ANALYSIS OF CRITICAL SUCCESS FACTORS, CHALLENGES AND PROSPECTS OF ERP PROJECT IMPLEMENTATION: A RETROSPECTIVE STUDY IN BUSINESS ORGANIZATIONS IN ETHIOPIA

A Thesis Submitted to the School of Commerce Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management (MA)

By: Getaneh Atnafu

Advisor: Mengistu Bogale (PhD)

Addis Ababa, Ethiopia

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By Getaneh Atnafu

Approval Sheet

As members of the examining Board, We certify that we have read and evaluated the research project prepared by Ato Getaneh Atnafu entitled "*Analysis of critical success factors, challenges and prospects of ERP project implementation: a retrospective study in business organizations in Ethiopia*" and recommend that it be accepted as fulfilling the research requirements the degree of master of arts in project management.

Advisor	**Signature**	**Date**
Internal Examiner	**Signature**	**Date**
External Examiner	**Signature**	**Date**

Abstract

Today, most business organizations have begun replacing their systems with ERP initiatives to improve management and administration. As most business organization CBE, Ethio Telecom Ethiopian Airlines and Heineken Ethiopia also planned a reengineering project that are designed to introduce world class business processes including the implementation of "Enterprise Resource Planning" system. This study focused on the investigation of success factors, challenges and future prospects of ERP systems in business organizations in Ethiopia. The research design was descriptive method and a five point Likert scale questionnaire are used for data collection and analyzed using descriptive statistics. Based on the results top management support, project team competency, user training, interdepartmental communication, and consultant support are CSF of ERP implementation. Also challenges of implementing ERP investigated are Lack of skills for implementing and using ERP, Insufficient training to users, Integration of different types of data was a big problem, Incompatibility with work, High system cost, Long customization period, High user resistance, System led to major organizational changes and ERP system too complex were the challenges faced by the firms. Furthermore based on the result various modules of ERP such as customer relationship management system, human resource management, procurement management, plant maintenance scheduling, manufacturing management, budget planning and projections and financial management components are functional and feature prospects are Eliminate/Reduce redundant tasks, Easier access to reliable data and information, Standardization of global business operations, Pressure to keep with competitors, improved internal communication, Overall reduction of operational costs and improved supply chain management.

Key Words: *Critical Success Factor (CSF), challenges, future prospects, ERP, HBSC, CBE, Ethio Telecom, Ethiopian Airline*

DECLARATION

I, Getaneh Atnafu, hereby declare that this thesis entitled "Analysis of Critical success factors, challenges and prospects of ERP project implementation: A Retrospective Study in Business Organizations in Ethiopia" is my own work except where otherwise indicated and acknowledged. This thesis has been carried out by me under the guidance and supervision of Dr. Mengistu Bogale.

The thesis is original and has not been submitted for the award of degree or diploma in any university or institution.

CERTIFICATE

This is to certify that the thesis entities "Analysis of Critical success factors, challenges and prospects of ERP project implementation. A Retrospective Study in Business organizations in Ethiopia" submitted to Addis Ababa University for the award of Master of Arts Degree in Project Management is a record of valuable research work carried out by Getaneh Atnafu, under my guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Name of Advisor

1. Dr. Mengistu Bogale Date …… Signature ……...

Acknowledgement

First and foremost, I thank to the Almighty Lord for endowing me the endurance and courage of going through all ups and downs to reach the stage where I am now. Secondly I would like to express my heartfelt gratitude to my advisor Mengistu Bogale (PhD) for his invaluable assistance and guidance during the course of my research proposal preparation.

Lastly, I would like to express my heartfelt gratitude to my wife Zomanesh Abye for courage; and to my best ever friend Workineh Semma for his unreserved cooperation.

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List of Acronyms

(ERP)-Enterprise resource Planning

(CBE)-Commercial Bank of Ethiopia

(IT)-Information technology

(CSF)- Critical success factor

(KSFs)-key success factors

(TMS)-Top management support

(PTC)-Project team competency

(UTE)-User training and education

(IC)-Interdepartmental communication

(BPR)-Business process reengineering

(CI)-Consultant involvement

(SPSS)-Statistical Package for Social Sciences

(MIE)-Mesfin Industrial Engineering

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Every aspect of management in the modern age relies heavily on information to thrive. Nothing move without information and it is generally believed that information is power and that who has it has power. It is an important resource needed to develop other resource. Changing circumstance and environments have necessitated the need for the proper dissemination of information at various levels of management. The development and use of Enterprise Resource Planning (ERP) is a Modern Phenomenon concerned with the use of appropriate information that will lead to better planning, better decision making and better results. This paper will explain information systems ideas in general and then will focus on Enterprise Resource Planning (ERP) as most sophisticated and its problems, implementation and critical success factors for ERP implementation (Davenport, 2000).

An information system aims to support operations, management, and decision-making (Kroenk, 2015). Unlike the traditional disintegrated pieces of information systems, Enterprise Resource Planning (ERP) solution package is one integrated information system with different modules like finance, human resource management, supply chain management, production planning and so on. These modules are integrated as one enterprise information system (Rashid et al., 2002).

An enterprise resource planning (ERP) system is a packaged software system that enables a company to manage the efficient and effective use of resources (inventory, human resources, sales, marketing, finance, customer information, etc.) by providing a total, integrated solution for its information processing needs (Koch, 2006).

ERP is the integrated management of core business processes, often in real-time and mediated by software and technology. The ERP system integrates varied organizational systems and facilitates error-free transactions and production, thereby enhancing the organization's efficiency. However, developing an ERP system differs from traditional system development (Shaul and Tauber, 2012). ERP systems run on a variety of computer hardware and network configurations, typically using a database as an information repository (Khosrow–Puor, 2006).

Organizations are adopting Enterprise Resource Planning systems to meet the existing challenges of information era and for competitive advantages. ERP systems facilitate organizations to get the key business processes to be automated and integrated. ERP systems facilitate timely flow of information among different parts of the organization freely, which consequently, helps the management in making strategic decisions. ERP systems are integrated enterprise-wide systems that automate core enterprise activities such as human resource, manufacturing, finance and supply chain management etc. to generate and access information in real time environment (Rashid et al, 2002).

1.2. Statement of the Problem

There are many ERP vendors, but the major are, SAP (systems applications products in data processing), Oracle, PeopleSoft, Baan and J.D. But the two most commonly used ERP systems that are currently used in Ethiopia are SAP and ORACLE ERP systems. Most organizations in Ethiopia implemented the SAP ERP system while Ethio-telecom and commercial bank of Ethiopia had implemented the ORACLE ERP system whereas Heineken Ethiopia and, Mesfin Industrial Engineering implemented MS-Dynamics ERP. There has been a lot of research on identifying success factors of ERP implementation in the world. In the context of Ethiopia, as per the knowledge of the researcher only few studies have been conducted. Abiot and Jorge (2012) have made an assessment on MS-Dynamics ERP implementation in Mesfin Industrial Engineering. Derese (2013) has conducted a study on Oracle ERP system at Ethio-Telecom, Sintayehu(2014)reviewed success factors for implementation of SAP Enterprise Resource Planning system at Ethiopian Airlines and also Kibebework (2015) has conducted research on the challenges and current status of ERP implementation at Mugher and Derba Cement industries. Berhanu (2018) has tried to assess the critical success factors of MS-Dynamics ERP implementation at Heineken Ethiopia; and Foziya (2017) identifies the factors affecting ERP implementation at CBE. Almost all researches in this country are conducted on each of the available ERP system in the organization individually or as a single case study. But, research on general ERP implementation in Ethiopia has not yet been conducted. Because all ERP system has difference in duration of implementation, cost and payback period which will have an indirect effect on implementation success, there should be more research on ERP in Ethiopia context as a survey study in general in business organization in Ethiopia.

When implementing an integrated and big ERP packages in developing countries, assessing the success factors that affect the implementation and sharing experience is very important (Sintayehu, 2014). Because ERP systems are complex and need huge budget investment, company re-arrangements and the implementation, success depends on various social, cultural and technical factors of the companies and countries (Roman, 2009).

Various organizations have different working practices that depend on their culture and nature of business (Kibebework, 2015). The organizational culture of service sector differs from industrial (factory) organization; even each service sectors organizational culture as well as each industrial organization culture is different. In addition, the different ERP systems have their own unique implementation methodologies and technical requirements. Other researchers, Markus and Tenis (2000) suggested that ERP success factors are variable and have different degrees of importance depending on the phase of ERP implementation. Therefore, the study will bridge the gap to find out organizational, technological, and individual factors affecting the implementation of ERP at each phase of ERP implementation in business organizations in Ethiopia. This study aims to measure the extent of ERP implementation success factors of implementation and challenges faced in these organizations.

1.3. General objective

The study has a general objective of evaluating the success factors, challenges and future prospects of ERP implementation in selected business organizations in Ethiopia.

1.3.1. Specific objectives

The specific objectives of the study are;

1. To measure the extent of ERP project implementation success
2. To highlight the critical success factors of ERP project implementation
3. To identify the challenges faced in during ERP project implementation
4. To pinpoint the future prospects of ERP project in these organizations

1.4. Research Question

The researcher intends to examine the critical success factors of ERP implementation in business organizations in Ethiopia. Depending on the review of empirical studies made around the world, the researcher has developed the following hypothesis.

1. To what extent the ERP project implementation become successful?
2. What are the critical success factors for ERP project implementation?

3. What were the challenges faced during the implementation of the ERP project?
4. What are the feature prospects and benefits expected from ERP implementation?

1.5. Scope of the Study

The scope of this research will bind to conduct a single-case study to investigate the effectiveness of ERP system implementation in case of those business organizations implementing ERP. The focus of the study is around the four main ERP modules, which are fully implemented, and being used at each business organizations in Ethiopia. The modules are; human resource management, supply chain management, business intelligence, and finance.

1.6. Significance of the Study

Implementing an ERP system is a major project requiring a significant level of resources, commitment and changes throughout the organization. Often the ERP implementation project is amongst the biggest projects that an organization may launch. As a result, the issues surrounding the implementation process have been one of the major concerns in industries.

By identifying the critical success factors of ERP implementation, challenges and future prospects the finding of this study will enable management of business organizations of Ethiopia which have been using ERP system to have an insight about the systems functionality by highlighting the gains achieved and the challenges faced. In addition, the recommendations of this study will also be used as an input or lessons for other companies who have a plan to implement ERP system. Moreover, the study will play a significant role as a literature base on future researches of related topics.

1.7. Limitation of the study

There were challenges while doing this study. The main challenge was in relation to the data collection process and SPSS data analyzing. Respondents were too busy to reply to my questions and unfamiliarity with SPSS software to analyze the data.

