). In other case, if the ERP system has not been implemented successfully, the heavy cost which the organization spend to modify the whole infrastructure becomes useless.

The key suppliers of ERP are SAP, Oracle & Microsoft, among them Oracle supplies the system to commercial bank of Ethiopia. In our country ERP systems are adopted by some companies like Ethio telecom, Ethiopian Airlines, Mesfin industrial engineering etc to gain competitive advantage. Considerable benefits of ERP include the minimum operating & maintenance cost, enhanced customer services, improved production schedule etc. Some of the disadvantages of ERP are Substantial financial investment (time taking and costly), Difficult and complex implementation, Inflexibility and vendor dependency etc. Once ERP deployed then to revert back is not possible. Hence ERP implementation is difficult and tends to be managed vigilantly to gain all benefits (Bingi et al., 1999).

1.2.BACKGROUND OF THE COMPANY

Generally, the Banking industry is growing relatively at a faster rate in Ethiopia than ever before. The type of services being provided has also improved and supported by modern technologies. This is due to the fact that number of banks has increased significantly and the competition among other banks becomes fierce

The history of the Commercial Bank of Ethiopia (CBE) dates back to the establishment of the State Bank of Ethiopia in 1942. CBE was legally established as a share company in 1963. In 1974, it was merged with the privately owned Addis Ababa Bank (CBE, 2017). Since then, it has been playing significance roles in the development of the country both economically and technologically. The bank is a pioneer to introduce modern banking to the country like Western Union and currently working with other 20 money transfer agents like Money Gram, Atlantic International (Bole), Xpress Money. It has more than 1160branches stretched across the country and four branches in South (CBE, 2017).

In the year 2011, Commercial Bank of Ethiopia decided to re-organize and re-engineer itself to align with a long term strategic road map for its future and to take the organization to the next level. The organization decided to implement Enterprise Resource Planning (ERP) system to ensure complete automation of its internal functioning to deliver services to all its stakeholders in an efficient manner.

A clear business plan and vision were developed behind the implementation strategy to know in which direction the project must be steered. The Commercial Bank of Ethiopia ERP Project team is composed of functional/business team and technical team both reporting to a Project Manager. Each Work Team will be composed of subject area experts and technical staff.All project staff and the project manager are full time staff. As ERP covers diverse functional areas across an organization, CBE's ERP team composition is also organized in a way it comprises representatives from all functional units namely, Finance, Procurement, Human Resource Management, Office of Strategy, Transport Management, and Management Information System.

The project was accordingly initiated with the selection of Project Management Consultant in March, 2014. After a detailed study of the requirements, a comprehensive Request for Proposal (RFP) was prepared for the selection of System Integrator. The System Integrator for the turnkey

implementation of ERP system was accordingly selected in August, 2015. The first phase of ERP went live in July, 2017 followed by full project going live in December, 2017.

This study describes the critical factors in implementation and benefits derived by use of ERP at Commercial Bank of Ethiopia. The objective of this case study is to provide insights into the paradigm of ERP implementation success factors towards adoption of IT systems in CBE.

1.3. STATEMENT OF THE PROBLEM

Despite the benefits that can be achieved from a successful ERP system implementation, there is evidence of high failure in ERP implementation projects. According to CHAOS report the failure rate of IT projects are 71 %, in order to minimize the failure rate identifying the success factor early in the conception stage is necessary.

Critical Success Factors are the limited number of areas in which results will ensure successful competitive performance and it became the reasons of successful implementation of ERP system. We can say, that these factors positively influence on the successfulness of ERP implementation.

Identifying the Critical Success Factors (CSF) as early as possible can provide valuable clues to help project managers improve their chances of success. This research focuses on seeking the most important CSF that influence the implementation process of an ERP system by examining the ERP implementation project in commercial bank of Ethiopia. An effort to identify and explore the key success factors related to the successful implementation of ERP projects.

1.4. RESEARCH QUESTIONS

i. What are the CSFs for an ERP implementation project? CSF should be analyzed with respect to organizational, technological and individual perspectives.
ii. What are the top five factors that have the highest influence on ERP projects ‘success?
iii. What is the relevance of each CSF along the implementation project stages?

1.5. RESEARCH OBJECTIVES

1.5.1. General objective

Organizations that wish to embark upon ERP implementations face complex projects with historically low rates of success (May, Dhillon & Caldeira, 2013). Key issues with ERP implementations include: budget overruns, not meeting project timelines, and a mismatch between results and the expectations of project deliverables (Ram, Corkindale, & Wu, 2013). Research has shown that employing key best practices during ERP implementation projects can mitigate the risks on ERP implementation projects and improve the likelihood of success (May, Dhillon & Caldeira, 2013).

The general objective of the research is to identify, quantify, rank and interpret critical success factors that affect the successful implementation of ERP..

1.5.2. Specific objective

i. To identify, rank and analyze critical success factors of ERP implementation
ii. To identify and analyze the top five factors that affect the implementation of ERP
iii. To identify the critical factors at each stage of ERP implementation of project
iv. To provide the possible recommendations for both further researches and other banks.

1.6. SIGNIFICANCE OF THE STUDY

In successful ERP projects, the adopting organizations witnessed substantial improvements in their performance. Efraim Turban and Jay E. Arason (2002, page 332) stated that "companies have been successful in integrating several hundreds of applications using ERP software, saving millions of dollars and significantly increasing customer satisfaction. The implementation of ERP systems is not easy and figures show very high failure ratio burden organizations with serious losses.

Considering the huge resources being invested in ERP systems worldwide for the sake of these benefits and the high failure ratio of their implementation from the other hand, together urge the necessity for a deeper study for the different factors that may lead to the success/failure of the implementation process. This study tends to figure out those critical success factors on ERP project implementation in Commercial bank of Ethiopia and to raise awareness about the

importance of these systems. In addition this study helps to pave a way for further research in the area of ERP projects.

1.7. SCOPE OF THE STUDY (DELIMITATION OF THE STUDY)

The research was conducted using a single-case study to investigate the factors affecting ERP systems implementation by considering the case of Oracle ERP project at CBE. The research data were collected from top management staffs, human resources staffs, information technology staffs, and operation staffs. This is because they are implementer and the day-to-day users of the system and they are likely to provide the relevant information. The research has faced significance limitation regarding the period.

1.8. LIMITATIONS OF THE STUDY

The researcher assumes that the sample represents the entire population and that the respondents were truthful in answering all questions pertaining to the study. It is a fair assumption that Technology, Organizational culture, Resource base and top management preferences have effect on ERP projects.

The study on assessment of critical success factor on ERP implementation is limited to one organization. The study is more recommendable if it will include similar other companies which implement similar system. However, due to time and expected data constraint the study is limited only on Commercial Bank of Ethiopia. Therefore, the result of the study may not be generalized but the result may shows critical factors for successful implementation of ERP in the banking industry.

1.9. ORGANIZATION OF THE RESEARCH REPORT

The research is organized in five chapters. The first chapter starts with a general introduction about ERP systems. It explains statement of the problem, the need or significance of the research, its scope and limitations. Chapter two is detailed literature review about ERP, theoretical review, empirical review and conceptual framework. The third chapter discusses in detail about the methodology of the research, data collection, and analysis techniques. Chapter four is about analyzing the data, discussion and results. Finally, chapter five contains conclusions, and recommendations for future works.

1.10. LIMITATION OF THE STUDY

These research findings will be able to contribute to the existing literature on factors affecting ERP system implementation in CBE. However, the study has some limitations. The first is the sample size considered in this study. The sample size is limited but taking more may give deep understanding of the concepts on the system. Nevertheless, this research is still valid having analyzed the available sample size with the interview. Secondly, the time required to complete the research was very small and this had an influence on the researchers' decision to pick a small number of interviewees. So the short time did not allow an in-depth search for more information. Thirdly, this research considers only a single case, it is better to consider multiple cases to make the finding more generalized. There for it is difficult to generalize the findings but it serves as a base for further in-depth researches.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

The purpose of this section is to collect data about CSFs and to position our literature review with regards to existing knowledge about the field of ERP and critical success factors for a proper implementation. Additionally, the use of literature reviews will help us answer the research question (RQ) and furthermore enable us to use pre-existing CSFs when producing the questionnaires.

2.1. THEORETICAL REVIEW

2.1.1. Project Success and Failure

The literature has presented many definitions and concepts of success and failure. Standing et al. (2006) argue that "project success is equally as complex to define as failure" (Standing, C., Guilfoyle, A., Lin, C. and Love, P., 2006). Baccarini (1999) suggests that project success has two elements: project management success and project product success. De Wit (1988) shows that there is a difference between project management success and project success. Avots (1999) proposes that project management is a main component of project success, which means that project success is achieved through project management. It shows that the overlap between project and project management occurs in: the time frame; the objectives of project success and project management success, which are often intertwined; and ease of measurement.

Whilst effective project management may be able to achieve project success, this does not mean, necessarily, that it can prevent project failure. Many researchers have shown that time, cost and user specification are success criteria. A successful IT project should meet time, cost and user requirements as well as gauge its effect on IT operations.

Time, cost and specification are a small element of the measurements, although they are significant factors for many information technology projects. Wateridge (1997) argues that project success can occur, even if it does not meet budget and time schedules. However, a project can be considered as having failed, even if the technical system has achieved its goals (Sauer, C. 1988).

It is tricky to define the success or failure of a project because it is a grey area. Wateridge (1997) confirms that success and failure are not black and white. Sauer, C. (1988) thinks that failure can happen only if there is a developmental or operational termination. Thus, researchers have tried to create or find success factors to lead projects to success.

Rowe, Mason and Dickel (1982) say that "Key result areas (KRAs) and critical success factors (CSFs) provide clues that help to answer the question of whether the organization is able to effectively mobilize its resources where there are conflicting sub goals, environmental uncertainty, and internal politics and constraints". Verma (1995, 1996) writes that communication, teamwork, and leadership are vital components of effective management of project human resources and are necessary to accomplish project objectives successfully.

Cleland (1986) suggested that "project success is meaningful only if considered from two vantage points: the degree to which the project's technical performance objective was attained on time and within budget; the contribution that the project made to the strategic mission of the enterprise."

