



**ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
GRADUATE PROGRAM IN PROJECT MANAGEMENT**

**FACTORS AFFECTING THE SUCCESSFUL IMPLEMENTATION OF
ENTERPRISE RESOURCE PLANNING (ERP) PROJECT: THE CASE
OF ETHIOPIAN POSTAL SERVICE ENTERPRISE**

BY

ELIAS WOLDEMARIAM (ID: GSR/5688/10)

ADVISOR: KONJIT HAILU (Ph.D.)

July, 2019 ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

GRADUATE PROGRAM IN PROJECT MANAGEMENT

**FACTORS AFFECTING THE SUCCESSFUL IMPLEMENTATION OF
ENTERPRISE RESOURCE PLANNING (ERP) PROJECT: THE CASE
OF ETHIOPIAN POSTAL SERVICE ENTERPRISE.**

BY

ELIAS WOLDEMARIAM (ID: GSR/5688/10)

APPROVED BY BOARD OF EXAMINERS AND ADVISOR

_____	_____	_____
Advisor	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Statement of Declaration

I, **Elias Woldemariam**, have carried out a research project on the “**Factor Affecting The Successful Implementation of Enterprise Resource Planning (ERP) Project in Ethiopian Postal Service Enterprise**” in partial fulfillment of the requirements for the Masters of Art (MA) degree in Project Management at Addis Ababa University, School of commerce with the guidance and support of the research advisor, Konjit Hailu (PhD).

I, also declare that this research project is my original work and that all sources of materials used for the research project are also properly recognized.

Elias Woldemariam

Name:

Signature

Date

Endorsement

This is to certify that **Elias Woldemariam** has carried out this thesis on the topic entitled “**Factors Affecting the Successful Implementation of Enterprise Resource Planning (ERP) Project in Ethiopian Postal Service Enterprise**” under my supervision. Accordingly, I here assure that his work is appropriate and standard enough to be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Project Management.

KONJIT HAILU (Ph.D.)

Advisor

Signature & Date

Contents

ACKNOWLEDGEMENTS	i
KEY TO ACRONYMS	ii
LIST OF TABLES	iii
LIST OF FIGURES	iv
<i>Abstract</i>	v
CHAPTER ONE:	1
Introduction	1
1.1. Background of the Study.....	1
1.2. Statement of the Problem.....	2
1.3. Research Question	4
1.4. Hypothesis.....	4
1.5. Objectives of the Study.....	5
1.5.1. General Objective	5
1.5.2. Specific Objectives	5
1.6. Significance of the Study	5
1.7. Scope of the Study	6
1.8. Limitation of the study	6
1.9. Organization of the study.....	6
CHAPTER TWO:	8
Literature Review.....	8
2.1. Theoretical Review	8
2.1.1. The meaning and characteristics of Projects.....	8
2.1.2. The concept of project management	8
2.1.3. Definition of ERP.....	9
2.1.4. A Brief History of ERP.....	10
2.1.5. ERP Systems Characteristics and Benefits	12
2.1.6. Implementation of ERP.....	14
2.1.7. ERP Life-Cycle Stages.....	16
i. Adoption Decision Phase	16

ii.	Acquisition Phase.....	16
iii.	Implementation Phase.....	16
iv.	Use and Maintenance Phase.....	16
v.	Evolution phase.....	17
vi.	Retirement phase.....	17
2.1.8.	Risks in ERP Implementation.....	17
2.1.9.	Critical Success Factors (CSFs) in ERP implementation.....	19
A.	Top Management Support.....	20
B.	Business Process Reengineering (BPR).....	21
C.	Change Management.....	22
D.	Use of Consultants.....	23
E.	Project team competency.....	23
F.	Project management.....	24
G.	Communication.....	25
2.2.	Conceptual Framework.....	27
2.3.	Summary of the Literature Review.....	27
CHAPTER THREE:		29
Research Design and Methodology		29
3.1.	Research approach.....	29
3.2.	Research Design.....	29
3.2.1.	Sampling Frame.....	30
3.2.1.1.	Sampling technique (Census).....	30
3.2.1.2.	Total population as a sample size.....	30
3.3.	Data source and Type.....	31
3.4.	Data collection Procedures.....	32
3.5.	Measurement Instruments.....	32
3.6.	Data Analysis and Presentation Techniques.....	33
3.6.1.	Descriptive statistical Analysis.....	33
3.6.2.	Inferential statistical Analysis.....	34
3.7.	Validity and Reliability.....	35
3.7.1.	Validity.....	35
3.7.2.	Reliability.....	36
3.8.	Ethical Considerations.....	37