1.8. Organization of the study

Chapter one of the study is introduction that focuses on the background of the study, statement of the problem and objectives of the study. Chapter two focuses on literature review: both theoretical and empirical literatures. The third chapter is about the methodology by which the study employed. This chapter focuses on the sources of data, sampling techniques and sample size

and the method of data collection and analysis. Chapter four of the paper discusses the findings and it presents the results from the sources. The last chapter focuses on conclusion and recommendation of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2. THEORETICAL REVIEW OF ERP

2.1. Enterprise Resource Planning (ERP)

Enterprise resource planning systems or enterprise systems are software systems for business management, encompassing modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business (Rashid, et al, 2002).

The enterprise resource planning (ERP) system incorporates a set of programs that provides support for main organizational activities such as manufacturing and logistics, finance and accounting, sales and marketing, and human resource. It also helps for sharing of data and knowledge among different parts of the organization as well as reducing costs, and improves management of business processes (Adel, 2001).

The architecture of the software facilitates transparent integration of modules, providing flow of information between all functions within the enterprise in a consistently visible manner. Corporate computing with ERPs allows companies to implement a single integrated system by replacing or re-engineering their mostly incompatible legacy information systems.

American Production and Inventory Control Society (2001) has defined ERP systems as "a method for the effective planning and controlling of all the resource needed to take, make, ship and account for customer orders in a manufacturing, distribution or service company.

"ERP (enterprise resource planning systems) comprises of a commercial software package that promises the seamless integration of all the information flowing through the company– financial, accounting, human resource, supply chain and customer information" (Davenport, 2000).

2.2. ERP Overview

Enterprise resource planning (ERP) is an industry term for the broad set of activities that helps an organization manages its business. An important goal of ERP is to facilitate the flow of information so business decisions can be data driven. ERP software suites are built to collect and organize data from various levels of an organization to provide management with insight into key performance indicators. An Enterprise resource Planning (ERP) system is packaged business software that integrates organizational processes and functions into a unified system. In traditional IT systems, each of the system components are found separated as applications by their own with one database system for each of them. However, ERP system integrates all of the components through one central database which is common for all the modules.

2.3. Evolution of ERP

Table 2.1 Evolution of ERP

Year	Description
1960s	Inventory Control Packages
1960s	Material Requirements Planning (MRP)
1980s	Manufacturing Resources Planning (MRP II)
1990s	Enterprise Resource Planning (ERP)
2000s	Extended ERP

As illustrated earlier in 1960s Inventory Management and control is the combination of information technology and business processes of maintaining the appropriate level of stock in a warehouse. The activities of inventory management include identifying inventory requirements, setting targets, providing replenishment techniques and options, monitoring item usages, options, monitoring item usages reconciling the inventory balances, and reporting inventory status. (MichaelD. Okrent et al, 2004), cited in (Embong., (2008))

In the 1970s Material Requirement Planning (MRP) Materials Requirement Planning (MRP) utilizes software applications for scheduling production processes. MRP generates schedules for the operations and raw material purchases based on the production requirements of finished goods, the structure of the production system, the current inventories levels and the lot sizing procedure for each operation.

1980s Manufacturing Requirements Planning or MRP utilizes software applications for coordinating manufacturing processes, from product planning, parts purchasing, inventory control to product distribution.

1990s Enterprise Resource Planning or ERP uses multi-module application software for improving the performance of the internal business processes. ERP systems often integrate business activities across functional departments, from product planning, parts purchasing, inventory control, product distribution, fulfillment, to order tracking. ERP software systems may include application modules for supporting marketing, finance, accounting and human resources.

2.4. Core and Extended Components of an ERP System

There are three most common core ERP components

1) Accounting and Finance
2) Production and Materials Management
3) Human Resource

1. Accounting and finance manages accounting data and financial processes within the enterprise with functions such as general ledger, accounts payable, accounts receivable, budgeting, and asset management.

2. Production and materials management component handles the various aspects of production planning and execution such as demand forecasting, production scheduling, job cost accounting, and quality control.

3. Human resource component tracks employee information including payroll, benefits, compensation, performance assessment, and assumes compliance with the legal requirements of multiple jurisdictions and tax authorities.

2.5. Main and Sub-Modules of ERP System

Table 2.2 Main and Sub-Modules of ERP System

Main module	Sub-modules
Financials	• GL - General Ledger • AP - Accounts Payable • AR - Accounts Receivable • AM - Asset Management • Cash Management

	• Banking • Profitability Analysis • Budgeting and Controlling
Human Resources	• PY – Payroll • OM - Organizational Management • Personal planning • TM - Time management • Travel expenses • Training
Logistics & Operations	• MM - Materials Management • PP - Production planning • Materials planning (MRP) • Inventory management • Quality management • PS - Project System management • Shipping
Sales & Marketing	•Order management • Sales management • Sales planning • Pricing • After-sales service

2.8. Big Bang vs. Phased

There are two standard strategies for ERP implementation: the strategy of the all-at-once, "big bang"; and a phased rollout approach. In a big bang approach, the ERP system is implemented and goes live throughout the company in one day. Before the go-live date, systems are checked, staff is prepared, trial runs are performed, and organizational adjustments are completed.

In a phased approach, an organization rolls out one part of the ERP system at a time, beginning at the core and then deploying additional modules in phases.

2.8.1. Benefits and Drawbacks of the Big Bang Approach

Benefits:

Low Cost

The big bang approach can be lower in operating expenses, as all other systems are replaced on a single day.

Fast Return

The return on investment is realized faster, as all departments go live at once and the time to implementation is quicker from start to finish.

Low Risk

Because systems can be slowly implemented and tested without pressure, and old systems can be cast off one-by-one, the ability to revert systems or make adjustments can lower the risk to the business. Employees also have more time to adjust, which in turn helps to keep the business running smoothly throughout the transition.

Drawbacks:

Disruptive

Making everyone switch gears on one day requires a great deal of planning and preparation, and involves the upending of previous business practices all at once. This can put a damper on the general productivity of the company while the disruption takes place.

Riskier

Converting all systems at once can be highly risky for a company. If something goes wrong, the process of reverting systems can be complicated, or at worst, unsuccessful. If systems do not smoothly convert, or if the staff is not fully prepared, a big bang approach can leave a business in a vulnerable position.

Higher Cost

A phased approach requires the maintenance of the old systems in parallel with the new, and may require additional consultants or temporary interfaces be maintained while the implementation occurs, contributing to an overall higher spend on the project's entirety.

Slower Return

The return on the ERP investment in a phased approach is a much slower process, lengthening the time between system purchase and measurable benefit. And a phased approach can lose its motivation, causing the implementation to lag and delay the full deployment.

Each type of deployment has its benefits and drawbacks, and every business has a different appetite for the risks inherent in each approach. Neither approach is much more popular than the other, adding testament to the variability of preference. A phased rollout may suit small- and medium-sized businesses better than a big bang approach, as the impact on productivity can be riskier than a slower, more costly implementation. Taking a look at how much tolerance a company has for each benefit and drawback can help decision makers take the approach most suitable for their individual businesses

2.9. Pros and Cons of ERP

There are different initiatives and reasons for acquiring ERP systems. (Chung, 2007)Argued that ERP systems have the advantage of all-in-one integration between all parts and processes of a company, and this in turn gives the possibility of proper control. They are used to control and reduce data redundancy and accuracy. Redundant tasks will be removed and the efficiency of the company increases. In general, compared to the traditional functional IT systems, ERP systems provide different benefits to a company and these benefits can be viewed in different dimensions as operational, managerial, strategic, IT infrastructure and organizational (Chung, 2007). Also express ERP System benefits in different dimensions.

Operational: Operational benefits are Productivity improvement, Cost Reduction, Quality Improvement and Customer Satisfaction

Managerial: Decision making, Resource Management, Strategic Business Growth, Business Cooperation and Business Leadership

IT Infrastructure: Business Change Flexibility, IT Cost Reduction and Increased IT Capability

Organizational: Common Vision, Empowerment and Changing Work Patterns The other advantage of ERP systems is that easier and timely reports functionality. Users can get self-services of data needs and access. They can run their own reports and have better access to their data and the ability to manipulate and report on this data.

The advantages of ERP Systems are summarized as below:

- ✓ Integrate financial information of different sources such as revenues, sales and cost.

- ✓ Standardize Human Resources information for simple tracking of employee's time and benefits data.
- ✓ Standardize and speed up operating processes
- ✓ Reduce inventory and lower costs
- ✓ Integrated, on-line, secure, self-service processes for business
- ✓ Eliminate costly mainframe / fragmented technologies
- ✓ Empower and enable employees, partners, customers and suppliers.

In summary, ERP application can help organizations in various ways of business aspect. The common importance of ERP that can be conclude are it helps in reduction of organization's operating cost can be reduced, integrates all parts of an organization, increases the efficiency of operations as a result of the integration, integration on information systems which enables free flow connection of information across the organization and enables consolidation of different software within the organizations. (Zuckerman et al, 1999) as cited by (Bin Embong, 2008) argued that Enterprise Resource Planning can streamline the business operations and play a role as a key of successful ingredient to gain competitive advantages within the organizations.

On the other hand, ERP systems have some drawbacks and limitations. These systems are usually complex. Regardless of their long-term benefits and reduced maintenance costs, initial one time implementation is expensive. And even if data accuracy and integration is achieved by ERP systems, it is hard to correct or amend data once it is maintained in the system as it will affect many modules and processes. While ERP systems have more efficient methods, freedom and self-creativity practice with the system is minimal.

Since it is important to create a comparison between the advantages and disadvantages of ERP so that I can show the significant differences occurred before and after the implementation of the system.

Some of the disadvantages of ERP are time consuming, followed by expensive, conformity of the modules, and features and complexity.

- ✓ **Time consuming**

ERP implementation is longer and can take from six months to several years to complete. The ERP software functions itself will usually be available in used approximately in every six month (Michael D. Okrent et al, 2004).

As cited by (Bin Embong, 2008) Companies that install ERP do not have an easy time to gain the benefits of it. Companies usually will change their ways of business and the ways people do their job after implement the ERP system and this will take times. The important thing is not to focus on how long it will take. It is effective to understand the potential benefits and how to use wisely the system in order to improve the business itself because ERP implementation will take almost between one to three years in average Stevenson (2007) as cited by cited by (Bin Embong, 2008).

- ✓ **Expensive**

ERP are expensive to implements. The price includes with general information technology (IT) infrastructure. Cost may be change from thousand dollars to millions and the business process reengineering cost in infrastructure may be extremely high and create result in budget overrun. It is include with the hidden cost of ERP implementation that usually a company will face in the following areas.

A. Training

Training fees for the workers are high because of difficulties of implementing complex as ERP.

B. Integration and testing

Hidden cost in ERP such as testing the links between ERP package and other corporate software links.

C. Data conversion

Data conversion like moving the corporate information such as customers and supplier record, products design data, and etc. will costs money.