Freeman and Beale (1992) provided an interesting example of the different points of view of people: "An architect may consider success in terms of aesthetic appearance, an engineer in terms of technical competence, an accountant in terms of dollars spent under budget, a human resources manager in terms of employee satisfaction, and chief executive officers rate their success in the stock market." Freeman and Beale (1992) reviewed the project management literature, identified seven main criteria for measuring the success of projects; five of them are more frequently used than others:

i. Technical performance
ii. Efficiency of execution
iii. Managerial and organizational implications (mainly customer satisfaction)
iv. Personal growth, and
v. Manufacturability and business performance

Project success may be assessed by different interest groups—stockholders, managers, customers, employees, and soon. Criteria for measuring project success must therefore reflect different views (Stucken Bruck, 1986).

Clarke (1999) also states that by targeting the main problems and issues using the key success factors as a focus could make a significant difference to the effectiveness of project management. In order to ensure that a project is completed successfully, project plans need to be updated regularly.

Dvir et al. (1988) suggest that the CSF projects are not universal for all projects. Different projects have different sets of CSF, suggesting the need for more contingent approach to the theory and practice of project management. Success factors can be perceived as main variables that contribute to projects' success. A combination of factors determine the success or failure of a project and influencing these factors at the right time makes success more probable

(Savolainen, 2012) In earlier project management literature the main focus was on identifying generic factors that contribute to projects' success. Within the last years, authors emphasized on the existence of different success factors depending on project type. The struggle to identify the critical success factors is an ongoing topic, approached by many researchers especially due to the pressure of implementing successful projects in a dynamic global market and ever changing business world (Crisan, B. 2014).

According to Kenny (2003), when judging a project's success within an organization, one cannot limit the analysis to the efficiency of the project management processes employed but must also take into account the project's effectiveness in contributing to the organization's strategic objectives. Effectiveness is measured or evaluated as a function of the degree to which project goals are achieved, while efficiency is measured as a function of meeting the project's deadline, budget, and quality criteria.

The success of any project is determined by how well the project contributes to the achievement of the organization's strategic objectives (effectiveness) and how well the project has been carried out efficiency). In an organizational environment, projects are ways to implement strategies. Therefore, a project's objectives must be directly connected to the organization's strategic objectives.

A differentiation should be made between the two related concepts: success criteria and success factors. First, relevant success criteria have to be identified and then, success factors should be

determined in order to increase the chances of project success (Müller, Turner, 2007). Even though, in this research, the focus area is on success factors, success criteria cannot be neglected.

Success criteria are defined as variables that measure project success. Since project success might be perceived differently by stakeholders, there is a need for comprehensive criteria that reflect their interests and views (Dvir et al., 1998). Westerveld (2003) emphasizes the importance of stakeholders' satisfaction as a main success criterion, complementary to the "iron triangle" of time, budget and quality, and adds that different time lags should be considered. Establishing a set of criteria applicable to any type of project is unrealistic (Mir, Pinnington, 2014). Although certain criteria might be relevant in measuring the success of most projects, they should be adapted to size, complexity, duration, type and stakeholders' requirements.

Figure 1 iron triangle

Source: Alemu S., Mesfin B., & Mesfin K.

Pinto and Slevin (1987) defined CSFs as "factors which, if addressed, significantly improve project implementation chances". Rockart (1979) defined CSF as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization".

Samuel et al. (2013) defined a theoretical framework which includes five categories namely National Context, Organizational Context, ERP System Context, External Expertise Context, and ERP Success. An investigation using this framework helps to identify and range14 CSF for the success of the implementation in Ethiopia. The factors are Perceived Benefit, Training and Education, User Involvement, BPR, User Satisfaction, Team Composition, System Quality, Communication, Infrastructure, Change Management, Legacy System, Top Management,

External expertise, Project Management. The authors raised the importance of national factors in the context of developing countries, and conclude with the necessity for a good management of important factors.

ERP systems are usually implemented as projects. ERP implementation projects usually involve selecting the ERP vendor, establishing business process reengineering, implementation, and evaluation of the adopted system (Wei, 2008).ERP implementation projects normally involve internal IT & business personnel from the adopting firm as well as external consultants from implementation partners in order to be successful. This shows how human resources intensive ERP projects are. It is also worth mentioning that a good implementation partner is considered one of the most important factors for the success of ERP projects, and is another addition to the complexity of ERP implementation projects (Dai, 2008).

Due to the complexity of ERP projects it will be important to discuss ERP project implementation issues and ERP project failures in the next sections to further understand the introduction of ERP in to organizations and how it contributes to the relationship between ERP and business performance.

2.1.2. History of ERP

The evolution of ERP systems closely followed the development in the field of computer hardware and software systems and the history of ERP systems starts with efforts of automating inventory control systems in the1960s when most organizations designed, developed and implemented centralized computing systems for their inventory control systems (Rashid et al, 2002).

During the 1960s most organizations designed, developed and implemented centralized computing systems, mostly automating their inventory control systems using inventory control packages (IC). These were legacy systems based on programming languages such as COBOL, ALGOL and FORTRAN. Material requirements planning (MRP) systems were developed in the 1970s, which involved mainly planning the product or requirements according to the master production schedule. Following this route new software systems called manufacturing resource planning (MRP II) were introduced in the1980s with an emphasis on optimizing manufacturing processes by synchronizing the materials with production requirements. MRP II included areas

such as shop floor and distribution management, project management, finance, human resource and engineering (Rashid et al, 2002).

ERP systems first appeared in the late 1980s and the beginning of the 1990s with the power of enterprise-wide inter-functional coordination and integration. Based on the technological foundations of MRP and MRP II, ERP systems integrate business processes including manufacturing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, and transportation, providing accessibility, visibility and consistency across the enterprise (O'Leary, 2001).During the 1990s ERP vendors added more modules and functions as "add-ons" to the core modules giving birth to the "extended ERPs". These ERP extensions include advanced planning and scheduling (APS), e-business solutions such as customer relationship management (CRM) and supply chain management (SCM) (Rashid et al 2002)

Figure 2: Evolution of ERP

(Source: Rashid et al.)

ERP system

An ERP system is a technology infrastructure that can assist companies in integrating all internal departments (accounting, finance, marketing, human resource, and operation) with external suppliers and customers. It links all areas of a company's internal functions and processes with the external ones in order to make close relationship with customers and suppliers. ERP also allows for the sharing of information between different partners, supports the effectiveness of the supply chain management, and therefore improves the flow of information. These will enable

managers to make decisions based on accurate and up-to-date information (Al-Mashari & Zairi, 2000).

Al-Mashari (2003) noted that, since 1990s ERP systems have been considered by many researchers and practitioners as one of the most innovative developments in Information Technology and one of the most well-known IT solutions for this decade, and this is in fact because ERP system has become one of the main prerequisites and the backbone of e-business era, as well as the key factor to solve Y2K problem.

ERP system could be a useful tool for companies to build a strong information systems infrastructure and to enable the management to undertake better decision-making based on accurate and on-time information. Furthermore, these systems improve product quality and customer responsiveness and also enhance information sharing and information quality among different departments inside the company, as well as extend beyond the company's boundaries to suppliers, customers and other partners in the supply chain. Ultimately, this will enhance overall business performance that helps to achieve competitive advantage in the global economy and improve long term profitability (Klaus et al., 2000).

2.1.3. CSFs in ERP Implementation

In this section, the proposed CSFs in ERP implementation will be described using the content of the literature reviews and the sources from which they draw their conclusions. The CSFs have been chosen after examining the frequency of which they are used in the literature reviews. We have chosen to use the CSFs that are mentioned in three or more reviews. This is to ensure that the CSFs that we choose indeed can be considered accepted as critical. After exploring the chosen reviews, we could see that several CSFs could be combined since they represented the same factor. Hence, these are the CSFs that we will use to answer the RQ.

Top Management Commitment

The number one cited CSF and considered the most relevant and critical factor by prior researchers is "Top management commitment and support". This concept is referred to the need of having committed leadership at the top management level (Finney & Corbert, 2007). Successful ERP implementation very much depends upon active and persistent top management

involvement, and the importance of top management support in each step in all company levels is crucial (Zabjek et al., 2009).

Harrison (2004) argues that when some companies hand over their ERP implementation responsibility to the technical departments, they make a vital mistake resulting in a failed project. The use and success of IT in organizations should include participation from the top management, as that reflects that the top management works actively together with the rest of the company towards a successful IT-implementation (Byrd &Davidson, 2003).

Motwani, et al (2002) concludes that not only should the top management be active in the implementation process, but to ensure progress and ultimately success. This is what Yusuf, Gunasekaran and Abthorpe (2004) stress in their contribution; they argue that the commitment has to be solidified by a knowledge base, not only built on strategic planning and leadership but also of technical expertise. This knowledge can express itself in understanding the importance of delegating enough resources to the project in order for it to be successful (Nah et al., 2003).

Bhatti. T. R., (2005), has mentioned two aspects of top management that is leadership and the providing of necessary resources, Moreover, top management is not only limited to initiation and facilitation but will must be extended to the full implementation of ERP system by directing the implementation team to monitor the progress throughout the project

Implementation Strategy

Mandal and Gunasekaran (2004) argue that this is indeed the most important CSF for a successful ERP implementation, from a top manager's point of view. Several questions have to be asked in order to form a well-functioning strategy for implementation; what are the specific information needs at operational and managerial levels, how will the ERP system integrate with the existing system, and what is the schedule for the implementation?

Answering these questions, the company can develop a plan which would increase their chances of success with 90% compared to companies without a plan (Mandal & Gunasekaran, 2003). Many researchers promote a phased approach to the implementation since it gives the company flexibility to make changes in the timeframe should any unforeseeable events occur (Mandal & Gunasekaran, 2003)

Change Management

Nah et al. (2007) stress the importance of change management, starting at the project phase and continuing throughout the entire life cycle. The enterprise's wide culture and structures have to be managed; this includes people, organization and cultural change (Nah et al., 2007). The pre-existing organizational structure and processes found in most companies are not compatible with the new structure, tools and information that are provided by the ERP systems (Umble et al., 2003). Even if a system is flexible, it imposes its own logic and sheds new light on a company's strategy, organization and culture. Thus, in order to cope with that, an organization may force the re-engineering of key business processes or developing new business processes to support the organization's goals (Umble et al., 2003).