CHAPTER FOUR:.....	38
Results and Findings	38
4.1. Demographics Information	38
4.1.1. Gender of the Respondents	38
4.1.2. Age of the Respondents	39
4.1.3. Education Level of the Respondents.....	40
4.1.4. Employee’s Job Experience	40
4.1.5. Respondent’s Department	41
4.1.6. Respondent’s Position.....	42
4.2. Descriptive Analysis	42
4.2.1. Top Management Support.....	43
4.2.2. Business Process Reengineering.....	45
4.2.3. Use of Consultant.....	47
4.2.4. Project Management	48
4.2.5. Project Team competency	50
4.2.6. Change Management.....	51
4.2.7. Communication.....	53
4.2.8. Summary of survey results for the dependent variable.....	56
4.2.9. Summary of frequency results of each variable and Mean Score for dependent and independent variables.....	57
4.3. Correlation analysis	60
4.3.1. Correlation analysis between independent and dependent variables	61
4.3.2. Correlation matrix analysis between independent variables	63
4.4. Multiple Linear Regression Analysis.....	64
4.4.1. Assumptions of Multiple Regressions	64
4.4.2. Model Summary.....	69
4.4.3. ANOVA Model Fit	70
4.4.4. Beta Coefficient	71
4.4.5. Relationship of the variables.....	73
4.5. Discussion of the Results	74
4.5.1. Hypotheses test and findings.....	74
4.5.2. Effect of Business Process Reengineering on ERP implementation.....	75
4.5.3. Effect of Communication on ERP implementation	76
4.5.4. Effects of Top Management Support on ERP implementation.....	77

4.5.5. Effects of Team Competency on ERP implementation	78
4.5.6. Effects of Project management on ERP implementation	79
CHAPTER FIVE:	81
Summary, Conclusions, and Recommendations.....	81
5.1. Introduction.....	81
5.2. Summary of the Findings.....	81
5.3. Conclusion.	84
5.4. Recommendations.....	86
5.5. Limitation and Suggestion for Future research.....	87
Reference.....	88
Appendices	94

ACKNOWLEDGEMENTS

First and foremost, I would like to thank the Almighty God for giving me the strength, knowledge, ability and opportunity to undertake this research and to persevere and complete it satisfactorily. Without his blessings, this achievement would not have been possible.

Next, I would like express my gratitude to my research advisor Dr. Konjit Hailu, Who tirelessly provided me all with the necessary advise, guidance, and comments throughout this study.

My thanks also go to my dear wife, Betelehem Kassaye, for her understanding, support and contribution throughout the period of my studies. I would also like to appreciate my beautiful kids, Hasset and Menna Elias, and my sisters and brothers, for being there for me all the time.

It would be inappropriate if I omit to mention the names of my dear friends Belesti Esubalew, Taye Tarekegn, Abnet Gondere, Zebider Tamiru & My Boss Aron Bisrat, who have, in their own ways, kept me going on my path to success, assisting me as per their abilities, in whatever manner possible and for ensuring that good times keep flowing.

Finally, Special thanks go to Taye Tarekegne, who has been instrumental in assisting me with the data analysis.

Thank You All!!!