D. Data analysis

For an analysis purpose, the data from the ERP system must be combined with the data from external systems. This will charge as the cost of a data warehouse in the ERP budget.

E. Consultants

Consulting fees will be charges and usually become higher if it involves outside consulting firm besides of own vendor's consultant.

- ✓ **Conformity of the modules**

The architecture and components of the selected system should conform to the business processes, culture and strategic goals of the organization. A one reason for ERP implementation to fail is the software itself does not fix the one of important business processes for a company.

- ✓ **Features and complexity**

According to (Koes Boersma, 2005) cited in (Bin Embong, 2008) argued that ERP systems are not easy to be defined and are complex and dispersed within and between organizations because of its system modules and complexity of implementation. Each of the position involves in ERP system in organizations said that these systems are elusive where the system itself are in constant instability.
Nowadays, some of the mid average companies having difficulty on the performance of ERP system due to lack of effective evaluation features and models of the system ERP system may have too many features and modules so the user needs to consider carefully and implement the needful only.

2.10. Importance and Impact of ERP systems on Industry and Organizations

There are many benefits to having an ERP system within the organization. Information is readily available for the proper users, all data is kept in a central repository, data redundancy is minimized, and there is a greater understanding of the overall business picture.
ERP systems bring corporate business processes and data access together in an integrated way that significantly changes how they do business.
Companies realize the business value of ERP systems with the ability to obtain business process integration. Business process integration allows processes within a company to be incorporated together in one centralized system. The value of encompassing process integration permits companies to gain efficiencies in overall and individual processes. (Fuβ, 2007).
Have researched multiple articles and developed a list of anticipated benefits of ERP systems. The list includes the following benefits:

- ✓ Improved security and availability
- ✓ Increase in organizational flexibility
- ✓ Cost reduction
- ✓ Fast amortization of investment
- ✓ More efficient business processes
- ✓ Higher quality of business processes
- ✓ Improved integrality
- ✓ Reduced complexity and better harmonization of IT infrastructure
- ✓ Better information transparency and quality
- ✓ Better and faster compliance with legal requirements and frameworks

ERP systems continue to be impactful towards industry and organizations. So many innovations have been developed and implemented just in the last five to ten years. More focus has been made towards supply chain management and customer relationship management. Many ERP vendors have incorporated these modules into their systems to help better serve customers. Vendors realize the need for the companies they serve to continue to be scalable, flexible, and have the ability to compete in their respective industries.

One future impact is the incorporation of cloud computing. Cloud computing is going to allow companies to free up resources, because the company will have a third party hosting the system and software needed to do business over the Internet. ERP systems could be included in this opportunity. More companies will be served with this new capability. The company will not be required to manage the hardware and software used. Companies will be all owed to pay as they use the service, instead of making a capital investment (S.,F. 2010).

2.13. ERP Implementation

(Jose M. Esteves, J. A. , 1999) argued that ERP system goes through different life-cycle stages during its whole life within the hosting organization. The complete ERP life-cycle is divided into six generic stages. These stages are adoption decision phase, acquisition phase, implementation phase, use and maintenance phase, evolution phase and retirement phase.

2.13.1. ERP Life-Cycle Stages

- ✓ Adoption Decision
- ✓ Acquisition phase
- ✓ Implementation phase
- ✓ Use and maintenance phase
- ✓ Evolution phase
- ✓ Retirement phase

Source: (Esteves, 1999)

i. Adoption Decision Phase

In this phase, the need for ERP system is reviewed and decided while selecting an information system which best addresses the critical business challenges and improve the organizational strategy. It is in this stage that the system requirements, its goals and benefits are defined. Analysis of the impact of ERP adoption at a business and organizational level is done here.

ii. Acquisition Phase

Acquisition phase is selection of ERP product system which best fits the requirements of the organization and minimizes customization needs. Consulting company is selected in this phase to help in the next phases of the ERP life-cycle. Issues of price, training and maintenance services are analyzed and a contractual agreement is defined here. Return on investment analysis of the selected product should also be done in acquisition phase.

iii. Implementation Phase

In this phase, the acquired ERP system is customized, parameterized and adapted to the needs of the organization. This phase is usually done with the help of consultants and implementer partners who provide implementation methodologies, know-how and training.

iv. Use and Maintenance Phase

This is the stage when the system must be used in a way that returns expected benefits and minimize disruption. This is referred to as Establishment Period, the period after go live until the system gets stabilized. In addition, once a system is implemented it must be maintained to correct malfunctions and optimize its functionality.

v. Evolution phase

Evolution phase is the integration of more capabilities to the ERP system and expanding it to incorporate new benefits and functionalities.

vi. Retirement phase

This phase is the time when decision is made to replace the ERP system with other information systems due to its inadequacy to the current needs of the organization or availability of new technology. ERP systems can be complex and difficult to implement, but a structured and disciplined approach can greatly facilitate the implementation.

2.13.2 Factors Contributing for ERP Implementation Failure

Superficially, no single point of failure can be attributed to unsuccessful ERP implementations.

Some of the causes cited for failed ERP projects include:

Inherent complexity of ERP implementation

- ✓ Outside consultant issues
- ✓ Inadequate training
- ✓ Process risk and process barriers

- ✓ Corporate culture
- ✓ Unrealistic expectations
- ✓ Over-customization of software
- ✓ Using IT to solve the problem
- ✓ Timeline flexibility
- ✓ Infrastructure issues

Source: (Barton., 2001)

2.14. ERP Critical Success Factors

The identification of CSF before the start of the project is somewhat critical for the successful implementation of ERP systems (Esteves, 1999). A number of empirical and non-empirical studies have talked a variety of CSF for ERP implementation. The results of some major research on ERP implementation success factors have been defined below. (Holland, 1999)Presented a number of success factors in ERP implementation and suggested their division into strategic and tactical factors. The model was illustrated on a sample of two ERP implementation projects. Among 12 factors, the authors highlighted the critical impact of legacy systems upon the implementation process and the significant of selecting an appropriate ERP strategy. (Somers T.M., a. N., 2001) has pronounced the importance of CSF across the stages of ERP implementations using the responses from 86 organizations implementing ERP. From their broad list of 22 CSF for ERP implementation, the most important are: top management support; project team competence; interdepartmental cooperation; clear goals and objectives; project management; and interdepartmental communication. (Al-Mashari, 2003) Presented taxonomy of ERP critical factors where 12 factors were divided in to three dimensions related to the stages of ERP project, which are: setting-up, deployment and evaluation. The taxonomy presented emphasizes that a clear vision and business director is fundamental for the success of ERP system implementation. (Chen, 2001). analyzed several critical planning issues prior to the ERP adoption decision, including needs assessment and choosing a right ERP system, matching business process with ERP system, understanding the organizational requirements, and economic and strategic justification. He reported that competitive strategy, targeted market segments, customer requirements, manufacturing environment, characteristics of the manufacturing process, supply chain strategy and available resources all enter into the decision of ERP adoption.

2.15. CSF for ERP Systems Implementation

- ✓ Top management support
- ✓ Project management
- ✓ Use of consultants
- ✓ Business process reengineering
- ✓ Project team competence
- ✓ Change management
- ✓ Interdepartmental communication

1. Top Management Support

Top management support has been constantly recognized as the most vital and crucial success factor in ERP system implementation projects. Top management support in ERP implementation has two main facets:

A. Providing leadership and

B. Providing the necessary resources

To implement ERP system successfully, management should monitor the implementation progress and deliver clear direction of the project. They must be willing to allow for a mindset change by accepting that a lot of learning has to be done at all levels, together with themselves (Bhatti, 2005) (Bradford, 2000) Stated that one organization characteristic, top management support, was contributory in explaining ERP implementation success. Top management must take a dynamic role in leading the ERP implementation. The success of a main project like an ERP implementation totally depends on the strong, sustained commitment of top management. This obligation when transferred down through the organizational levels results in an overall organizational commitment (Bingi, 1999).

Management must be involved in every step of the ERP implementation. Some companies make the serious mistake of handing over the responsibility of ERP implementations to the technology department. This risks the entire company's existence because of the ERP system's profound business implications. An overall organizational commitment that is very noticeable, well-defined, and felt is a sure way to ensure a successful implementation (Umble, 2002).

Similarly (Glaser, 1999) stated that there must be an established strong commitment to successfully implementing the new system by presentation strong leadership from senior management, restrictive the initial scope of the project, and working towards achieving an early success.

Leadership support is essential for all levels of the organization, especially since ERP systems are widespread organizational change.

If top management is not strongly committed to the system, and if does not participate actively, the implementation has a high probability of letdown. And if top management leads the project without a clear leadership and commitment the power inherent in a new information will be wasted (Umble, 2002).When Top management needs to openly and explicitly identify the project as a top priority (Wee., 2000). Senior management must be dedicated with its own participation and readiness to allocate its effort to implementation (Holland, 1999). This involves providing the needed people for the implementation and giving suitable amount of time to get the job done (Roberts, 1992). New organizational structures, roles and responsibilities should be established and approved. Policies should be set by top management to establish new systems in the company.

In times of conflict, managers should mediate between parties (Roberts, 1992). A successful implementation is only achievable when high-level executives have a strong commitment to the project (Davenport, 2000). The boldness of senior managers will touch not only the flow of funds and information to the project, but also the subordinates understanding the project, its future influence upon the company as a whole, and its impact upon the employees as valued and talented individuals. Top management support is desirable throughout the implementation. The project must obtain approval from top management (Sumner, 1999), and align with planned business goals. This can be achieved by top management bonuses to project success (Wee, 2000).

2. Business Process Reengineering (BPR)

Bingi, (1999) define that implementing an ERP system involves reengineering the existing business process to the greatest business process standard. ERP systems are constructed on best practices that are followed in the industry. According to (Umble 2002) Automating existing redundant or non-value-added processes in the new system can cause an implementation to fail.

The combined environment of the new ERP system will require the organization to conduct business in a dissimilar way. The proper implementation of an ERP system should force key

business processes to be reengineered and cause a consistent rearrangement in organizational control to tolerate the effectiveness of the reengineering efforts. An ERP system will clearly change the normal style of operation within and between functions, but it will also change many social systems throughout the organization. When organizations implement ERP a certain level of BPR should be involved, as the packaged software may be incompatible with the needs and business processes of the organization. In order to improve the functionality of the software in accordance with the needs of the organization, an organization should reengineer business processes to fit the software instead of trying to modify the software to fit the organization's current business processes (Ngai, 2008). To achieve the greatest welfares provided by an ERP system, it is authoritative that the business processes are aligned with the ERP system. Both the reengineering literature and the ERP literature suggest that an ERP system alone cannot improve organizational performance unless an organization restructures its business processes (Somers T.M., 2001).