Legare, (2002) stresses the individual characteristics to influence a successful ERP implementation. If these characteristics are not in line with the top management's perception of how the system is to be established, the higher the risk of impediments in the implementation phase. Companies can cope successfully with user resistance by establishing a change management team, and a program made up of top and project management. The program involves procedures for constant feedback, monitoring the achievement, and rules for reporting responsibility (Shaul & Tauber, 2013).

Francoise, Bourgault and Pellerin (2009) outline some efforts in relation to the user that the change management team could be facing, such as; formally gather support from opinion leaders prior the start of the project, assess the organization's capabilities to accept change, secure that the training provided for the whole organization is complete, identify the risks and threats in conjunction with defining mitigation plans, circulate information/rumors on the benefits and changes that an ERP system will give, not starting the transition prematurely until the whole organization is ready, begin actions to reduce resistance to change at the very start of the implementation, consolidate employees' motivation throughout the project and specifically, prepare the project leader to handle change management problems. To conclude, if the change management process includes letting the employees, e.g. the system users, voice their opinions and be heard, the implementation process is more likely to be successful.

Project Management

Nah et al., (2001) state that a good project management is essential in an ERP implementation project. The project management activities span the first four stages of the ERP life cycle from beginning the project until closing it (Somers & Nelson, 2004). The approach to project management suggests that the project planning and control is in correlation with the project's characteristics such as project size, experiences with technology and project structure (Somers & Nelson, 2004). An individual or group of employees should be given the responsibility to drive success in the project management (Nah et al., 2001). When the project team is formally established, the team must subsequently be defined in terms of its milestones (Holland & Light, 1999).

It includes determining the critical paths of the project, deciding on the timeliness of the project and managing the force of timely decision making (Nah et al., 2001). Hence, the scope should be established, clearly defined and be limited. As ERP projects tend to be huge and inherently complex, due to the extensive combination of hardware and software as well as the countless organizational, human and political issues (Somers & Nelson, 2004).

Bhatti. T. R., (2005), that, "Project Management involves the use of skills and knowledge in coordinating the scheduling and monitoring of defined activities to ensure that the stated objectives of implementation projects are achieved. The formal project implementation plan defines project activities, commits personnel to those activities, and promotes organizational support by organizing the implementation process.

Implementation Team

For an implementation to run smoothly, training is not the only tool that can be used. The need for a strong, competent core team of dedicated and capable employees is also important, especially at the very start of the implementation (Cliffe, 1999). This team is meant to lead the way, using their talents to probe for details when carrying out the planning phase of the implementation. Soh, Kien and Tay-Yap (2000) emphasize the fact that the users have to grow from being just complacent and passive to actually delving deeper into the implementation process; this is particularly true for the core team. Snider, da Silveira and Balakrishnan (2009)

also argue that the use of smaller task forces consisting of a few talented employees is a way to reach success when implementing an ERP system.

They argue that smaller teams more often seek guidance when problems that they cannot solve by themselves arise, and by doing so, they got the input from outside parties more often which both increased their knowledge and also made sure that the implementation was on the right track (Snider et al., 2009). Larger groups of experts tend to base their decisions solely on their prior experience which, in Snider et al.'s (2009) case study showed to be inefficient. However, the competence of the team must be rather high; the team must be able to understand both the technical aspects of the process as well as be able to lead the project in an effective manner (Dezdar & Ainin, 2011). Shaul and Tauber (2013) also draw conclusions to the project team competence from several studies to emphasize team members' knowledge; how well the team is building morale and motivation, if there are good relations between the project team and users, is there a balanced project team or even cross-functional project teams. Many researchers also highlight the need for a project champion as a part of the implementation team (Mandal & Gunasekaran, 2003).

This individual employee should facilitate strong leadership skills together with knowledge of business, technology and personnel management (Mandal & Gunasekaran, 2003). Somers and Nelson (2001) describe the project champion as owning the role of change for the life of the project and that they should understand the whole organization throughout. They continue explaining the benefits of having an executive level individual with extensive knowledge of the organization and its processes, which Falkowksi et al. (1999) agree with; through this executive, senior management can monitor the ERP system implementation since the project champion is directly responsible for the project outcome (Somers & Nelson, 2001). The project team should consist of system users in order for the team to understand the practical implications of the implementation process (Akkermans & van Helden, 2002). This is why our fifth hypothesis

Business Process Reengineering

An ERP project pushes organizations to revisit their business processes and scrutinizes the ways of doing things relative to the best practices already embedded in the system. Bhatti (2005) uses the definition to BPR as "the fundamental rethinking and radical redesign of business processes

to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed". According to Dezdar and Sulaiman (2009), it also involves alignment of the business with the new system; process adoption, new process standards, business process skills and job redesign. There are special considerations to be undertaken during this phase, such as enhancing the ERP interface quality as well as the need to plan the infrastructure of the technology (Mabert et al., 2003). An issue with packaged software is the risk for conflict between the organization's needs and the pre-existing business processes (Somers & Nelson, 2004). Responsibilities of individual business processes are deployed among the boundaries in the organization, therefore, to identify the core business processes is important and a necessary step before re-engineering. Since it is quite often that these processes are invisible, as they have never been documented (Zabjek et al., 2009). Indeed, BPR plays a crucial role when implementing a new system and particularly at the earliest stages, from introduction through adoption; however, it tends to be less important when the technology has become a routine and embedded in the business processes (Somers & Nelson, 2004).

Use of Consultants

In the review by Dezdar and Sulaiman (2009), the CSF referred as "Use of consultants" were considered to have been one of the less frequently cited CSF. However, from the categorization made, it appears to be sufficiently brought up by authors. Somers and Nelson (2001) state that organizations use consultants in order to facilitate the implementation process as they may be familiar to specific industries possess knowledge about the modules and have adequate competency in determining which suite will be a better fit for a given company. Organizations frequently use outside consultants when setting up, installing, and customizing their software and the use of external parties appear to play an essential role in the initial start of the project but diminish during the latter stages of implementation when the system is running (Somers & Nelson, 2004).

Finney and Corbett (2007) argue that many researchers have advocated the need to include ERP consultants as part of the implementation team. However, in doing so it is also an imperative to arrange for knowledge transfer from the consultants to the company, so it ends up decreasing the dependency for the consultant over time (Al-Mashari et al., 2003).

From the system user perspective, a consultant can provide information, training and manage the overall implementation. The top management can negotiate with the vendors and get to an acceptable price for engaging external consultants, providing their users with adequate training (Upadhyay & Dan, 2009).

ERP Selection

Selecting the right ERP system from the start is vital to the success of the implementation process. For a company to be able to choose the right ERP system, the implementation phases need to be carefully worked through (Motiwalla & Thompson, 2012). Motiwalla & Thompson, (2012) argue that the ERP system must match the business processes of the company for it to be successfully implemented; this is in line with what many researchers mean when they are promoting the vanilla approach when implementing the ERP system (Somers & Nelson, 2001).

Choosing an ERP system which does not fit the organizational processes to a certain extent will lead to the company struggling to adapt, spending precious resources and ultimately having to abandon the conversion as a whole and try again (Law & Ngai, 2007). As the process is very costly and time-consuming, companies should not take this matter lightly. Selecting the right system also means selecting the right vendor to distribute the system. The company should base their vendor decision on several factors; the characteristics of the vendor, i.e. reputation, the relationship between the company and the vendor, the support that the vendor can offer and which tools the vendor has to its name (Davenport, 2000).

Quality Management

Saade and Nijher (2015) state that quality management is referred to the data integration of previous data, and the accuracy ensuring the data quality fulfils the requirements of the new system. Moreover, much of the success of the implementation process and ultimately of the total success of the system relies on the ability of the team to ensure data accuracy when converting it into the new system (Umble et al., 2003).

Finney and Corbett (2007) argue that the conversion process of the implementation may involve cleaning up suspect data that is not required in the new ERP system. The conversion process should be such that there is a minor chance of loss of data during the migration (Saini et al.,

2013). This part of the implementation also involves ensuring the system reliability, system integrity, stability and compatibility of the software. Adding to that, in relation to the system user, the quality management regards the user fit and if the system user fully understands the applications.

Assessing if the ERP system is perceived as complex or not by the users and whether the ERP fits the organizations business processes (Dezdar & Sulaiman, 2009). Before going "live", Saini et al. (2013) argue that the organization should execute a variety of tests so that the system is stable, hence, detecting flaws and errors before the introduction. Involving the users in the system testing via test cases is vital, so that the user can check the robustness of the system, furthermore control that it works properly in the operational environment, and is one of many steps for user acceptance (Yusuf et al., 2004).

Risk Management

Risk management involves developing proper troubleshooting tools, adequate skills and techniques and in relation to the CSF use of consultants, working closely with vendors and consultants when something is wrong in the system (Shaul &Tauber, 2013). Troubleshooting errors is critical when implementing an ERP and the relationship with vendors and consultants to resolve software problems should also work well (Nah et al., 2001).

Aloini et al., (2007) argue that the nature of ERP project risk is determined by the risk factors; hence they suggest a risk management approach to mitigate the risks of ruining the project. Thus, managers can consider measuring the risk within an ERP project as an important part of risk management (Chen et al., 2009). However, despite having a proper risk management strategy, the users should be the one having the knowledge about any contingency plan if the errors occur, thus, the know-how of troubleshooting the system when the system is live. If they do not have the knowledge of doing that, they might get over-reliant on the vendor to resolve technical queries (Maguire, Ojiako & Said, 2010). Moreover, if the user does not have the proper education and knowledge that the system user is exposed to, they will find it hard to give precise details of the deficiencies and leading to delays from the vendors to solve the problem (Maguire et al., 2010).