KEY TO ACRONYMS

APM	=	Association for project Management
APS	=	Advanced Planning and Scheduling
CRM	=	Customer Relationship Management
CSF	=	Critical Success Factors
EPSE	=	Ethiopian Postal Service Enterprise
ERP	=	Enterprise Resource Planning
ERPI	=	Enterprise Resource Planning Implementation
EY	=	Ernst and young
IC	=	Inventory Control
ISSP	=	Information System Strategic Plan
IT	=	Information Technology
MRP	=	Material Requirements Planning
MRP II	=	Manufacturing Resource Planning
PM	=	Project Management
PMI	=	Project Management Institute
SCM	=	Supply Chain Management
SPSS	=	Statistical Package for Social Science
TC	=	Team Competency
TMS	=	Top Management Support
UC	=	Use of Consultant
VIF	=	Variance Inflation Factor

LIST OF TABLES

Table 2.1 Tangible and intangible benefits of ERP systems	13
Table 3.1 : Target Population which was used as a sample size.....	31
Table 3.2: The references of the measurement items	33
Table 3.3: Model Specification of Variables	35
Table 3.4: Reliability Statistics/Cronbach's Alpha	37
Table 4. 1 Responses Related to Top Management Support	44
Table 4. 2: Responses Business Process Reengineering.....	46
Table 4. 3: Responses Related to Consultant.....	47
Table 4. 4: Responses Related to project management.....	48
Table 4. 5: Responses Related to project team competency	50
Table 4. 6: Responses Related to Change Management.....	52
Table 4. 7: Responses Related to Communication	54
Table 4. 8: Responses related to ERP implementation success.....	56
Table 4. 9: Frequency of respondents for each level of agreement	58
Table 4. 10: Criterion – referenced scale definitions	58
Table 4. 11: Mean score result summary according to Criterion–referenced scale.....	59
Table 4. 12: Measures of Associations and Descriptive Adjectives.....	61
Table 4. 13: Correlation between independent variables and dependent variable.....	61
Table 4. 14: Correlation Matrix within dependent variables	63
Table 4. 15: Normality of data distribution	65
Table 4. 16: Multicollinearity Test Table	68
Table 4. 17: Model Summery Table	69
Table 4. 18: Anova Model Fit.....	71
Table 4. 19: Beta Coefficient	72
Table 4. 20: Summary of Hypothesis Testing Results from Regression Analysis Coefficients. .	74

LIST OF FIGURES

Fig 2.1: ERP evolution (source Rashid, et al 2002).....	11
Fig 2.2: Conceptual Framework Developed for the research	27
Fig 4. 1: Response Rate	38
Fig 4. 2: Gender of the Respondents.....	39
Fig 4. 3: Age of the Respondents.....	39
Fig 4. 4: Educational Level of the Respondents	40
Fig 4. 5: Work Experience of the Respondents	41
Fig 4. 6: Department of the Respondents.....	41
Fig 4. 7: Position of the Respondents	42
Fig 4. 8: Normality distribution taste figure	66
Fig 4. 9: linear relationship test figure.	67
Fig 4. 10: Scatter plot for linearity test	67

Abstract

The purpose of the study was to examine factors affecting successful implementation of ERP Project in Ethiopian postal service enterprise. The study was guided by the following specific objectives; Identification of common factors affecting successful implementation of ERP project in Ethiopian postal service, assessing collective effects of the factors on ERP project implementation, assessing the individual effect of each of factors on ERP project, and ranking the factors according to the weight of their effects on ERP project. Quantitative research approach was used in the study. Mixed research design was used to identify and examine factors that affect the successful implementation of ERP Project in the case company. The total numbers of purposively selected respondents were taken as the sample size of the study. The data was collected using a questionnaire comprised of 47 close-ended questions with Likert scale. Based on the findings, among the seven independent factors five of (Business Process Reengineering, Communication, Top Management Support, Team Competency, Project management) the independent factors were found to have positive and significant correlation with the dependent variable which is ERP implementation. The ANOVA test result showed that, the value of R and R^2 obtained under the model summary was statistically significant. The multiple linear regression analysis revealed that, 4 of the 7 independent variables (Communication, Top Management Support, Team Competency, Project management) have a statistically significant positive relationship to predict ERP implementation successes whereas Business Process Reengineering has a statistically significant negative relationship to predict ERP implementation successes.