A crucial part of working with the ERP functionality is the ability to modernize operations. When implementing a system, many organizations fail to specify their organizational objectives. Job skills are raised by the requirements of the new, post-implementation company. Some customization will always be required in order to meet individual needs (Themistocleous, 2001).

But Modifications should be avoided to reduce errors and to take advantage of newer versions (Rosario,2000) Process modelling tools help aid customizing business processes without changing software code (Holland, 1999). Broad reengineering should begin before choosing a system. In conjunction with configuration, a large amount of reengineering should take place iteratively to take advantage of improvements from the new system. Then when the system is in use reengineering should be carried out with new ideas (Wee, 2000).

3. User training on software and Education

User training on software should a company give an attention. But when this issue is ignored, mainly it does not have the largest quantifiable benefit for a company who implement ERP; expenses are greatly increased in the long run. By treating resource training with little respect and financial support, it is not hard to realize the reality of delay, confusion and financial ruin that may result. Some companies preserve on assigning a fixed cost or percentage to the training effort, regardless of need or variable conditions (Gargeya, 2005). This mistake has surely been the cause

of many failed implementation efforts. Fortunately, it has also been a source for others to learn from such experiences and avoid repeating the mistake (Gargeya, 2005).

(Gargeya, 2005) State that people must be handled on two levels. First, employees must be trained on the new system in order to use it to day-to-day processes. The second level is educational experience. Training, re-skilling and professional development of the IT workforce is serious. User training should be highlighted, with substantial investment in training and re-skilling of developers in software design and methodology (Sumner, 1999). Employees need training to know how the system will change business processes. There should be additional or extra training and on-site support for staff as well as managers throughout implementation. A support organization like help desk, online user manual is also critical to meet user's needs after installation (Wee, 2000). A company will never get benefits from the ERP system until the employees have no information that how to operate the new system (Jarrar.Y. F, A.-M.A, 2000). The main reason of user training and education program to safeguard that employees are easy with the ERP system; and to raise the expertise and knowledge of users (Holland, 1999) ERP system installation without fitting training can lead the system to failure (Jarrar. Y. F., 2000). Therefore, training doesn't mean only to work the new system but also to know the new processes and the incorporation within the system that how the work of one user operates the work of other user (Holland, 1999). some authors in the literature has described that user training is not only limited to the users but also needed for the project team, but all others agreed specifically on the user training (Finnery, S. &. , 2007). ERP is a complex system and without suitable training it is complex to use the system even the user has strong IT skill. It is significant for both end users and technical staff to focus on.

4. Change Management

Change management is another crucial and important critical success factor of ERP project implementation. To introduce ERP project in a company, change management is an important factor for successful implementation to structure the change management strategies and business process methodology to accomplish its goal (Jarrar. Y. F., 2000).

Change management is vital, starting at the project phase and continuing throughout the entire life cycle. Enterprise wide culture and structure change should be managed (Falkowski et al., 1998), which include people; organization and culture change (Rosario, 2000). Unpredictably, the most

common failure factor reported was that of readiness for change. Implementing ERP system completely changes the culture of the organization (Gargeya, 2005). Many companies make simplicity assumption of how an implementation will affect the culture within the organization. All changes like cultural and perception change should handle utmost care (Davenport, 2000). If people are not ready or willing to change, change simply will not occur.

All managers must be charged with the responsibility of controlling worker anxiety and resistance to the ERP system (Aladwani, 2001). Organizations should have a strong corporate identity that is open to change. An emphasis on quality, a strong computing ability, and a strong willingness to accept new technology would aid in implementation efforts (Nah et al., 2001). Management should also have a strong commitment to use the system for attaining company's business aims (Roberts, 1992). Users must be trained before a company tries to implement a new system, and concerns must be addressed through regular communication, working with change agents (Rosario, 2000). As part of the change management efforts, users should be involved in all design and implementation of business processes, and formal education and training should be provided to help all employees (Bingi, 1999).

Change management system believes on changing the business process for an organization, so careful attention must be given to change management system. Organizational change refers to the body of knowledge that is used to ensure the complex change. The change management approach will try to ensure the acceptance and readiness of the new system, allowing the organization to get the benefits of its use. A successful organizational change approach relies in a proper integration of people, process and technology. Based on because ERP system completely changes the culture of organizations where many companies found hard to accomplish this successfully. Also, many companies identified that ERP implementation fail to accomplish the desired benefits because they underestimate the efforts involved in change management (Bhatti T. R., 2005).

5. ERP Consultants

(Welti, 1999) argues that the success of a project depends on the capabilities of the consultants, because they have in-depth knowledge of the software. (Somers T.M., 2001). Point out that consultants should be involved in different stages of the ERP project implementation, Because of rapid growth within the ERP software market, there has been a shortage of competent consultants.

Finding the right people and keeping them through the implementation can be a major challenge. ERP implementation demands multiple skills – functional, technical, and interpersonal.
Consultants with specific industry knowledge, such as public sector, are fewer in number. The success or failure of the project depends on how well the organization can manage consultants and the necessary knowledge transfer between consultants and internal employees (Bingi, 1999).

6. Project Team competency

Project team leader should be competent on different areas (Pavlovna, Pecherskaya Evelina, et al, 2015).

a. Professionally: -to implement ERP successfully the project team should be competent on professional expertise, Ability to implement professional expertise as appropriate and Willingness to professional commitment and knowing the system and the process in detail to guide others which are involved in the system.

b. Methodological: -to implement ERP In a successful way the second methodological competency are very critical because in this issue project teams should have the ability to know about the best possible approach and procedures, Ability and willingness to put the chosen procedure into practice.

c. Social Competence: -the third is social competency this issue is the Ability to perceive other people's thoughts, attitudes and feelings, Ability to communicate effectively, i.e. as appropriate for the given situation and the people involved, Enjoy and maintain acceptance, working with a good manner by understanding issues raised by the system users and escalating to the responsible parties.

d. Personal Competence: -the forth is conscious use of professional and methodological expertise as well as of the social environment, Networking of professional, methodological and social competencies.

7. Interdepartmental communication

Communication is like the engine for the company who implement ERP system that keeps everything working properly. Communication is as a key component across all factors of them.
Project Implementation Profile and maintained that "communication is crucial within the project team, between the team and the rest of the organization, and with the client". Poor communication

between reengineering team members and other organizational members was found to be a problem in business process reengineering implementations. Communication and cooperation should be of two kinds: inwards the project team and outwards to the whole organization. It is necessary to create an understanding and an approval of the implementation (Stephan A.Kronbichler, 2009).

2.16. Empirical review

The literature on ERP systems is abundant as years' progress since it is still on its growth phase. According to Victor (2011) the major challenges were lack of clear goals and objectives, lack of dedicated resources, lack of proper change management, lack of training, lack of user involvement and unclear ERP project communication. Christopher (2011) identified the major factors as non-supportive organizational culture, inadequate allocation of resources, resistance to change, ineffective communication, lack of top management support and commitment, high implementation cost, lack of incentive and reward system, inadequate user training and education.

Gatimu (2009) whose research was on the implementation of ERP in Education Sector in KCA University found out that the major challenges in implementation were; lack of preparedness to change by organization; the project manager was not skillful in project management and that performance was not monitored before, during and after implementation. Further, neither a business plan, nor vision was created or followed during the implementation. Other challenges identified were that the project team was not diverse and did not present major areas of the organization, end user training was not effective and that the scope of ERP was not well defined. Gatimu also found out that the implementation was not well staffed to meet the project deadline.

L. Harrison A (1997) The purpose of this study is to determine the benefits sought from implementing ERP; the extent to which critical factors were present during the ERP software implementation; the level of satisfaction with the performance of implemented modules among the project managers and team members; the perceptions of project managers and team members as to the benefits and concerns of implementing ERP, the extent to which selected decision-making processes used in the organization's decision to implement ERP; and the number of modules purchased with the intent to implement versus those actually implemented. This knowledge will allow organization leaders to make more informed decisions when implementing ERP. Also concluded that the benefit most often realized through ERP implementation was redesigned business processes. In regard to critical factors present during ERP implementations, it was

concluded that top management was kept well-informed of the implementation, project team members and project managers felt that their implementation was a success, it was also concluded that the project team members had a numerous of advice from their implementation experience in the areas of change management, cost management, consultants, project management, vendor issues, and training. A suggestion heard consistently was to make sure that there is top management support, employee buy-in, proper training, and trained consultants. So finally the researcher found those concluded factors are a best mechanism for both Public and private institution while they implementing ERP. (Emad Abu-Shanab, R. A.-S., 2015)

This study explored the major key success factors (KSFs) that will turn the implementation process to a success. The researcher raised 2 critical questions for his study what are the major factors that define the success of ERP systems and how they are ranked by Jordanian firms and experts. The instrument used included some demographic data related to the respondent and the firm of respondents. The survey included 22 KSFs utilizing a 7 point Likert scale. The study found that the top factors influencing ERP success are top management support, user training on software, interdepartmental communication and cooperation, and project team competence. (AL-Sabaawi, 2015)

The purpose of this study is to describe critical success factors for ERP implementation. This study has been building by focusing on checklist and group of interviews to specific data collection form sample in Cihan University. The studies raised two main questions;

1. What are the critical factors for ERP implementation success in a Cihan university? And
2. What are the KCSFs (Key Critical Success Factors, most preferred CSFs) that should be taken into high priority for the successful ERP implementation in a Cihan university and how they are ranked by sample?