User Involvement

In relation to change management and as a result of the frequently cited failures, companies often encounter user resistance. The users are in many cases, often afraid that the ERP implementation will change their role, job status, importance, responsibilities and the access of valuable information (Shaul &Tauber, 2013). The user involvement can hence, be referred to a psychological state of the individual as the importance and personal relevance of the system to the user (Bhatti, 2005).

Shaul and Tauber (2013) emphasize the activity of nominate user delegates that contain solid knowledge of the organizational processes, thus, be in charge of the cross-functional requirements in the redesigns of the processes, activities and functional areas both during the initial implementation and over time. Therefore, the user involvement and participation are considered critical success factors as they will result in a better fit of user requirements and enhancing a better system quality, use and acceptance (Esteves & Pastor, 2000). However, it is necessary to consider the impact of changing from one system to another and the nature of work in connection to the specific job descriptions (Finney & Corbett, 2007).

The management has to take into account how the staff may need to be redesigned or restructured (Motwani et al., 2002). Despite that, Bhatti (2005) argues that there are two areas for user involvement when the company decides to implement an ERP system: (1) user involvement in the phase when the company defines the ERP system needs and (2) user participation in the implementation phase of the ERP systems.

Communication

Failing to achieve a fluent and open communication between top management and the system user is a major cause of ERP implementation failure (Huang et al., 2004). Motwani et al. (2005) argue that a company encouraging its employees to participate actively in the implementation is more successful than a company that does not. Furthermore, Motwani et.al (2005) discusses the importance of open communication when sharing the news of the change of ERP systems as well as the ongoing updates regarding the change. Indeed, cross functional and interdepartmental coordination is of utmost importance when implementing an ERP system and having excellent company-wide communication is vital (Chen et al., 2009).

IT Infrastructure

IT infrastructure is another critical success factor of ERP system implementation. It is critical to evaluate the IT infrastructure and skills of an organization but if necessary the infrastructure should be upgraded or restored (Finney, S., & Corbett, M. 2007). On the other hand Jarrar et-al (2000) pointed that sufficient hardware and networking infrastructure is essential before going to ERP implementation because a strong IT infrastructure is required for ERP applications.

Hardware selection is the company choice but usually the ERP software vendors select the appropriate hardware that which hardware is more accurate to run the ERP applications (Bhatti. T. R., 2005). Moreover, the crucial impact on ERP implementation is the configuration of software and can affect the outcome of the implementation process (Jarrar et-al 2000). It is evident that ERP system implementation integrate the information system, business process and IT infrastructure in organizations (Bhatti. T. R., 2005).Moreover, companies are turning towards ERP solutions for information technology planning and legacy systems management (Holland C. P. & Light B., 1999).

2.2. EMPIRICAL REVIEW

Today, information technology plays a key role in providing capabilities for almost all sectors to develop their tasks. Many organizations have invested a lot of money in information technology because of increasing awareness that IT investments can be an important source of competitive advantage (Imamoglu and Gozlu, 2008). For example, the USA spends more than $250 billion every year on IT projects (Avots I., 1969). However, most recent studies have demonstrated that the failure rate of IT projects is high. According to CHAOS reports (as cited in ***Umar A.,*** *2013*), on average over a 16 year period, 29% are successful, 24% fail and approximately half (47%) are challenged projects.

Many studies have covered why IT projects fail. Whittaker indicates three main causes for project failure: poor project planning (specifically, risks were not addressed or the project plan was weak), the business case for the project was weak in several areas or missing several components and a lack of management involvement and support (Whittaker B., 1999).

Normally, a project has two outcomes: success or failure. However, IT project failures include challenged projects. Almost all studies have shown that challenged projects are a type of failed project. Thus, according to CHAOS reports, the average percentage of failed projects during the past 16 years is 71% (24% + 47%). This is a high rate of failure. Even though challenged projects are not totally failed projects, they are in a grey area. This high rate of project failures causes conflict between project managers on one side and CEOs and stakeholders on the other side.

Many companies around the world commence implementing ERP systems in 1990s; the main reason behind the implementation of ERP systems is to re-engineer business processes through a uniform information system (Rajagopal, 2002.). During the mid of 1990s to 2000, around 30,000 companies worldwide, as a minimum, have implemented ERP systems (Mabert et al., 2003). Companies worldwide have been spending $10 billion dollar per year on ERP system (Yusuf et al., 2004). Since 1996 until 2003 there was a tremendous upward growth of ERP systems, but in the last few years ERP systems seems to be forgotten and that lead to a significant drop in ERP market.

There are many success records of ERP systems implementation in many companies such as Cisco systems, Eastman Kodak, Autodesk, IBM, Fujitsu Microelectronics, Panasonic, ChevronTexaco, and Tektronix. These companies have achieved the expected benefits of ERP systems. On the other hand, there are also other companies experience failures in ERP systems, for instance Dell Computer, FoxMeyer Drug, Boeing, Dow Chemical, Hershey Foods, and Mobil Europe, encountered large loss due to ERP systems failure.

Most organizations have invested huge amount of money in information technology in Saudi Arabia, which has one of the biggest IT markets in the Gulf region. The IT market in Saudi Arabia had a value of US$3.3 billion in2010, and is expected to increase to US$4.6 billion by 2014. Also, there will be a huge demand between 2010and 2014 for software developers, systems analysts, IT project managers and IT consultants (*Saudi Arabia: Information Technology Report*, 2010).

Shaul and Tauber (2013) emphasize some CSFs to be particularly challenging in the ERP implementation. One of them is the selection process of an ERP system, meaning companies

often suffer poor fit between the ERP system and the organization. The project management is another, for which the argument is that organizations that underestimate the complexity, size and scope of ERP implementation throughout the life cycle often experience a failed project. Senior leadership is the third factor, stressing the importance of top management being fully committed to the entire process of the ERP implementation.

Data management is a technology driven CSF, stressing that the existence of inaccurate, incomplete, inconsistent, inaccessible or doubtful data can harm the implementation since the ERP system aims to be widely deployed throughout the organization. Sufficient training program, all stakeholders must be well-trained and informed on how the business processes are migrated into the ERP system to fully reap the benefits of the system functionalities. Lastly, Shaul and Tauber (2013) discuss user involvement and exemplify with organizations facing failures in the implementation phase due to the resistance of the system user. Companies can cope with user resistance by establishing a change management team, and a program made up of top and project management (Shaul &Tauber, 2013).

Alizai (2014) identified factors affecting implementation of ERP as change strategies, change management, project management, resource management (time, budget and skills), internal and external contractor, end user engagement, user acceptance testing. Application integration, customizations management, testing strategy, staff attitude to change, organizational ideology, effects of merger or acquisition on a project, strategic management issues, leadership support for the project and managerial style are also identified.

Garg (2010) stated that companies do not show the failure of ERP system implementation however, ERP failure rate is very high. Different factors influence positively or negatively on the successful implementation of ERP system. Different studies identified critical success and failure factors of ERP system implementation.

Jamil and Ijaz (2007) mentioned in research work that ERP is a most highly technological and complex software package offer to different buyers in several sectors of economy to centralized the database in real time working.

Abbas (2015) in his study identify critical success factors of ERP implementation and the impacts of critical success factors for the successful implementation of ERP in banking sector of

Pakistan. During his study he uses Survey questionnaire method/techniques to identify CSFs which have significant impact on successful implementation of ERP. IT infrastructure is less significant as compare to other CSF like management commitment, IT skills, Training and education, self-efficacy and user involvement. Correlation and regression value shows that all CSFs have significant impact on success implementation of ERP while only IT infrastructure is less significant as compared to the five factors in Pakistan banking sector context.

Maditinos, et al (2012) investigates the way that human inputs (top management, users, external consultants) are linked to communication effectiveness, conflict resolution and knowledge transfer in the ERP consulting process and their impacts. They identified factors like the assistance provided by external consultants, knowledge transfer, knowledge transfer concerning technical aspects of ERP systems is more important than effective handling of communication, as well as conflict resolution among organizational members and the role of top management support less importance.

Lee S. (2001), Investigate CSF's affecting ERP system implementation in USA higher education, They have identified seven implementation difficulties: lack of end user involvement, inadequate project funding, lack of business process reengineering, insufficient planning time, insufficient research on vendors, improper technical and insufficient training.

Sayegh (2010), understand the critical success and failure factors of ERP system implementations in organizations that are based in the U.A.E.in his researcher identified CSF's are Strategic visioning, planning, Change Management, Communication, ERP strategy & Implementation Team, Project Manager, Performance Evaluation and Organizational fit of ERP systems/technical support. And also critical failure factors like not clear Strategic Visioning & Planning, Poor Change Management, Lack of Communication, ERP strategy & Implementation Team, Performance Measurement and Lack of ERP technical support.

Many scholars suggested as ERP system have many advantages for the success of companies. In order to get these multifunctional advantages some Ethiopian companies implemented the system into their organizations. Along with this, some researchers has conducted study on ERP system implementation in Ethiopia. For example Abiot and Jorge (2012) have made an assessment study on Ms-Dynamics ERP implementation in Mesfin Industrial Engineering. Derese (2013) has conducted a study on ERP system at Ethio-Telecom, and also Kibebework

(2015) has conducted research on the challenges and current status of ERP implementation at Mugher and Derba Cement industries.

CBE is trying and taking many organizational improvement systems, which facilitates its progressive functioning. Because of this, it is the first bank in Ethiopia which is currently purchasing and implementing the new enterprise resource planning called Oracle ERP. The bank has paid 2.6 million dollars for the purchase and licensing of Oracle ERP from Oracle; 22pc of the money was for the licensing of the solution. The bank will pay this amount (572,000 dollars) every year to renew the license. The system is integrated with the core banking system of the bank, by which CBE's transaction, payments, settlements and taxes are automatically monitored (CBE, 2015).