Key Words: *business process reengineering, communication, top management support, team Competency and project management*

CHAPTER ONE:

Introduction

1.1. Background of the Study

Today, it is hard to imagine any organization that has not been affected by information systems and computer applications. Many organizations consider information systems and computer applications as essential to their abilities to compete or gain a competitive advantage. Information has become a management resource of equal importance to property, facilities, employees, and capital. It almost became unthinkable that an organization can fulfill its objectives without the effective use of information (Ethiopian Postal Service Information System Strategic Plan (ISSP report, 2004).

As the business world moves ever closer to a collaborative model and competitors upgrade their capabilities, to remain competitive, organizations must improve their own business practices and procedures. Functions in the company must upgrade their capability to generate and communicate timely and accurate information. To accomplish these objectives, companies are increasingly turning to enterprise resource planning (ERP) systems (Loizos, 1998).

Enterprise resource planning (ERP) system has been one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business in large organizations. ERP systems attempt to integrate all business processes into one enterprise wide solution to enhance data homogeneity and integration of modular applications (Morris and Venkatesh, 2010). Subsequently, a signified benefit of ERP systems is to streamline the workflow across various departments, ensure a smooth transition and quicker completion of processes, and enable all the inter departmental activities to be properly tracked and none of them to be “missed out” provided that processing all business acts in accordance with information processing (Rajesh 2011).

Successful implementation of ERP systems yields advancements in planning, making decision, improves the firm performance and creates opportunities for growth. ERP system acts as an effective tool that enhances firm performance and sustains a continuous competitive advantage (Li et al., 2006). However, not all ERP implementations have been successful. Since ERP implementation affects entire organizations such as processes, people, and culture, there are

some challenges that companies may encounter in implementing ERP. For instance, lack of support from stakeholder, selection of an inappropriate ERP system, unavailability of proper support from senior management and not having proper communication with the stakeholders are the common ones.

An ERP implementation takes many years to complete and requires a large amount of IT investment and their effectiveness are hard to evaluate. Today organizations of any magnitude have implemented or in implementing Enterprise Resource Planning (ERP) in order to reap the benefits of integration and to remain competitive in the market (Ashish Kr ,Dixit, 2011).

Ethiopian postal service engaged with Ernst and young (EY) to provide financial reform and ERP implementation in 2008 E.C. in-order to capitalize the benefit after implementing ERP system which is improving productivity, increase efficiency, decrease cost and simplify processes. However, the project is not delivered based on the standards (planned schedule, cost, scope, and quality standards). In the event of such distressed project, the company going to incur a huge loss. Therefore, identifying the issues involved with ERP implementation at Ethiopian postal service is important. This paper aims to identify factors affecting the successful implementation of ERP project, assessing individual effect and collective effect of these factors on ERP project implementation, at the Ethiopian Postal Enterprise.

1.2. Statement of the Problem

In recent times, Information Technology (IT) and Information Systems (IS) play an important role in business environment. In regards to growing global competition, numerous state-of-the-art information systems have been developed. Among these systems Enterprise Resource Planning (ERP) systems is one of them. ERP systems, designed to support both the functional and operational processes of the organization, are commercial software packages that “promise the seamless integration of all the information flowing through the company—financial and accounting information, human resource information, supply chain information, customer information” (Davenport,1998; Ranganathan and Brown, 2006).

Today, many public and private organizations worldwide are implementing or in the process of implementing ERP systems in place of the functional legacy systems that are not anymore well-compatible with modern business environment. ERP system is a modular integrated

business software system that facilitates an organization to use its resources efficiently and effectively. The integration brought by ERP enables organizations to respond to competitive forces and market opportunities, to improve product portfolio, to reduce carrying costs and to maintain supply chain relations strictly (Mishra et al. 2011).

Most organizations have invested in ERP systems to replace legacy systems, for cost containment reasons and to improve operational performance, efficiency and internal controls. Considering the available industry-wide solutions and their benefits, particularly when compared to other means of processing structured organizational data, ERP systems have the ability to automate and integrate business processes, share common data and practices across an organization, and produce and access real-time information.

Despite the promises and the continued popularity of ERP Systems, evidence is accumulating to demonstrate that obtaining benefits from an ERP is not as straightforward as those selling and promoting such systems would like us to believe (Boersma & Kingman, 2005). Many companies have experienced challenges in implementing ERP systems leading to wastage of time and money. It is therefore important for companies planning to implement ERP systems to understand the factors affecting implementation in order to minimize the risk of failure and to optimize their ERP implementation.