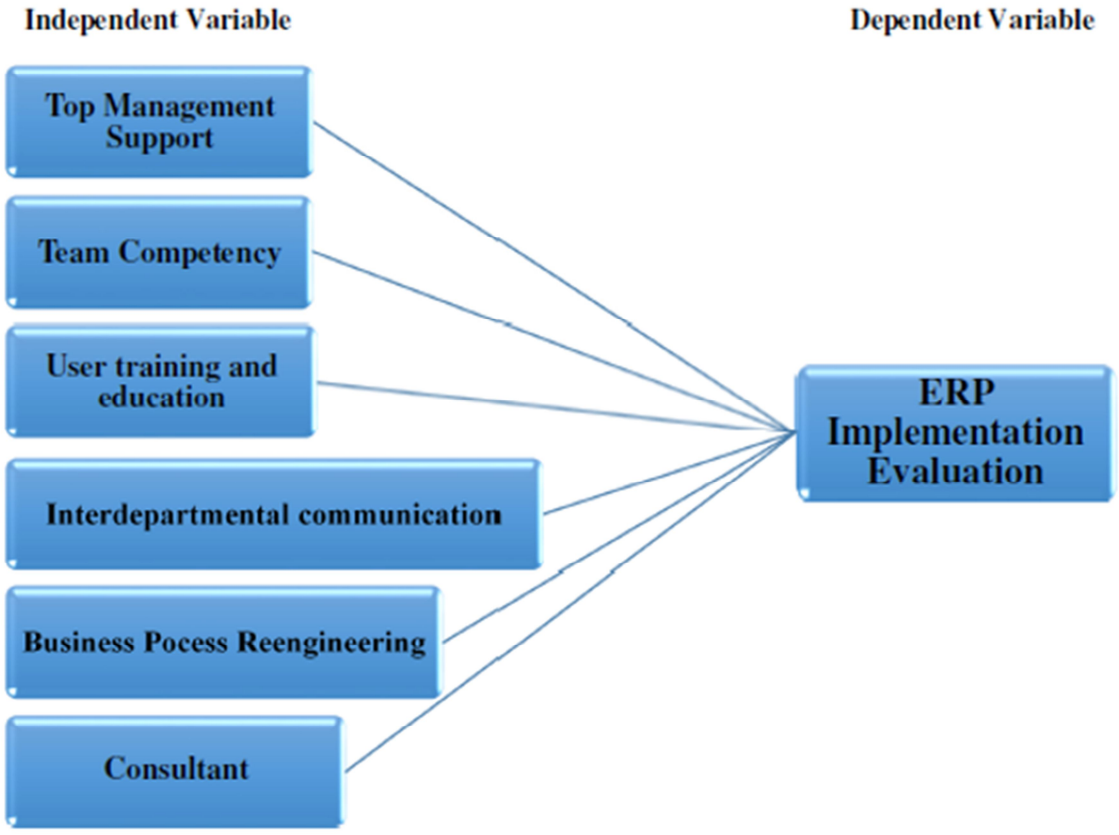
The researcher identified 8 CSF in relation to ERP implementation in high education sector at developing countries. Those are Project management, Technological infrastructure, Communication, Departments(Stakeholder) participation, Change Management, Business Plan and Vision, Commitment and support of top management, User training and education out of this the most important success factors were ERP implementation success are Project management, Technological infrastructure and Commitment and support of top management. (Severin V. Grabski, S. A. , 2011)

The aim of this study is to identify the risks and controls used in ERP implementations with the researcher examine each of the above risks in more detail and specify controls that can be utilized by organizations to minimize that risk. The researcher list five major business risks associated with the implementation of ERP systems: the lack of alignment of the new information system and business processes; the possible loss of control due to decentralization of decision making; risks associated with project complexity; the potential lack of in house skills; and users' resistance.

2.16.1. Conceptual Framework

A conceptual framework is an analytical tool with many variations and contexts. It is used to make conceptual distinctions and organize ideas by using diagrams or charts and the like. Hence, the researcher tries to see the relationship between Independent variables (top management support, project team competency, user training and education, interdepartmental communication, business process reengineering, Consultant involvement and Dependent variable (ERP implementation success). The researcher chose these variables due to the fact that previous researchers which are discussed in the literature review section identified that these variables are the critical success factors that affect ERP implementation moreover these variables are the ones that captures the essence of the study.

Figure: 2.1. Diagram for Conceptual framework



Source: Developed for the research

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3. Introduction

Research Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically (Kothari, 2004) in this chapter; the Research Design, Sampling Design, Data Collection Methods, and Data Analysis have been discussed in details. All the elements in this chapter are constructed based upon the purpose of the research which is identifying the CSFs, challenges and future prospects of ERP implementation.

3.1. Research Design

Since the research has an intention to achieve different objectives, the research design is descriptive by employing cross-sectional survey method. Descriptive studies would be used in order to "describe an accurate profile of persons, events, or situations" (Robson, 2002, as cited in Saunders et al., 2007).

Accordingly, this study is descriptive because it tried to measure the extent of ERP implementation success and challenges of ERP implementation.

3.2. Source of Data

Primary and secondary sources were used to collect data throughout the research.

3.2.1. Primary source

According to evidence from case studies primary data can come from six sources: documents, archival records, direct observation, participant-observation, and physical artifacts (Yin, 2003).

Thus in this study primary data was collected through self-administer closed ended questionnaire.

3.2.2. Secondary source

According to Ghauri (1995), the major advantage of collecting secondary data is that they give general idea on how to conduct the research and the best method to be used. In other literature, secondary data are those that are already available, and refer to data that have already been collected and analyzed by someone else (Kothari, 2004). Thus, the researcher used the available documents from the case study companies official website, ERP project charter etc.

3.3. Data collection tools

The main data collection technique that was employed for this research is questionnaire. The other technique which was used here is document review to supplement the results of questionnaire. The questionnaire with the five point Likert scale was used with a closed-ended questions. These questions were distributed to the research participants who are going to be identified by stratified random sampling and purposive sampling techniques. Various documents were reviewed to collect information needed. In this regard, the relevant information from published and unpublished documents including textbooks, journals, company's reports and publications related to ERP implementation, dissertations, online materials, training manuals and different papers related to Enterprise resource planning (ERP) were used.

3.4. Population and Sampling Design

Population refers to the total or aggregate of all individuals with specified characteristics (Richard, 2006). The collection of all possible observations of a specified characteristic of interest is called a population while a collection of observations representing only a portion of the population is called a sample. The study aims at assessing the implementation of ERP in the selected business organizations of Ethiopia which are being selected by using purposive sampling technique. As the knowledge of the researcher the population for this study that implement ERP system in Ethiopia includes Commercial Bank of Ethiopia, Ethiopian Airline, Ethio-telecom, Heineken Ethiopia Brewery S.C, Mugher Cement Industry, Ethio-Cement Industry, Mesfin Industrial Engineering, Derba Cement industry.

3.5. Sample Size and Sampling Technique

Sampling technique helps to select the respondent according to the purpose of the study. In this study, the technique used to select the sample elements were stratified random sampling and purposive sampling techniques. Stratified random sampling technique helps the researcher to divide the entire population into different subgroups or strata, and then randomly selects the final subjects proportionally from the different strata. Then and there, the technique is used to come out with result that will represent the population. The method allows giving equal chance of selection for all elements of the population in each study area (Justus I. with Butte, 2001:p. 29-31). Purposive sampling, judgmental or selective is a non-probability sampling technique in which researcher uses

his or her own judgment to select members of population to participate study based on objective of the study (William, 2006).

Having this technique in mind, the sample of the organizations for the study which was selected from the population using purposive sampling for this study include Ethio-telecom, Ethiopian Airline, Commercial bank of Ethiopia and Heineken Ethiopia Brewery S.C.; and the sample size of this study was selected proportionally from those selected business organizations by using purposive sampling. The purposive sampling technique also might uses to select the respondents who have more exposure for the implementation of the ERP project.

3.6. Data Presentation and Data Analysis Methods

3.6.1. Data Measurement

In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each type of measurement, there is/are an appropriate method/s that can be applied and not others. In this research, ordinal scale was used. Ordinal scale is a ranking or a rating data that normally uses integers in ascending or descending order. The numbers assigned to the important (1, 2, 3, 4, 5) do not indicate that the interval between scales are equal, nor do they indicate absolute quantities. They are merely numerical labels. Based on Likert scale we have the following:

TABLE 3.1. THE NUMBERS ASSIGNED SCALE

Item	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Scale	5	4	3	2	1

3.6.2. Data Management

Data cleaning was done prior to carrying out data analysis so as to ensure validity and reliability. Each questionnaire inspected and corrected to ensure that the data might contain therein are eligible and accurate and coding was done by assigning numerical values.

3.6.3. Data Analysis

First, the researcher collected the needed data by administrating a questionnaire to the respondents of each organization selected proportionally. After that, the collected data was rearranged, edited and calculated in order to make complete data that is useful for this study.

Next, the collected data was analyzed using descriptive statistics. The descriptive statistics (percent, mean and standard deviations) are used to analyze the general trends of the data. The descriptive statistics analyzed using the Statistical Package for Social Sciences (SPSS 24.0).

The researcher reviewed the appropriate statistical data analysis tools namely descriptive statistics. Before analyzing the data, the collected raw data was cleaned and edited for completeness and consistency. Then systematically, organizes the data to confirm if it represents the target population and to facilitate objective analysis at a later stage. The response was also screened for correctness and accuracy and then they were assigned numerical values which are representing various attributes being researcher measure and the filled in Microsoft excel. The data can analysis to establish the measures of central tendency and variation that include the mean, maximum, minimum, range, frequency, and standard deviation highlighting the key findings.

The Statistical Package for Social Science (SPSS) version 24 was used to analyze the data obtained from primary sources. Specifically, descriptive statistics tables, percentages were used for analysis of this study.

3.7. Ethical Considerations

The principle of voluntary participation was adhered to and respondents was not be coerced into participating in the research. The researcher ensured confidentiality. Permission was sought from the selected business organizations and the expected respondents to participate in the study. The respondents were informed of the consent and the purpose of this research study. To ensure confidentiality, names of the respondents will not be used in the study.

CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION

4. Introduction

This chapter covers the presentation, analysis and interpretation of data collected from primary sources. A total of 127 questionnaires were distributed to Employees of Ethio Telecom, CBE, Heineken Ethiopia and Ethiopian Airlines to assess factors influencing ERP implementation in these companies. Out of the 127 questionnaires distributed, 116 were properly filled and usable for further analysis.

This chapter presents the descriptive analysis on variables of the study. All the data were coded and entered in to SPSS version 24 and inferences were made based on the statistical results.

4.1. Reliability and Validity

A reliability test is used to assess consistency in measurement items. If a research tool is consistent, stable, predictable and accurate, it is said to be reliable. The greater the degree of consistency and stability in an instrument, the greater its reliability. Bhattacherjee, 2012 defined reliability as the degree to which the measure of a construct is consistent or dependable. Internal consistency reliability test was used to determine reliability of the questionnaire by calculating Cronbach's Alpha which is used to measure the internal consistency of the measurement items. If a coefficient alpha is between 0.6 and 0.7 it indicates that there is fair reliability, higher alpha coefficients indicate higher scale reliability (Joseph, 2003).

As shown in table below scale reliability Cronbach Alphas coefficients for top management Support is **.937**, project team competency is **.885**, user training and education is **.858**, interdepartmental communication is **.896**, business process reengineering is **.889**, Consultant involvement is **.614** and ERP implementation evaluation is **.758.** This study also demonstrates high internal consistency and the total Cronbach Alpha coefficient is .856. Therefore, this study demonstrates high reliability.

Validity refers to the extent of which a test measures what we actually wish to measure. The questionnaire was adapted from other research paper by (Selvakumar Swaminathan, 2011). Pilot testing allow assessing the questions validity and the likely reliability of the data (Ranjit, 2011). It also enables the researcher to know whether the design of data collection instruments is successful

in meeting the research objectives and in obtaining meaningful responses. In line with the above assumption pilot test was conducted and this validation was made regarding the reliability of the questioners' through the use of Cronbach's Alpha. Subsequently, when the pilot test was successful the researcher proceeded with the final distribution of the questioner.