Murray, J.P. (2001) describes the nine factors for IT project success that he thinks can make or break IT projects:

i. appropriate senior management levels of commitment to the project
ii. adequate project funding
iii. a well-done set of project requirements and specifications
iv. careful development of a comprehensive project plan that incorporates sufficient time and flexibility to anticipate and deal with unforeseen difficulties as they arise
v. an appropriate commitment of time and attention on the part of those outside the IT department who have requested the project, combined with a willingness to see it through to the end
vi. candid, accurate reporting of the status of the project and of potential difficulties as they arise
vii. a critical assessment of the risks inherent in the project, and potential harm associated with those risks, and the ability of the project team to manage those risks
viii. the development of appropriate contingency plans that can be employed should the project run into problems
ix. an objective assessment of the ability and willingness of the organization to stay the project course

A study by Dong et al. (2004) covers most of the concerns of "Chinese information systems' project managers, for which the most commonly cited set of CSFs are:

(a) Effective communication

(b) Top management support

(c) User involvement

(d) Project manager and team members

(e) Project definition

(f) Project planning

(g) Project control and change management

(h) Technology support

ERP Implementation Stages

Motiwalla and Thompson (2012) provide a clear framework for a traditional implementation strategy of an ERP system. The authors divide the implementation in to five stages. In the **first** stage called the scope and commitment stage, necessary requirements are gathered, and what gaps that is to be filled with the ERP system is figured out. During this stage, analyzing and comparing the current business practices with the new is vital in order to avoid significant system modifications after the implementation takes place. After this, the vendor is selected based on the needs of the company, together with factors such as total cost of ownership, consulting and training services and customer service and help desk support. These criteria, together with the budgetary restrictions, help the company narrow down the selection of vendors to the one with the best fit.

During the **next** stage, called the analysis and design stage, the number and what kind of modules that are to be used is decided. A company can either choose to take a vanilla approach, in which the ERP software package is selected "as is" without any major modifications, or a chocolate approach in which the package is customized to the very needs of the company. The chocolate approach might, because of the customization to user requirements, increase the

implementation risk and the investment. During this stage, a change management plan is formed and plans for data conversions, system conversion and training are created.

The **third** stage is called the acquisition and development stage. This is when the license for the production version of the software is purchased, and the production version of the system is built. The tasks formed to fill the gaps identified in the first stage are carried out. The technical team installs the software and the change management team works with the system users; changing business processes and training on the sandbox version of the software.

Stage **four** is called the implementation stage. This is the most crucial of the stages since the new ERP system goes live for the first time; often there are mishaps that have to be tended to which costs time and money if not dealt with swiftly. There are four basic conversion approaches used when going live; the phased, the pilot, the parallel and the big bang. The phased approach is a tentative movement from the existing ERP system to the new. This approach can be time-consuming, but it is also the least disruptive to the company. The pilot approach involves implementing a smaller version of the final system prior releasing the full version. This approach is used in order to ensure that the final system is appropriate. The parallel approach is the costliest of the four because the new ERP system is implemented and used while the existing system is still online. This approach is best used when the company is not sure that the implementation will be successful. The final approach, the big bang, is the approach with the highest risk but it is the straightest forward and clean. In this approach, the company simply shuts the existing ERP system down and powers up the new one. This is, of course, risky, but it is also the least costly since there is no duplication of information.

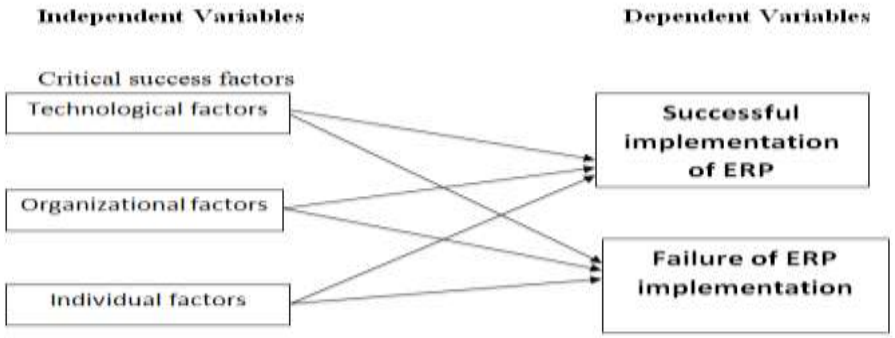
The last stage of the implementation is called the operation stage. In this stage, ongoing training for the users is conducted as the ERP modules are released, user feedback from training and actual system practice is controlled in order to make the necessary adjustments to the change management approach. During this stage, new versions of the software are continually released, patches are installed, and the system is upgraded together with the ERP vendor.

2.3. CONCEPTUAL FRAMEWORK

The ERP implementation phase consists of the customization and adaptation of the ERP package acquired according to the needs of the organization. Usually this task is made with the help of consultants who provide implementation methodologies, know-how and training. The thesis conceptual framework diagram is represented in figure 3. The research area is ERP systems and aspects were discussed in the Theoretical Background. The thesis specific context was the ERP implementation phase, and its success or failure.

A conceptual framework is a diagrammatic presentation of the relationship between the independent and dependent variables; it forms the basis of the research (Zaina, 2009). The conceptual framework illustrates influence of variables on the success of the ERP projects implementation in the case of CBE. The conceptual framework as shown in the figure below illustrates the link between the independent variables which are Technology, Organizational culture, Resource base and top management preferences and the dependent variable which is success or failure of the ERP projects. The two main variables are regulated by the intervening variable which is the organization's routines and policies.

Figure 3 Conceptual Framework



Source: adopted from Abbas, (2015)

Markus (2000) mentioned 4 phases, 3 of them are affecting the implementation of an ERP system (and CSF). These phases are the project chartering which is similar to the planning phase, the project phase which means implementation and the shakedown phase which consists of

stabilizing, eliminating bugs and getting to normal operations. On the other hand Falkowski (1998) mentioned the following phases which are similar to the other models: “requirement analysis and specification”, “conceptual design”, “code development and verification” and “testing and installation”. Ross (1999) classified the ERP implementation process into the five phases design, implementation, stabilization, continuous improvement and transformation.

The process of Fig 4 was selected for the assignment of CSF into project phases. The phases mentioned are: pre-implementation, implementation and post-implementation. The stabilization and the improvement phases are not clearly set aside, that’s why the 2 phases are summarized in one phase.

Parr, G. Shanks (2000) shows that the CSFs in each project phase are different and some of them are affecting the whole project cycle. The stuffing of the project team seems to be very important for the ERP project because team composition & teamwork was identified in every single phase

Figure 2 below shows the conceptual framework of the study where ERP system implementation has been divided into three stages: implementation, pre and post implementations. This three stage model also shows CSFs associated with the each phase. On the bases of this framework the present study identified different CSFs in implementation stage of ERP system.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. INTRODUCTION

The research method is the important part of a research, because it helps researchers to decide how to achieve the specified objective, what data to collect, and how to collect and analyze the data in order to solve the target problems. Therefore, it needs much consideration on choosing the appropriate methods, which can provide the desired outputs.

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. In fact, the research design is the conceptual structures within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data (selltiz et al). Thus, research design provides an outline of what the researcher is going to do in terms of framing the hypothesis, its operational implication and final data analysis.

This study takes a qualitative and exploratory approach that involves in-depth, semi structured interviews with ERP program managers involved in off shoring to elicit the success factors in off shoring of ERP implementations. Respondents were ERP manager who had played a key leadership role in ERP implementations involving off shoring. Twenty one such ERP experts and two team leaders were responded as a part of this study working in different organizations

This chapter discusses about the methodology by which the researcher employed to conduct the study. Thus, overview of the methodology**,** research purpose, research approach, research strategy, the case study as a research method, case selection and sampling, data collection method, methodological limitations, data analysis techniques, related works and their methodologies, quality of research and finally summary of the methodology are presented below. Therefore, this chapter outlines the methods that were used in answering the research questions.

3.2. RESEARCH DESIGN

The research design used was survey methodology. The research issues considered in this study can be investigated through questioners and interview with the selected respondents. Since the implementation of ERP systems has already occurred in the selected organization, this research study infers ex post-facto. The survey questionnaire captures a data through the assessment of respondents' perceptions. The data gathered are quantitatively analyzed and the study's findings are interpreted and generalized.

A collection of potential ERP implementation success factors will be identified though review of related literatures. The respondents expressed their opinions concerning the importance of subsequent factors for the implementation success and about the factors' appearance in their projects. The synthetic measure of implementation success will be constructed and the factors' impact on the implementation project success was examined. Then, the influential factors for the ERP implementation success will be ordered in order of their criticality and the first five factors are selected and discussed.

3.3. DATA TYPE AND SOURCE

3.3.1. Data type

Primary data were collected using a self-administered questionnaire and interview with key respondent. The respondents were the Information technology staff, ERP manager and project team members in the bank. The respondents were chosen based on their knowledgeable and skilled on ERP system implementation.

Secondary data are used to supplement the findings from primary sources. They are sources of data that are second-hand. Such data are not original because they have been used or originate from previous studies. The secondary sources include project agreements, articles, journals and other published work.

3.3.2. Data source

There are two sources of data- primary data and secondary data. Primary data mean the data collected for the first time, whereas secondary data mean the data that have already been collected and used earlier by somebody or some agency. In this research the primary data were collected by means of questioner and interview.

3.4. TARGET POPULATION AND SAMPLE

3.4.1. Target population

This study comprises those who participate in the implementation of ORACLE ERP project that is project management and project team members of Commercial bank of Ethiopia. The respondents were selected from different departments like those currently working in ERP and IT other employees who were involved in the project and assigned in other operational position. These departments was targeted because they are directly or indirectly involved in the process of ERP choice and implementation. The total number of participant in the project phase was eighty five.

3.4.2. Sampling and Sample size determination

Sampling is the process of selecting units or individuals from a population which can be included in the study, for instance, to answer interview questions or respond to survey questionnaires. There are different sampling techniques such as probability sampling, random sampling, convenience sampling and purposive sampling.