A study conducted by Nah and Delgado (2006) identified seven critical factors for ERP implementation. These factors are: business plan and vision, change management, ERP Team composition, management support, project management and system analysis. However this study was based on a developed country which is significantly different from a developing country like Ethiopia.

Aldammas & Al-Mudimigh (2005) classified eleven factors affecting ERP implementation. These factors are: ERP team work and composition, top management support, effective communication, project management, business plan and vision, project champion, appropriate business and legacy systems, business process reengineering and customization, change management program and culture, software development testing and trouble shooting and monitoring and evaluation. This study was also conducted in Saudi Arabia which is a far more developed country compared to Ethiopia.

A local research conducted by Saron (2017) the case of Heineken breweries S.c Ethiopia, asserts that top management support, project team competency, user training and education, inter departmental communication, business process reengineering and consultants support are the key factor influencing ERP implementation success. Also Foziya (2017) tried to assess factors affecting the implementation of enterprise resource planning at commercial bank of Ethiopia and found out that good communication and coordination between implementation partners is essential.

To the best of the researcher's knowledge, no study had been conducted on ERP implementation focusing on the postal sector. This study therefore sought to bridge this knowledge gap by taking in to account the common critical success factors (CSFs) faced and evaluate their contribution in the successful ERP implementation process at Ethiopia postal service.

1.3. Research Question

Based on the statement of problem and objective of study, the researcher posed the following Major questions

- What are the factors that affect successful implementation of ERP project at Ethiopian postal service?
- To what extent do the identified CSFs collectively affect successful implementation of ERP project at Ethiopian postal service?
- To what extent does each of the CSFs influence successful implementation ERP project at Ethiopian postal service?
- How can these factors be ranked in relation to their influence on the successful implementation of ERP project at Ethiopian postal service?

These questions will be answered based on the findings from facts and figures collected in the course of this study.

1.4. Hypothesis

Depending on the review of empirical studies made, the researcher has developed the following hypothesis.

H1: Top management support has a positive impact on ERP implementation success

H2: Business Process Reengineering (BPR) has a positive impact on ERP implementation success

H3: Change Management has a positive impact on ERP implementation success

H4: Consultant support has a positive impact on ERP implementation success

H5: Project team competency has a positive impact on ERP implementation success

H6: Project Management has a positive impact on ERP implementation success

H7: Communication has a positive impact on ERP implementation success

1.5. Objectives of the Study

1.5.1. General Objective

The broad objective is to assess the factors affecting successful implementation of ERP project implementation in Ethiopia post service.

1.5.2. Specific Objectives

The specific objectives of the study that emanate from the general objective are:

- Identification of common factors affecting successful implementation of ERP project in Ethiopian post service.
- Assessing collective effects of the selected CSFs on ERP project implementation
- Assessing the individual effect of each of these CSFs on ERP project
- Ranking these CSFs based on the weight of their effects on ERP project

1.6. Significance of the Study

The findings of the study will have many advantages for practitioners and academicians in the area of project management by providing useful information about the success and failure factors in implementing ERP. Theoretically the study is expected to contribute to the advancement of knowledge about the factors affecting the successful implementation of ERP projects. In addition, it will be of an invaluable importance and will open doors to realize the factors that affect successful implementation of the ongoing and potential ERP projects and

thereby ERP projects and implementing organizations will be able to plan the necessary techniques to ensure effective implementation of these projects. The study will also be used as a base on which others can develop theirs.

The results of this study will also be used to fill the literature gap on ERP in Ethiopian context and can be used as a reference for future research projects.

1.7. Scope of the Study

The study is limited to the CSFs (Business Process Reengineering, Communication, Top Management Support, Team Competency, Project management, Use of Consultant, Change Management) affecting the successful implementation of ERP project in Ethiopia postal service enterprise. The Ethiopian Postal Service Enterprise ERP project has been chosen as a case for the study. In effect it may not at any cost reflect performance issues of other projects. The research has only focused on the company's Head Quarter located in Addis Ababa.