Table 4.1 shows the reliability test Cronbach's Alpha coefficients for assessment of ERP in the case of business organizations in Ethiopia. The Cronbach's Alpha coefficients of the variables range from 0.614 to 0.937. And the overall Cronbach's Alpha coefficient for expected scale items is 0.856. Based on the examination of the research scales and constructs, it can be concluded that each variable represents a reliable and valid construct.

TABLE 4. 1 RELIABILITY TEST (CRONBACH'S ALPHA)

Dimensions	Cronbach's Alpha Coefficients
Top Management Support	.937
project team competency	.885
user training and education	.858
Interdepartmental communication	.896
business process reengineering	.889
Consultant involvement	.614
ERP Implementation Evaluation	.758
Reliability of Total Scale	0.856

Source: Analysis of Survey data 2019, using SPSS 24

4.2. Demographic Characteristics of Respondents

As shown in table 4.2 below that majority of the respondents are male which accounts for 74% or more than half of the total respondents while the rest 26% are female. The majority of respondents are less than 30 years of age, which accounts to 56% of the total respondents. The other 35% of the respondents falls between 30 and 40 age group category and the remaining 9% fall under 40 and 50 years between. This result indicates that there are younger employees' in the organizations which during implementation could have a positive result during training, coping up with organizational change and creating a fluent communication among departments. The academic qualification of the respondents' shows that majority of the employees 75% hold their degree, 25 hold master's degree.

The academic qualification of respondent is expected to enhance the quality of the data as they are likely to understand the questioner and forward their view fairly accurately.

TABLE 4. 2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Category	Item	Frequency	Percent
Gender	Male	86	74%
	Female	30	26%
	Total	116	100%
Age	Less than 30 years	65	56%
	B/n 30 and 40 years	41	35%
	B/n 40 and 50 years	10	9%
	Total	116	100%
Qualification	Diploma	0	0%
	Degree	87	75%
	Masters	29	25%
	PHD	0	0%
Total		116	100%

4.3. Factors Influencing ERP Project implementation in Business Organization in Ethiopia

The different factors that can affect usage of implementation of ERP in business organization top management support, project team competency, user training and education, interdepartmental communication, business process reengineering and consultant involvement have been stated in the literature review and were analyzed as presented here below.

4.3.1. Top Management Support

For exploring the role of top management in ERP implementation project in business organizations of Ethiopia the researcher provided (as shown in table 4.3) questions and offered these questions to the project teams of each organization. The final result showed that majority of respondents give their agreement that top management support was a key CSF of ERP project with percentage scores of 37%, 32%, 35%, 29%, 25% and 23%. This means that top management had an appropriate support of ERP implementation regarding allocation of resource, delegation of authority, and motivation of employees. Overall, top management has played an instrumental role in the

implementation process. The result obtained above was consistent to previous studies of (Huang, 2010), (Joycelyn L. Harrison, 1997), which considers top management support, is one of the most important factors for success of ERP implementation. Seen that top management support has been constantly recognized as the most vital and crucial success factor in ERP system implementation

TABLE 4.3. SUMMARY OF SURVEY FINDINGS FOR TOP MANAGEMENT SUPPORT

SR #	Item	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Remarks
		5	4	3	2	1	
1	Top management has allocated all the required resources (time, budget and money) for ERP project implementation.	37%	54%	9%	0%	0%	Agreed
2	Top management has understood the objectives of ERP project.	32%	57%	11%	0%	0%	Agreed
3	Top management had a good knowledge of ERP project.	35%	41%	13%	11%	0%	Agreed
4	Top management had taken a self-motivated role in leading the ERP project implementation.	29%	45%	15%	11%	0%	Agreed
5	Top management had taken all the necessary risk and responsibilities during ERP project implementation.	25%	51%	20%	4%	0%	Agreed
6	Top management has set official policies.	23%	58%	13%	6%	0%	Agreed

Source: Analysis of Survey data 2019, using SPSS 24

4.3.2 Project Team Competency

For investigating project team competency six questions were designed for the teams of ERP project implementation in each sample organizations. As presented in Table 4.4 below, the majority of the respondents have agreed for each statement related to project team competency with a percentage score (59%, 58%, 56%, 51%, 47% and 46%) which shows that the project team competency was one of CSF of ERP project. The result concurs with results of a research done by (L. Harrison, 1997) and (Abu-Shanab, 2015), who showed PTC was one of the most important factors for successful ERP project implementation.

TABLE4. 4 SUMMARY OF SURVEY FINDINGS FOR PROJECT TEAM COMPETENCY

SR#	Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Remarks
		5	4	3	2	1	
1	The team members were skilled or qualified.	28%	59%	10%	3%	0%	Agreed
2	The ERP project has been the top and only priority for the team.	24%	58%	14%	4%	0%	Agreed
3	The team members had knowledge of the key issues relating to ERP project implementation.	27%	56%	15%	2%	0%	Agreed
4	The project team had experienced in previous ERP implementations.	29%	51%	18%	2%	0%	Agreed
5	The team members had business and technical knowledge.	24%	47%	21%	8%	0%	Agreed
6	The team members had carefully been selected based on their knowledge and ability to accept change.	26%	46%	19%	9%	0%	Agreed

Source: Analysis of Survey data 2019, using SPSS 24

4.3.3. User Training and Education

In order to study user training and education factor the researcher designed eight questions (see table 4.5). As presented in Table 4.5, the majority of respondents agreed with a score percentages of 58%, 64%, 68%, 69%, 70%, 75%, 72% and 78% and some of them have strongly agreed by 31%, 20%, 17%, 14%, 16%, 9%, 22% and 12% percent for the statements related to user training and education . This result is also supported by other researchers like (Abu-Shanab, 2015), (V. Grabski, 2011) and (AL-Sabaawi, 2015) which considers UTE is one of the most important critical success factor for ERP implementation.

TABLE 4. 5 SUMMARY OF SURVEY FINDINGS FOR USER TRAINING AND EDUCATION

SR#	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Remarks
		5	4	3	2	1	
1	Organization has provided all resources required for training.	31%	58%	8%	3%	0%	Agreed
2	Training programs were properly and well designed for end-users.	20%	64%	13%	3%	0%	Agreed
3	Training materials (manual) have been customized for each specific job.	17%	68%	9%	6%	0%	Agreed
4	An organization-wide training program has been placed and all employees were involved.	14%	69%	10%	7%	0%	Agreed
5	Training materials target the entire business task, not only	16%	70%	12%	2%	0%	Agreed

	the ERP screen and reports.						
6	Enough time was allocated for ERP training.	9%	75%	16%	0%	0%	Agreed
7	Training material had been built by the organization functional experts.	22%	72%	6%	0%	0%	Agreed
8	Training program was handled by highly qualified consultants and trainers.	12%	78%	10%	0%	0%	Agreed

Source: Analysis of Survey data 2019, using SPSS 24

4.3.4 Interdepartmental communication

For investigating interdepartmental communication five questions were designed for ERP project implementation teams in these organizations. As presented in Table 4.6 below, the majority of respondents are agreed with score percentages of 73%, 83%, 79%, 67%, and 74% and some of them have strongly agreed by 16%, 12%, 15%, 20% and 9% percent for the statements related to interdepartmental communication.

TABLE 4. 6 SUMMARY OF SURVEY FINDINGS FOR INTERDEPARTMENTAL COMMUNICATION

SR#	Item	Strongly agree	agree	Neutral	Disagree	Strongly disagree	Remarks
		5	4	3	2	1%	
1	There were regular cross functional meeting to discuss about the ERP.	16%	73%	5%	6%	0%	agree
2	There were regular internal group meeting to share new	12%	83%	3%	2%	0%	agree

	method of using ERP.						
3	ERP improvement suggestions had been regularly collected from multiple employees levels.	15%	79%	3%	3%	0%	agree
4	IT staff fully support all functional users during ERP implementation.	20%	67%	10%	3%	0%	agree
5	Communication team was set to solve the departmental conflicts that arise during the ERP implementation.	9%	74%	12%	5%	0%	agree

Source: Analysis of Survey data 2019, using SPSS 24

4.3.5 Business Process Reengineering

BPR factor was investigated by four questions and valid respondents give their level of agreements. The result shows majority of respondents give there score of agreed (4) 88%, 70%, 67% and 68%, and some of the respondents strongly agreed for each questions related to BPR with percentage of 7%, 13%, 14% and 16%. The result of this study is supported by other researchers like (Ijaz, 2014) and (V. Grabski, 2011) which considers BPR as one of the most important factors for ERP project implementation success.

TABLE 4. 7 SUMMARY OF SURVEY FINDINGS FOR BUSINESS PROCESS REENGINEERING

SR#	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Remark
		5	4	3	2	1	Agree
1	Some business processes have been modified to fit the ERP application.	7%	88%	5%	0%	0%	Agree
2	Limited amendments have been done on the system.	13%	70%	14%	3%	0%	Agree

3	Changes in organizational structure have been done smoothly	14%	67%	11%	8%	0%	Agree
4	Specialized consultations have been utilized successfully to change the existing processes.	16%	68%	16%	0%	0%	Agree

Source: Analysis of Survey data 2019, using SPSS 24

4.3.6 Consultant Involvement

Five questions were designed to assess the role of consultants in ERP implementation. This study is also supported by other researchers like (L. Harrison, 1997) which considers CI is one of the most important factors for successful ERP implementation. As Table 4.8 shows majority of the respondents was satisfied with questions related to consultant involvements. The respondents give their level of agreements about consultant involvement in ERP implementation and majority of them give agreed to the sentence or question raised to them (64%, 66%, 90%, 89%, 51%) were agreed, some of the respondents with percentage score 26%, 15%, 7%, 4%, 26% were strongly agreed and few respondents were undecided and disagree with a percentage score of (5%, 10%, 2%, 4%, 14% and 5%, 9%, 1%, 3%, 9%) respectively. From the response it can be seen that CI was the crucial factors while implementing ERP project.

TABLE 4. 8 SUMMARY OF SURVEY FINDINGS FOR CONSULTANT INVOLVEMENT

N=116	**Item**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	
SR#	Score	5	4	3	2	1%	Remarks
1	Consultants had in-depth knowledge of software.	26%	64%	5%	5%	0%	agree
2	Consultant had involved in different stages of implementation.	15%	66%	10%	9%	0%	agree
3	Consultants had multiple skills covering functional, technical, and business knowledge.	7%	90%	2%	1%	0%	agree
4	Consultant had given quick	4%	89%	4%	3%	0%	agree

	response when error arose after go-live.						
5	Consultants were able to quickly respond for any problem.	26%	51%	14%	9%	0%	agree

Source: Analysis of Survey data 2019, using SPSS 24

4.3.7. ERP Implementation Evaluation

The percentage value of ERP project implementation team response to ten questions which are designed to measure the success of ERP implementation is used to evaluate the success level of ERP project. The result bellow indicates overall implementation was successful and it improves productivity, operational efficiency, customer satisfaction, financial visibility and control.