A purposive sampling method was used to select the respondents from the list of employees involved in the project. According to (Albright A., 1998), case study almost always uses purposive sampling. The objective of a case study is not to find out how often something occurs in a population, instead what occurred and why it occurred. In case study, the sample units must have the potential and richness in information to be key informants for the study. The sample size is calculated with a confidence level of 95 % and confidence interval 17 using internet software and the result shows the sample size can be 24. When determining the sample size needed for a given level of accuracy we must use the worst case percentage (50%).

$$n_o = \frac{Z^2 * (P) * (1-P)}{C^2}$$

$$SS = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

SS= sample size

Z= confidence level=95%=1.96

P= percentage picking the choice

C = confidence interval

N= population

3.4.3. Sampling selection procedure

In qualitative research the issue of sampling has little significance as the main aim of most qualitative inquiries is either to explore or describe the diversity in a situation, phenomenon or issue. Qualitative research does not make an attempt to either quantify or determine the extent of this diversity

The instrument that was used is a questionnaire and structured interview. The questionnaire was both open-ended and closed ended. In order to cover the whole scope, open and closed ended approach, shall be employed as proposed by (Orodho, 2005). This will further enhance greater understanding of the research problem. The open ended types of questions will give informants freedom of response to the questions without rehearsal to any question and thus ensure correct "first hand response". The closed ended types will facilitate consistency of certain data across informants and it's time-efficient.

Sampling techniques is divided into two, namely; 'probability or representative sampling' and 'non-probability or judgmental sampling' (Saunders et al.'s, 2007). Probability or representative sampling uses a form of random selection of samples as opposed to non-probability or judgmental sampling that do not depend on random selection of potential cases.

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. The data was collected through individual interviews and using structured questioners.

3.5. DATA COLLECTION METHOD

There are five components of a research design in a case study, these are; a study's questions, its propositions (if any), it's unites of analysis, the logic linking the data to the propositions, and the criteria for interpreting the findings. The researcher also states that evidence in case studies can be found through "direct observation of the events being studied and interviews of the persons involved in the events".

3.5.1. Questionnaire

The strategy used in this research included using a questionnaire for primary data collection. These data were considered data that specifically are collected to serve the purpose of this study. For this research, the questionnaire was conducted through a self-administered questionnaire. In order to reach a high number of ERP system users from the project team some of them were widespread geographically; the e-mail questionnaire was chosen to collect the data.

The questionnaire method is free from bias of the interview as answers are in the words of respondents and the respondents will have adequate time to give appropriate answers.

3.5.2. Interview

An interview is a purposeful discussion that occurs between people that assists in gathering valid and reliable data of current situations that are relevant to the research question. In this case, interview technique is used to collect all relevant data from representatives of four support processes of CBE's ERP implementation project teams.

Interviews are well appropriate when looking for opinions, experiences and privileged information from respondents in key positions. There are three formats of interviews, namely: unstructured interview, semi-structured interviews, and structured interviews. Unstructured interviews are open discussions and these types of interviews are not appropriate since the scope of the study will not be controlled. Structured interviews on the other hand are closed questions that are associated with short answers. These also cannot be used for this study because it affects

getting detailed data or information. Semi-structured interviews are preferable for this study since it allows detail discussions that enable controlling the scope of the study.

3.5.3. Document Analysis

Document analysis was used to support the analysis by reviewing different documents of Commercial Bank of Ethiopia. Some of the documents that will analyzed include CBE's strategy plans, contract agreements between CBE and Tech Mahindra Ltd and will also review to collect additional data to understand about the company and the ERP project. Even if detail literature review is done which are conducted in developed countries, there is limited or no research or document on ERP implementation especially regarding the Oracle ERP in this country.

3.6. DATA ANALYSIS AND PRESENTATION

Data is analyzed to draw empirically based conclusions. There are some techniques of analyzing data; to examine, categorize, tabulate, test etc. He also identified five analytical techniques to analyze data for case study research strategy; pattern matching, explanation building, time series analysis, logic models and cross-case synthesis.

Pattern matching is an analytic technique that is strongly pushed to be used for analysis. The researcher analysis of the data is considered to be findings that agree, disagree or add new knowledge to the existing literature.

Generally, analyzing data is based on developing and applying a certain method that will break the data down into results that are tested against the factors affecting ERP implementation success. Factors that affect the implementation of ERP have been derived from the literature and this research tends to use a pattern matching technique where findings will agree, disagree or add knowledge to existing literature.

Data analysis in this study started together with the data collection process. Notes were taken in each interview. Name and role of the interviewee and date and time of the discussion was recorded in the notes. The notes were reviewed and summarized daily or just after the interviews. Reviews of the preceding discussions were used as input and comparison in the other interviews. The main concern in the content of the notes was about the critical success factors and why these factors are important. Categories are created for the factors. Each critical factor mentioned in the

interviews is listed under the respective category if already exists or else a new category is created. The interviews and the factors categorization and analysis continued until the convergence of the factors and results.

Data triangulation is the other technique that will be used for data analysis in this research. One of the strengths of case studies compared to other methods is that evidence data can be collected from multiple sources. Triangulation is using evidence from different sources to validate and confirm the same finding. For this study, triangulation is used to compare results of the interviews, online survey and from questioners.

CHAPTER FOUR

4. DATA ANALYSIS AND RESULTS INTERPRETATION

4.1. INTRODUCTION

This chapter presents the findings from data collection in relation to the Enterprise resource planning systems implementation in commercial bank Ethiopia. The research instrument used was a questionnaire and semi-structured interview administered by the researcher. The respondent‘s data has been analyzed according to the objectives of the research which were establishing the activities of ERP implementation. There is the demographics analysis based on frequencies and percentages; analysis of activities of ERP system implementation using means and standard deviations, analysis of the strategies of ERP implementation using means and standard deviations as well as the factors influencing the choice of ERP implementation strategy by use of means, standard deviations and factor analysis.

Reasons that justified the implementation of the ERP system

- ✓ Standardization of processes: bring bank wide integration on a common system, increase data integrity, validity and reliability
- ✓ Adaptation of processes to international best practice
- ✓ Improved internal logistical processes, communications and create better information accessibility
- ✓ Address the current support organs setback to maintain sustainable, efficient and superior support for the core and support process;
- ✓ Improved management controls: support sophisticated data analyses by implementing business intelligence tools for better decision making;
- ✓ Enabling of future growth
- ✓ Integration among processes (process to use same data source system)
- ✓ Accessibility and decentralization of tasks (self service)

Implementation methodology and phases

According to the ERP manager response the methodology implemented were Iterative oracle implementation methodology called OUM (Oracle Unified Methodology) which is iterative (requirement, configure, show, test, and then configure, show, test …….)

CBE OUM ERP implementation methodology has five implementation phases. These are;

1. **Business Requirements Analysis:** During this phase, the business analysts work closely with the client's key business users and managers to understand and review their existing business processes. The project team ensures that all aspects of the current and future requirements (including reporting, security, and integration requirements) of the business are brought to the table and thoroughly evaluated with respective stakeholders.

2. **Solution Design:** In this phase, the teams finalize the business solutions based on the future business process design. The future process model is converted into the required steps to be completed for translating this solution in to the ERP. The future design must take into account any security requirements and enhancements agreed with the business, as well as all business needs to be met in the project.

3. **Solution Build and Test (UAT):** This phase involves building any required enhancements agreed during the solution design phase. Project teams prepare the functional specifications and ensure sign off from stakeholders before starting to build such enhancements. Eventually these enhancements are tested in the presence of both the customer and project business teams. The business system test is performed to validate the proposed future process model. The technical designing and integration of modules are developed. UAT is the key business users test the new applications and the required custom components for acceptance. Project teams will have to ensure that the new applications meet all the critical business needs to commence production. Also assessed is the readiness with respect to data extraction and upload programs for the production transition phase. Based on these test results and assessments, approvals are provided to start the operation transition phase.

4. **User acceptance test:** this phase involves perform acceptance testing, sign-off acceptance test results the deliverable is acceptance test result sign-off UAT, design security matrix, develop user procedures and finalize production configuration

5. **Production Transition and Support:** During this phase the new applications systems are setup and the required master data is uploaded in accordance with the conversion strategy. The production environment is prepared in accordance with the transition strategy and the efficiency of the new systems is measured. The new systems are put to use and any teething problems are resolved. In the new environment, end users are bound to raise queries, which need to be effectively resolved by the support teams. Once the steady state is reached, new systems are transitioned to the maintenance and support team.

These all stages were discussed with the factors affecting the implementation of ERP. These factors were identified as they happen in the stage by the interviews conducted during the study. Based on the interview, the current status of ERP implementation in CBE is at the operation. The overall implementations have gone through the explained stages (from requirement to operation).

Main strengths and weaknesses the project experienced during the implementation of the project is listed here in the table below.

Table 1: strength and weakness

Strength	**Weakness**
✓ Project Team Structure designed by top management	✓ Inadequate training has given to users which in turn require high support by end users from ERP team.
✓ Top management leadership and Executive sponsorship	✓ Lack of time management
✓ Good Project Management	✓ Prioritize issues according to their sensitivity
✓ Dedicated team members	✓ Time taken by consultants to come back from vacation
✓ Consultant with good expertise	✓ Low System performance/resiliency
✓ Good Leadership from Team Leaders	✓ Long time taken by Interface issues.

✓ Ability of System adaptability by team members	✓ Resistance to accept /less attention given by the end users

Source: research data (2018)

Major Challenges faced and ways they were managed

- **Data cleansing** in the HR profile, In Finance module and In SCM. Even if the task has affected the schedules, finally the project team /ERP SCM & Finance/ has identified what should be migrated to Oracle GL & FA.
- **Problem in users' adoptability:** ERP project is expected to trigger major changes in way of doing business across the bank. The ERP system is expected to fully automate the internal processes and support functions based on its strong features of " Self Service" functionality. Therefore users are required to initiate and follow up specific transaction online using the self service features. This is a new business paradigm which expects users to shift to paperless transaction, thus has become a challenge.
- **System performance and Network Interruption**: Frequent discussion with ERP Data Base Administration team.
- **Internal Staff expertise:** insufficient knowledge about the system in early stage of project. Further reading and more practice to cope up with the system and develop knowledge by training

4.2. DEMOGRAPHICS

The analysis of demographics attempts to determine the job titles of the respondents in line with the targeted specialists namely, IT staff and project managers; determine the relative ages of the respondents; establish the experience level which may give an indication of the level of expertise; establish the level of education and any professional certifications which may give an inclination into the understanding of enterprise resource planning systems and also determine the Bank tier which gives us an indication of the banks rank in form of asset base.

4.1.1. Job Titles

The respondents were required to indicate their job titles. Data analysis was done and the results are shown in Table 2.

Table 2: Job Titles

Titles	**Frequency**	Percentage
IT	7	29.17%
Project management	3	12.50%
Project team members	14	58.33%
Total	24	100.00%

Source: research data (2018)

Age

The respondents were required to indicate their age. Data collected was analyzed and is shown in Table 3.

Table 3: Age

Age range	**Frequency**	**Percentage**
20-25 Years	0	0%
26-30 Years	4	17%
31-35 Years	11	46%
> 35Years	9	38%
Total	24	100%

Source: research data (2018)

From the age‘s data analysis on Table 3, majority of the respondents lie within the age of 31-35 which is 46% of the respondent and Second is above 35 years age range at 38%. Respondents within the age ranges of 26-30 years have 17% representation.

4.2.3. Qualification

The respondents were required to indicate their level of education. Data collected was analyzed and is shown in Table 4.

Table 4: **Qualification**

Level of education	**Frequency**	**Percentage**
Diploma	-	-
Degree	17	70.83%
Post graduate	7	29.17%
Total	24	100.00%

Source: research data (2018)

Table 4 shows that all of respondents have degrees and postgraduate level education with both tying at 70.83% and 29.17% level of education respectively.

4.3. FACTORS AFFECTING ERP IMPLEMENTATION

As we have discussed in chapter three, eighty five dedicated employees of CBE engaged in the ERP implementation project. However, from them, we selected twenty four candidates for the purpose of this study and twenty four of them responded the questioners; one ERP Project manager, two ERP team leaders, and twenty one ERP technical team members. Some of the candidates selected have been involved in ERP implementation at all phases (from requirement analysis up to go-live (production) phases. According to Yin’s (2009), the employed method of candidate selection in the sense that certain pre-selection criteria were checked when candidates were being selected to assist, through interviews.

The twenty factors identified as important for ERP success through literatures review were distributed on survey questionnaire for confirmation and 24 respondents give their opinion regarding the factors based on their experience. Most of the survey responses were with "Important" and "Very Important" ranking as can be seen from the survey results summary in tables 5 & 6 which shows that the factors selected are in line with the project.

As mentioned before, respondents were asked to choose from the list of factors presented in the table 5 & 6 below. Since all these factors are relevant to projects' success, it can be observed that each of them received votes. However, there are certain factors that were chosen by more respondents. Thereby, it can be stated that the factors that were chosen by most of the respondents have higher impact on projects' success than the others. Based on the results of the questionnaire, the five factors with highest impact on projects' success are: top management support (4.96), project planning and strategy (4.92), project management and leadership (4.92), team composition, dedication and retention (4.67), change management and communication (4.63) and Business process change and less customization (4.63).

As we can see from table 5 below none of the respondents choose the above factors as non-important and 40.21% and 45.63% respondents give their opinion as important and very important respectively and the other 0.83% and 13.33% respondents chooses this critical factors are less important and neutral respectively. This result shows us that the above mentioned factors are critical for the successful implementation of ERP.

Table 5: Summary of questionnaire results: by number of respondents and percentage of response

R/N	Critical Success Factor	Not Important	Less Important		Neutral		Important		Very Important	
			no	%	no	%	no	%	no	%
1	Project planning and strategy						2	8.33%	22	91.67%
2	Change management and communication						9	37.50%	15	62.50%
3	Top management support and commitment						1	4.17%	23	95.83%
4	Project management and leadership						2	8.33%	22	91.67%
5	Clear user requirement and need assessment				2	8.33%	12	50.00%	10	41.67%
6	Capability of consultants and implementers						10	41.67%	14	58.33%
7	Project scope management				1	4.17%	15	62.50%	8	33.33%
8	Training, documentation and knowledge transfer				3	12.50%	13	54.17%	8	33.33%
9	Team composition, dedication and				1	4.17%	6	25.00%	17	70.83%

	retention									
10	Data preparation and migration						14	58.33%	10	41.67%
11	Incentives and celebration of milestones		2	8.33%	6	25.00%	6	25.00%	10	41.67%
12	Organizational culture and readiness				7	29.17%	8	33.33%	9	37.50%
13	Users involvement and system testing		2	8.33%	8	33.33%	5	20.83%	9	37.50%
14	Quality control and feedback				5	20.83%	13	54.17%	6	25.00%
15	Business process change and less customization				1	4.17%	7	29.17%	16	66.67%
16	Adequate infrastructure and facilities				2	8.33%	11	45.83%	11	45.83%
17	Trust and harmony between project team partners				9	37.50%	15	62.50%		
18	Basic IT capability of users and team members				5	20.83%	14	58.33%	5	20.83%
19	Appropriate integration and interfaces				9	37.50%	15	62.50%		
20	Establishing ERP support team				5	20.83%	15	62.50%	4	16.67%
	Total Responses		4	0.83%	64	13.33%	193	40.21%	219	45.63%

Source: research data (2018)

4.4. SUCCESS FACTORS RANKING

The result from table 6 shows that the factors listed as critical has important effect for the successful implementation of ERP project in commercial bank of Ethiopia. As the survey data shown the first seven factors have very important effect for the successful implementation and the next ten factors have important effect on the successful implementation of ERP in the case of commercial bank of Ethiopia.

Table 6: Summary of the survey questionnaire results: by average value and rank

R/N	Critical Success Factor	Average value (on five scale)	Ranking
1	Top management support and commitment	4.96	1
2	Project planning and strategy	4.92	2
3	Project management and leadership	4.92	2
4	Team composition, dedication and retention	4.67	4
5	Change management and communication	4.63	5
6	Business process change and less customization	4.63	5
7	Capability of consultants and implementers	4.58	7
8	Data preparation and migration	4.42	8
9	Adequate infrastructure and facilities	4.38	9
10	Clear user requirement and need assessment	4.33	10
11	Project scope management	4.29	11
12	Training, documentation and knowledge transfer	4.21	12
13	Organizational culture and readiness	4.08	13

14	Quality control and feedback	4.04	14
15	Incentives and celebration of milestones	4.00	15
16	Basic IT capability of users and team members	4.00	15
17	Establishing ERP support team	3.96	17
18	Users involvement and system testing	3.88	18
19	Trust and harmony between project team partners	3.63	19
20	Appropriate integration and interfaces	3.63	19
	Overall average of response	4.31	

Source: research data (2018)

From the listed factors top management support and commitment were however considered as one of the very important and critical success factors during the interviews. And other six factors (Project planning and strategy, Project management and leadership, Team composition, dedication and retention and Change management and communication, Business process change and less customization) have selections only as “Important” and “Very Important”. These factors are those with high frequencies during the interviews.

As we have seen the table 6 above the twenty success factors are sorted based on their overall average value of survey results. According to this list, the factors sorted at the top five are Top management support and commitment, Project planning and strategy, Project management and leadership, Team composition, dedication and retention, Change management and communication and Business process change and less customization. These are still in line with the results of the interview discussions. The overall cumulative average value of all the success factors in the survey result is 4.31on a 5-point scale.

Twenty factors are identified as critical success factors during interview sessions. On the other hand, survey results show that all these factors are very important all with average value of more than 4 on 5-point level. This indicates two basic findings. The first is that, the interview

discussions are conducted in detail and exhaustively to find out the ERP critical success factors. The other finding is that the results of the interviews and survey questionnaire converge to each other indicating that factors cited many times in interviews are also ranking high in the survey.

Top management support: most of all respondents agree that top management support is very important. In ERP implementation, repositioning the company and transforming the business practices must receive approval from top management and a good commitment from top management is essential to support the implementation progress. The implementation plan also must be communicated from top to down to show the attention from the top management.

Project planning and strategy: to implement ERP packages needs a good plan of what kind of package to choose (Customized or non-customized) and implementation time, rather than just to purchase off-the-shelf software. The careful and well-analyzed plan must be equipped with good documentation. The plan must be process-oriented rather than functional-oriented, because ERP is mainly about the process change

Project management and leadership: a clear business vision is needed to guide the project throughout the ERP life cycle. Project management related factors like Clear goal and objective, Effective project management, Reasonable expectation, Other dept. participation, Change request, Implementation strategy, Data conversion, Clear & effective communication are very critical for a successful ERP implementation.

Team composition, dedication and retention: the project team is the driver of the project, and selection of the appropriate people at the appropriate time is important in delivering a complex project successfully. Not only is having the right people important, but so is giving them the authority needed to execute their responsibilities effectively. The ERP team should be balanced, or cross functional and comprise a mix of external consultants and internal staff so the internal staff can develop the necessary technical skills for design and ERP implementation.

Change management and communication: change management is a primary concern of many organizations involved in ERP project implementation. Many ERP implementations fail to achieve expected benefits; possibly because companies underestimate the efforts involved in change management. User resistance has been associated with almost any type of system change, even more so for a large information system change like ERP. The main resistance is because the

users are worried that their job might be eliminated or be changed from their usual way of doing things. Change management creates new working relationships and information sharing among departments of ERP implementation.

Communication is one of most challenging and difficult tasks in any ERP implementation project. It is considered a critical success factors for the implementation of ERP systems by many authors. It is essential for creating an understanding, an approval of the implementation and sharing information between the project team and communicating to the whole organization the results and the goals in each implementation stage. In addition to gaining approval and user acceptance, the communication will allow the implementation to initiate the necessary final acceptance. The communication should start early in the ERP implementation project and can include overview of the system and the reason for implementing it be consistent and continuous.

Business process change and less customization: companies need to identify their current business structure and business process associated with their existing IT systems in the beginning of ERP project and relate this to the business process contained within ERP system. Both respondents strongly think that BPR is very important and grounded process in ERP project. Companies need to identify their current business structure and business processes associated with their existing IT systems in the beginning of ERP project and relate this to the business processes contained within ERP system.