TABLE 4. 9. SUCCESS OF ERP IN BUSINESS ORGANIZATIONS IN ETHIOPIA

No.	Item/Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Remarks
		5	4	3	2	1	
1	Overall, ERP implementation was successful.	32%	53%	13%	2%	0%	agree
2	ERP implementation has realized the expected benefits to the Business.	27%	65%	5%	3%	0%	agree
3	The company's productivity is improved after using ERP.	23%	70%	7%	0%	0%	agree
4	Business operational efficiency has been improved after using ERP.	18%	77%	5%	0%	0%	agree
5	Business processes have been updated through the use of ERP.	30%	61%	9%	0%	0%	agree
6	ERP allows for better control of business operating expenses.	3%	92%	5%	0%	0%	agree
7	The financial visibility has been	1%	97%	2%	0%	0%	agree

	improved after implementing ERP.						
8	ERP is integrated in the whole business process.	0%	92%	8%	0%	0%	agree
9	ERP has improved customer satisfaction.	5%	90%	5%	0%	0%	agree
10	ERP system is easy to operate and user friendly.	8%	87%	5%	0%	0%	agree

Source: Analysis of Survey data 2019, using SPSS 24

As Table 4.9 shows majority of the respondents was satisfied with questions related to ERP implementation evaluation. When the respondent asked ten (10) related question majority of them give a score of 4 (agree) which indicates agreed for all of the sentences above in the table (53%, 65%, 70%, 77%, 61%, 92%, 97%, 92%, 90%, 87%) and some of them give a score of 5 which represents there strong level of agreements (strongly agree) for the question raised to them (32%, 27%, 23%, 18%, 30%, 3%, 1%, 0%, 5% and 8%). Also few persons show their level of agreements neutral which shows they are not decided about their level of agreements. Generally, from the response it can be seen that the respondent agreed that the overall ERP implementation was successful and effective.

4.7. General Challenges of Implementing ERPs

The research was set to find out the level of agreement by respondents from those sample business organizations in Ethiopia that had implemented the ERP on those challenges that were faced by the organizations. The study sought to establish the extent to which the companies had faced each of the following challenges in ERP adoption. The responses were rated on a five point Likert scale indicating to what extent respondents agree to each questions of challenge statements.

TABLE 4.100 FOR INTERNAL AND EXTERNAL CHALLENGES OF ERP IMPLEMENTATION

N=116	Score	5	4	3	2	1	
	Description	percentile %	percentile %	percentile %	percentile %	percentile %	remark
1	Lack of skills for implementing and using ERP	28%	42%	29%	0%	0%	Agree
2	Insufficient training to users	4%	88%	8%	0%	0%	Agree
3	Integration of different types of data was a big problem	28%	66%	5%	0%	0%	Agree
4	Incompatibility with work	5%	81%	14%	0%	0%	Agree
5	High system cost	0%	93%	7%	0%	0%	Agree
6	Long customization period	29%	69%	2%	0%	0%	Agree
7	Benefits of the system not recognizable	0%	84%	16%	0%	0%	Agree
8	High user resistance	2%	57%	31%	10%	0%	Agree
9	Inadequate preparation by employees to the new system	11%	68%	7%	9%	5%	Agree
10	System led to major organizational changes	6%	84%	9%	0%	0%	Agree
11	ERP system too complex	33%	60%	7%	0%	0%	Agree
12	Security of the system easily compromised	9%	66%	10%	9%	6%	Agree

Source: Analysis of Survey data 2019, using SPSS 24

From the findings of Table 4.10, majority of the respondents agreed that lack of skills for implementing and using ERP, insufficient training to users ,integration and migration of different types of data was a big problem, incompatibility with work, high system cost, long customization period, benefits of the system not recognizable, high user resistance, inadequate preparation by employees to the new system, system led to major organizational changes, ERP system too complex and security of the system easily compromised were the challenges faced by the organizations in ERP project adoption as shown by the percent 42%, 88%, 66%, 81%, 93%, 69%, 84%, 57%, 68%, 84%, 60% and 66% respectively.

On the other hand, some of the respondents strongly agreed that lack of skills for implementing and using ERP, insufficient training to users, integration and migration of different types of data was a big problem, incompatibility with work, high system cost, long customization period, benefits of the system not recognizable, high user resistance, inadequate preparation by employees to the new system, system led to major organizational changes, ERP system too complex and security of the system easily compromised were the challenges faced by the organizations in ERP adoption as shown by the scored percentages of the respondents 28%, 4%, 28%, 5%, 0%, 29%, 0%, 2%, 11%, 6%, 33%, 9% respectively. From the findings, it is clear that the list of these challenges were the main problems faced during ERP project implementation in business organizations in Ethiopia.

4.8. Extent of ERP System Implementation

The study sought to establish the extent to which the organizations had implemented the ERP system in each of the following applications. The responses were rated on a five point Likert scale indicating to what extent respondents agree to the statements, where: 1- To no extent, 2- To a little extent, 3- To a moderate extent, 4- To a great extent and 5-To a very great extent.

TABLE 4. 111 FOR THE EXTENTS OF ERP IMPLEMENTATION.

Discerption	**5**	**4**	3	2	1	Remarks
Customer Relationship management system	23%	70%	7%	0%	0%	To great extents
Human resource management	13%	75%	12%	0%	0%	To great extents
Procurement management	19%	71%	10%	0%	0%	To great

						extents
Plant maintenance scheduling	23%	66%	11%	0%	0%	To great extents
Quality management of raw materials	10%	87%	3%	0%	0%	To great extents
Manufacturing management	8%	86%	6%	0%	0%	To great extents
Inventory management	46%	47%	7%	0%	0%	To great extents
Budget planning and projections	32%	59%	9%	0%	0%	To great extents
Financial management	12%	83%	5%	0%	0%	To great extents
Management reports	18%	69%	13%	0%	0%	To great extents
Sales force automation	15%	77%	8%	0%	0%	To great extents

Source: Analysis of Survey data 2019, using SPSS 24

From the findings of Table 4.11, majority of the respondents agreed to a very great extent that the organizations had implemented the ERP system in customer relationship management system; human resource management; procurement management; plant maintenance scheduling; manufacturing management; budget planning and projections and financial management as shown by the percentage score 23%, 13%, 19%, 23%, 10%, 8%, 46%, 32%, 12%, 18% and 15% respectively. On the other hand, most of the respondents agreed to great extent with ERP system in management reports; sales force automation and quality management of raw materials management as shown by the 70%, 75%, 71%, 66%, 87%, 86%, 47%, 59%, 83%, 69% and 77% respectively. From the findings, it is clear that the companies had adopted the ERP system in customer relationship management system; human resource management; procurement management; plant maintenance scheduling; manufacturing management; budget planning and projections and financial management.

4.9. The future Prospects / benefits of Implementing ERP.

This research also goes to assess the future prospects or benefits that the business organizations in Ethiopia will seek up on implementation of ERP project.

Strategic Benefits:

Many new opportunities become available because of the very nature of integration that improves coordination and facilitates data sharing and data quality in a real-time operational mode. These include improved customer services, lower inventories, and reduced cycle times.

Functionality or business benefits:

Basic business benefits that flow from integration are those that enhance routine operations and provide additional and/or improved functionality. (1) Efficiency, (2) new functionality, (3) operational improvements, and (4) customer service

Economic Benefits;

Cost savings or economic advantages are the set of primary benefits that typically first come to mind when one talks with practitioners about the benefits of integration. (1) Less hardware and software maintenance, (2) more scalable hardware, (3) lower cost in general, and (4) utilization of modern technology and best practices.

TABLE 4. 122 FEATURE PROSPECT OR BENEFITS OF ERP IN BUSINESS ORGANIZATIONS.

1= Strongly Disagree; 2 Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree						
Items	Percent (%)	Percent (%)	Percent (%)	Percent (%)	Percent (%)	
N = 116	5	4	3	2	1	remark
Eliminate/Reduce redundant tasks.	21%	71%	8%			agreed
Easier access to reliable data and information.	18%	72%	10%			agreed
Standardization of global business operations.	14%	78%	8%			agreed
Pressure to keep with competitors	9%	87%	4%			agreed
Improved internal communication.	27%	64%	9%			agreed

Overall reduction of operational costs.	24%	62%	14%			agreed
Improved customer relationship or supply chain management	28%	68%	4%			agreed

Source: Analysis of Survey data 2019, using SPSS 24

Based on the findings above table 4.12 majority of respondents agreed that the implemented ERP eliminated/reduced redundant tasks, easier access to reliable data and information, standardization of global business operations, pressure to keep with competitors, improved internal communication, overall reduction of operational costs, improved customer relationship or supply chain management were the benefits that the companies acquired with the implementation of ERP system. And some of the respondents are also strongly agree with the percentage score of 21%, 18%, 14%, 9%, 27%, 24% and 28%.

CHAPTER FIVE
CONCLUSIONS AND RECOMMENDATIONS

5. Introduction

After presentation of the results the study then went into discussing the results. The main purpose for the discussion was to put the results into the perspective of the research objectives. The areas of discussion involve; blueprint for successful implementation of ERPs, main challenges of ERP implementation, extents of ERP implementation and feature prospects and benefits of ERP implementation in the sample business organizations in Ethiopia.

5.1. Conclusions

As discussed in the introduction and as it was shown through the statement of the problem and literature review, there isn't a research stream on ERP project implementations for the case of many organizations in Ethiopia. This research aims to fill this gap. Throughout the study all questions were answered. The following are the main findings and results of the study;

- ✓ ERP system has been implemented successfully as it is described and evaluated by question related to successes evaluation in chapter four; and the result was good which the respondents agreed on it. This is very indeed indicator of success of ERP implementation for those business organizations of Ethiopia. Besides, the research revealed that in principle, international theoretical work on ERP implementations critical success factors can be fitted into the Ethiopian organizations context. All six critical success factors that have been discussed in the international literature and it have also been found as a critical success factors in this study.
- ✓ Top management support has been found as the most important factor of implementing the ERP system successfully. TMS is one of the important critical success factors. Top management in these companies have set official policies and taken a self-motivated role in leading the ERP implementation. They have been committed to allocate all the required resources (time, budget and money) for ERP system implementation. Therefore, top management was greatly supporting its organization in ERP implementation processes by maintaining a financial plan and delegating implementation authority.