Customization means that the general ERP packages need to be configured to a specific type of business. The extent of customization determines the length of the implementation. The more customization needed, the longer it will take to roll the software out and the more it will cost to keep it up to date. But many adopters could not avoid software modification, because the operation cannot function effectively with software functionality, even with modified business process (Axline et al., 2001).

4.5. CRITICAL FACTORS ALONG WITH THE PROJECT STAGES

There are five stages of ERP implementations namely; pre-planning, planning, detail design stage, delivery stage (development and test) and go live. However, during pilot interview the interviewees recognized all these phases modified into four and we could observe it on the CBE contractual agreement. These modified phases that CBE adopted for ERP implementation are;

where pre-planning and planning phases are merged in to requirement analysis phase, detail design stage (modified into solution design phase), deliver stage was modified as solution build and test (UAT) and go live phase as production transition and support

Based on the literature analysis, the implementation of ERP systems by different businesses tend to be influenced by several factors. Accordingly, different scholars identified those factors based on many dimensions of the businesses. However, majority of them concludes as these factors generally grouped into three; technological, organizational and individual factors.

This research finding is similar to the findings that technological, organizational and people or individual factors that affect ERP implementation into the company. The first technological factors affecting ERP implementation are business requirements identification, technical requirements identification, impact of technology, ERP complexity, cost of implementation, ERP compatibility integration issues, ERP installation aspects, data migration, application integration, ERP implementation(Go live) issues, business & technology issues and operational implication analysis.

Secondly, organizational factors affecting ERP implementation are organizational knowledge, organizational political support, project management, change and risk analysis, effects of managerial style, limited resource, project monitoring & control, organizational change management, change strategies, effective communication, project monitoring & control and operational implication analysis.

Finally, individual or people factors affecting ERP implementation identified are limited resource, user support base for application, In-house expertise, change management, staff involvement and attitude to change, management attitude, end user engagement and operational implication analysis.

Generally, this research finding is in line with the above-discussed researcher's finding in identifying factors affecting the implementation of ERP system into the company's context. These identified factors were analyzed in terms of technological, organizational and individual aspects of the company.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1. CONCLUSION

Success is desired in everyday life, in business activities and in projects. Given the high rate of projects that fail reaching their objectives or creating the wanted effects, researches that approach the topic of success bring positive inputs both to literature and to practice. Relating literature reviews with studies that capture the realities of business environments increase the usefulness of the results.

Success factors determine the positive outcomes of implementing projects. They have to be identified before projects' implementation, from the conception phase. But projects environments are dynamic, so success factors might change their level of influence in time, thus, a permanent monitoring of these factors is needed and whenever necessary the project manager should influence certain factors in order to increase chances of accomplishing success criteria.

To ensure successful implementation, organizations must learn how to identify the critical issues that affect the implementation process and know how to address them effectively to ensure that the promised benefits can be realized and potential failures can be avoided. Generally the ERP implementation success of the CBE and the success factors identified in this research can be a good base for other companies those who wants to implement any product of ERP especially Oracle.

The ranking developed in this paper identifies 17 CSFs which score 4 and above from the five point scale. This means these factors are important for the successful implementation of ERP. The identified critical success factors are: Top management, Change management, Project Management, Business process Re-engineering, and User Training as shown in table 7. All the mentioned literature in this paper agreed on the same factors which are critical for the successful ERP implementation.

5.2. RECOMMENDATIONS

As we have discussed earlier, the objective of this research is to identify and analyze the factors that affect the success of ERP implementation and their influence at each phase of ERP implementation in the CBE. Depending on the finding, we recommend the following;

1. Top management support and commitment, Project planning and strategy, Project management and leadership, Team composition, dedication and retention, Business process change and less customization and Change management and communication are the top critical factors as we have seen in the chapter four there for companies should consider this factors in implementing ERP in their company because this factors have serious impact on the successful implantation of the project. Ever if the above top five factors are critical the other factors have to be also considered in implementing ERP project to be successful.

2. Since this study is single case, researches of multiple case studies with higher sample size can give a general picture of factors affecting ERP implementation success. Additionally, conducting ERP implementation related research on organizations with other ERP system packages (like SAP, PeopleSoft, Baan and Microsoft) can also help to get all-rounded solutions of ERP system implementation.

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APPENDIX

Questionnaire

My name is Daniel Getachew. I am a graduate student from Addis Ababa University. As part of my studies, I am required to conduct a research on "**critical success factor in Enterprise Resource planning implementation projects the case of Commercial bank of Ethiopia**. I am interested in your experiences and opinion in regard to the above study. I am therefore appealing to you to fill for me this questionnaire. The information you will provide will be treated with a lot of confidentiality and will be strictly used for the purpose of this study.

Thank you in advance for your cooperation

INSTRUCTIONS:

The purpose of the study is to assess the factors affecting the success of the Enterprise Resource Planning implementation projects within Commercial bank of Ethiopia.

SECTION A: General questions

To select your responses please tick (□) appropriately

1. Gender: Male □Female □

2. Age: 25 and below □25-30 □30 - 35 □and above 35 □

3. Length of service: l -2yr□ 3yrs- 4yrs □5yrs- 6yrs□above 6yrs□

- What reasons justified the implementation of the ERP system?
  - ✓ Standardization of processes□
  - ✓ Adaptation of processes to international best practice □
  - ✓ Improvement of existing customer-facing services □
  - ✓ Creation of new types of customer-facing services□
  - ✓ Improved internal logistical processes□
  - ✓ Improved management controls □
  - ✓ Enabling of future growth□
  - ✓ Increasing the market flexibility to respond to new market opportunities □
  - ✓ Other, please specify:_____

SECTION B

The questions in this section ask you about your experience of work particularly with the implementation of the ERP systems. In this section, select an option that best explains your opinion on each of the following statements.

1= Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

R/No	**Critical Success Factor**	1	2	3	4	5
1	Project planning and strategy					
2	Change management and communication					
3	Top management support and commitment					
4	Project management and leadership					
5	Clear user requirement and need assessment					
6	Capability of consultants and implementers					
7	Project scope management					
8	Training, documentation and knowledge transfer					

9	Team composition, dedication and retention					
10	Data preparation and migration					
11	Incentives and celebration of milestones					
12	Organizational culture and readiness					
13	Users involvement and system testing					
14	Quality control and feedback					
15	Business process change and less customization					
16	Adequate infrastructure and facilities					
17	Trust and harmony between project team partners					
18	Basic IT capability of users and team members					
19	Appropriate integration and interfaces					
20	Establishing ERP support team					
21	Clear realistic objectives					
22	Detailed plan kept up to date					
23	Adequate budget					
24	Good performance by suppliers/ contractors/ consultants					
25	Realistic schedule					

SECTIONC: Interview Guide line

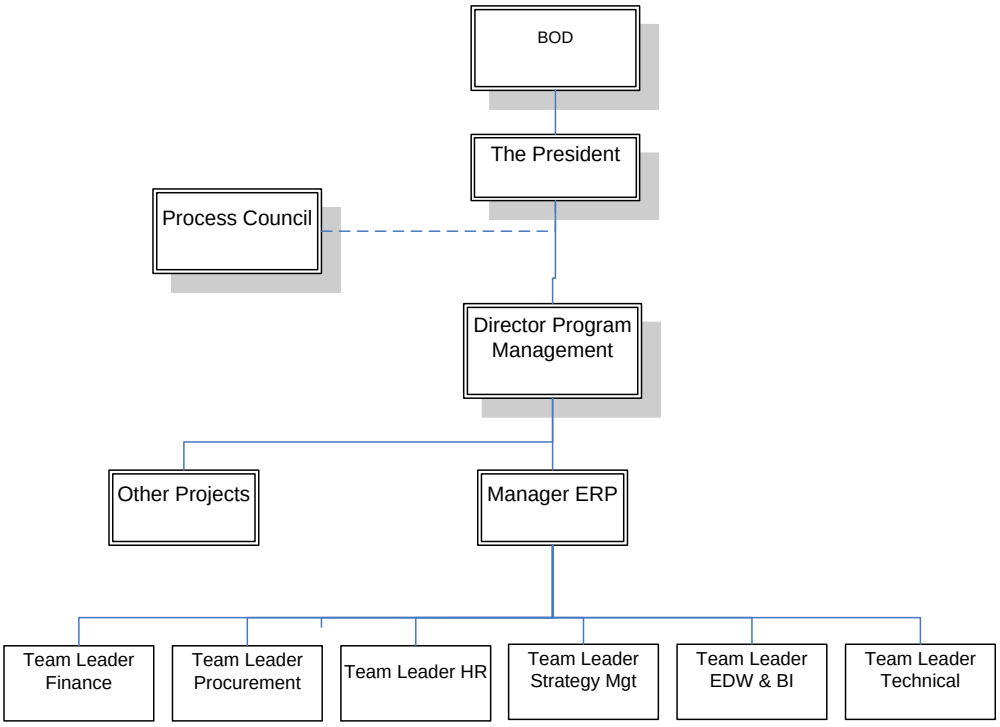
- How many employees were involved in the ERP implementation
- What kind of Enterprise Resource Planning (ERP) software do you use the company?
- What do you think are the critical success factors in ERP implementation?
- Why do you think they are critical?
- Implementation methodology and phases during implementation
- In your opinion, what are the strengths and weaknesses / challenges of this project?
- From your experience what do you think should be fulfilled for successful ORACLE ERP implementation?
- Any ideas and comments of your experience on this project.

Project team members involved in the project phase

	CBE				**Tech Mahindra**
1)	**Project Manager**			**1**	**1**
		Business	**Technical**	**Sub total**	
2)	Finance Team	14	5	18	**3**
3)	Procurement Team	12	4	16	**2**
4)	HR Team	16	6	22	**3**
5)	EDW & BI Team	4	8	13	**1**
6)	Strategy / Hyperion	4	5	9	**2**
7)	Technical (Database, storage, network…)	NA	7	7	**4**
		50	35	**85**	**16**
	TOTAL STAFF	**101**			

Source: commercial bank of Ethiopia project charter

Organizational chart



Source: commercial bank of Ethiopia project charter