- ✓ Project team competency also plays a significant role to success of the ERP project implementation. The project team was composed of skilled employees with relevant experience in prior ERP projects. The team members have passed through different tests and interviews to check their knowledge and ability to accept change.
- ✓ User training and education were also important to success of ERP project implementation. This was one of the main CSFs of ERP implementation. The organizations had focused on this factor during the implementation. They have designed training materials that focuses on both the entire business task and ERP features. The training materials were developed and the training was provided by functional experts from external consultants and internal staffs employed.
- ✓ Inter departmental communication were important to success of ERP implementation. ERP implementation project team in these organizations had built a communication team who would collect system improvement suggestions, support functional users and solve any departmental conflicts.
- ✓ Consultants have played a significant role in the success of the ERP implementation. The companies have hired different consultants in which some of these are named CIMAC, Tech-Tura and Tech-Mahindra who have in depth knowledge of the business and the system. The consultants have participated in different stages of ERP implementation.

- ❖ There are several ERP functions that can be implemented in the companies and for majority of the respondents, different functions or modules of the system were in place in their organizations to a greater extents such as customer relationship management system, human resource management, procurement management, plant maintenance scheduling, quality management of raw materials , manufacturing management, inventory management, budget planning and projections, financial management , management reports and sales force automation.

- ❖ In spite of ERP's significant growth from the late 1990s to the present day and its benefit to the organizations, there are a number of challenges that companies may encounter when implementing ERP. This research also tries to investigate the challenges faced during the implementation of the system by distributing questions to users of the system in these companies in Ethiopia. Based on the results of this research the respondents give their level of agreements for the empirically tested list of challenges of implementing ERP such as lack of

skills for implementing and using ERP, insufficient training to users, integration of different types of data was a big problem, incompatibility with work, high system cost, Long customization period, benefits of the system not recognizable, high user resistance, inadequate preparation by employees to the new system, system led to major organizational changes, ERP system too complex and security of the system easily compromised.

- Operational benefits are obtained in day-to-day operations of business. This category of benefits involves reduction of costs, reduced cycle time, reduction in errors, and productivity improvement among others. Respondents give a favorable response when they are asked that ERP will bring overall reduction of operational costs to the organizations.
- Respondents of this study seemed to have been satisfied with implementation of ERP for managerial purposes. Decision making had got lot better with timely and accurate information. They were able to better plan their future. As per respondents, highly appreciated factor here was the availability of updated information as it is indicated in their percentage score for the question states ERP will eliminate/reduce redundant tasks that with a percent of 71% were agreed and Easier access to reliable data and information with relative weight of 72%. Earlier, information was being collected manually and was analyzed using Microsoft Excel and other software. Normal time for this collection of information took weeks to months.
- Research showed that businesses had obtained strategic benefits after ERP implementation. External linkages got stronger as relations with the suppliers and customers had improved. The respondents also have good attitudes that the implementation of ERP will enable these business organizations in Ethiopia to have some strategic advantages such as standardization of global business operations, pressure to keep with competitors, improved internal communication, overall reduction of operational costs and improved customer relationship or supply chain management.

5.2. Recommendations

As explained in this research, ERP systems are important and bring competitive advantages to the organizations. ERP demand is also coming to many organizations in Ethiopia. So, the researcher recommends and suggests the following main points.

- Other Ethiopian organizations that are planning to implement ERP system can consider implementing critical success factors identified in this study as input for managing their ERP project.
- It is known that business environment is becoming more complicated in today's world and to be competitive in any types of service i.e. whether manufacturing or service rendering company it requires to have best production results mean optimum quality, smooth process execution and complete customer satisfaction which can only possible with the help of an integrated system. So to become renowned and best among all business organizations in Ethiopia and other should incorporate all the required modules of ERP to create an integrated system. Based on the result, as it is investigated by the extents of ERP implementation the researcher recommends the companies to insure all the modules incorporated should be functional to attain all the benefits of ERP.
- Companies of all sizes are investing in ERP systems to help improve processes and move to a paperless environment. However the implementation of ERP is not always simple, it can potentially create a lot of challenges depending on the way it is managed. The researcher recommends organizations should consider all the challenging factors listed above in the discussion of this study to take proactive measures in their ERP implementation process.

In order to improve success of future ERP implementation the researcher recommends the following points for each dependent variable.

- ✓ Top management of organization should strengthen supporting the project from the very beginning and should inform and motivate employees of the company in all stages of ERP project implementation.
- ✓ Companies should strengthen providing training to the project team and users in order to increase their knowledge and expertise.
- ✓ Companies should have professionally, socially and personally competent project team.
- ✓ Companies should strengthen promoting transparent communication in ERP project implementation.
- ✓ Companies should strengthen hiring competent consultant and allow them to involve in each stages of ERP project implementation.

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Appendices

Questionnaire for Business organizations in Ethiopia Employees

Addis Ababa University

College of Business and Economics

MA in Project Management

SURVEY QUESTIONNAIRE

This questionnaire is designed to collect first-hand information for a project conducted in partial fulfillment of Master Degree in Project Management under the title analysis success factors, challenges and prospects of ERP Implementation in the case of Business organization in Ethiopia. The completion of the research substantially depends on your cooperation and of the information you give in this questionnaire. Furthermore, the information you provide will be solely used for academic purpose. Therefore you are requested to give a genuine response to the questions.

The survey will be confidential and will not be used for other purpose other than this paper. Thank you in advance for taking your treasured time to fill out the questionnaire and I appreciate your collaboration in advance.

1) Sex: Male □ Female □

2) Age Less than 30 □ 31-40 □ 41-50 □ 51 – 60 □

3) Qualification: Diploma □ Degree □ Masters □ PHD □

PART A: ERP IMPLEMENTATION success factors:

The research questions on these topics are operationalized through a series of statements, to which participants are required to respond using a five point format. 1 represent strongly dis-agree, 2 represent disagree, 3 represent neutral, 4 represent agree and 5 represent strongly agree.

1- **Top Management Support (TMS)**						
To **what extent do you agree on the following statements regarding top management support?**						
#	Item	1	2	3	4	5
1	Top management has allocated all the required resources (time, budget and money) for ERP implementation.					
2	Top management has understood the objectives of ERP.					
3	Top management had a good knowledge of ERP.					
4	Top management had taken a self-motivated role in leading the ERP implementation.					
5	Top management had taken all the necessary risk and responsibilities during ERP implementation.					
6	Top management has set official policies.					

2- Team Competency (capability)						
To **what extent do you agree on the following statements regarding project team competences?**						
#	Item	1	2	3	4	5
1	The team members were skilled or qualified.					
2	The ERP project has been the top and only priority for the team.					
3	The team members had knowledge of the key issues relating to ERP implementation.					

4	The project team had experienced in previous ERP implementations.					
5	The team members had business and technical knowledge					
6	The team members have carefully been selected based on their knowledge and ability to accept change.					

3- User training and education						
To what extent do you agree on the following statements regarding users training and Education?						
#	Item	1	2	3	4	5
1	Organization has provided all resources required for training.					
2	Training programs were properly and well designed for end-users.					
3	Training materials (manual) have been customized for each specific job.					
4	An organization-wide training program has been placed and all employees were involved.					
5	Training materials target the entire business task, not only the ERP screen and reports					
6	Enough time was allocated for ERP training.					
7	Training material had been built by the organization functional experts					
8	Training program was handled by highly qualified consultants and trainers.					

4- Interdepartmental communication						
To what extent do you agree on the following statements regarding users training and Education?						
#	Item	1	2	3	4	5
1	There were regular cross functional meeting to discuss about the ERP.					
2	There were regular internal group meeting to share new method of using ERP.					
3	ERP improvement suggestions had been regularly collected from multiple employees levels					

4	IT staff fully support all functional users during ERP implementation					
5	Communication team was set to solve the departmental Conflicts that arise during the implementation.					

5- BPR						
To what extent do you agree on the following statements regarding BPR?						
#	Item	1	2	3	4	5
1	Some business processes have been modified to fit the ERP Applications					
2	Limited amendments have been done on the system					
3	Changes in organizational structure have been done smoothly					
4	Specialized consultations have been utilized successfully to change the existing processes					

6- Consultant						
To what extent do you agree on the following statements regarding Consultant?						
#	Item	1	2	3	4	5
1	Consultants had in-depth knowledge of software.					
2	Consultant had involved in different stages of implementation.					
3	Consultants had multiple skills covering functional, technical, business knowledge					
4	Consultant had given quick response when error arose after go-live					
5	Consultants were able to quickly respond for any problem.					

7- ERP Implementation Evaluation						
To what extent do you agree on the following statements regarding the evaluation of ERP Implementation?						
#	Item	1	2	3	4	5
1	Overall, ERP implementation was successful.					
2	ERP implementation has realized the expected benefits to the business.					

3	The organization Service is improved after using ERP					
4	Business operational efficiency has been improved after using ERP					
5	Business processes have been updated through use of ERP.					
6	ERP allows for better control of business operating expenses					
7	The financial visibility has been improved after implementing ERP					
8	ERP is integrated in the whole business process					
9	ERP has improved customer satisfaction					
10	ERP system is easy to operate and user friendly.					

PART B: ERP IMPLEMENTATION CHALLENGES:

1) How much do you agree or disagree with the following challenges in ERP Implementation?

1 represent strongly dis-agree, 2 represent disagree, 3 represent neutral, 4 represent agree and 5 represent strongly agree.	1	2	3	4	5
Lack of skills for implementing and using ERP					
Insufficient training to users					
Integration of different types of data was a big problem					
Incompatibility with work					
High system cost					
Long customization period					
Benefits of the system not recognizable					
High user resistance					
Inadequate preparation by employees to the new system					
There was high staff turnover after implementation					
System led to major organizational changes					
ERP system too complex					
Security of the system easily compromised					
System led to many staff layoff					
Vendors‟ unreliability					
Quality of ERP not to standard					
Not enough time to implement the system					

There were many problems during file conversion					

Part C: Extent of ERP implementation in your organization.

6) What ERP modules/ functions are currently implemented in your organization? (Tick all that apply)

SR #	Description	**5**	**4**	3	2	1
	1- To no extent, 2- To a little extent, 3- To a moderate extent, 4- To a great extent and 5-To a very great extent					
1	Customer Relationship management system					
2	Human resource management					
3	Procurement management					
4	Plant maintenance scheduling					
5	Quality management of raw materials					
6	Manufacturing management					
7	Inventory management					
8	Budget planning and projections					
9	Financial management					
10	Management reports					
11	Sales force automation					

Part D: Feature prospects of ERP implementation on your company.

1) Kindly indicate the extent to which the following aspects influence the feature prospects of company after the implementation process.

1= Strongly Disagree; 2 Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree	1	2	3	4	5
Eliminate/ Reduce redundant tasks.					

Easier access to reliable data and information.					
Standardization of global business operations.					
Pressure to keep with competitors					
Improved internal communication.					
Overall reduction of operational costs.					
Improved customer relationship or supply chain management					

APPENDIX II

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.937	.945	6

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.885	.903	6

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.858	.873	8

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.896	.905	6

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.889	.894	8

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.614	.632	13

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.758	.783	4

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items

.856	.867	9