1.8. Limitation of the study

This study is limited to testing the correlation between CSFs (Business Process Reengineering, Communication, Top Management Support, Team Competency, Project management, Change Management, Use of consultant) frequently used in research and ERP implementation success. Another limitation imposed on the study is that the scope of the study was confined to head office which may limit the comprehensive view of findings. Furthermore, since the research was restricted on the available time and budget, the study was limited to focus only on single case company and specific areas. These all have impact on the outcome of this research.

1.9. Organization of the study

The paper contains a total of five chapters. Chapter one of the study focuses only introductory aspects including background of the study statement of the problem, objectives of the study, significance, scope and limitation of the study. Chapter two presents the review of related literature. Chapter three presents the research design and methodology including data source and method of data collection, sampling techniques to used, and measurement and

analysis parts. Chapter four discusses the findings of the study. Based on the finding of the study, chapter five presents the conclusion and recommendation of the study.

CHAPTER TWO:

Literature Review

2.1. Theoretical Review

2.1.1. The meaning and characteristics of Projects

Project is defined as a temporary endeavor undertaken by people who work cooperatively together to create a unique product, service or result. The temporary nature of projects indicates that a project has a definite beginning and end (PMI, 2007). A project can be considered to be any series of activities and tasks that: Have a specific objective to be completed within certain specifications, have defined start and end dates, Have funding limits, consume human and nonhuman resources and are multifunctional (Kerzner, 2009)

A project can be characterized by a few elements such as objectivity as it is definable with result or output, complexity with normally interrelated activities and large number of different tasks, unique where it is usually a “one-off” assignment, uncertainty as it has element of risk, temporary with its well defined beginning and end and lastly operate in a life cycle as emphasis and resource needs change during the life of the project.

2.1.2. The concept of project management

Project management has been in practice for thousands of years. A dotted line can be drawn from the software developers of today back through time to the builders of the Egyptian pyramids or the architects of the Roman aqueducts. For their respective eras, project managers have played similar roles, applying technology to the relevant problems of the times (Berkun,2008).As a modern management practice, project management evolved out of World War II and U.S. Department of Defense projects. These projects required organizations to break the existing functional boundaries and find new ways to accomplish complex work (Gentile, 2012),

Project management is the application of tools, techniques, processes, methods and experience in achieving the desired purpose of a project (APM, 2012). While Kerzner (2009) adopts the definition of the classical approach to management to describe project management as planning, organizing, directing and monitoring of an organization’s resources for a temporary

purpose that will eventually achieve specific goals and objectives. In general, these definitions all describe project management as 'a means to an end. As such, it involves planning, organizing, monitoring, and controlling the project and requires its own tools and techniques (Belassi and Tukel, 1996).

The central theme running through the various project management Body of knowledge is the project management is an integrative process that has at his core, the balancing of 'the iron triangle' of time, cost and output. All three facets must be present for a management process to be considered project management (Patrick, W 2007).

2.1.3. Definition of ERP

Beheshti (2006) defines Enterprise Resource Planning (ERP) system as “a set of business applications or modules, which links various business units of an organization such as financial, accounting, manufacturing, and human resources into a tightly integrated single system with a common platform for flow of information across the entire business. ERP systems are very large software programs that control every aspect of a company from sales to accounting to supply chain to human resources. Historically, companies have been divided by functional areas, such as marketing and sales or accounting and finance. However, in order to react to the demands of customers in a rapidly changing marketplace, work from must flow quickly and accurately between functional areas (Monk & Wagner 2006). Functional area legacy systems “represent one of the heaviest drags on business productivity” (Davenport, 1998) and have been increasingly replaced by a single ERP system, via a single central database and common reporting tools. Each functional area within an organization is integrated by the software. This cross-functionality promotes business integration with the ability to view real-time results (Ranganathan & Brown 2006).

The 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 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).

As Kumar and Hillsgersberg, (2000) said an ERP system is a vast information system, which enables decision-makers to have an enterprise wide view of the information they need in a timely, reliable and consistent fashion.

ERP packages are integrated software packages that cover the techniques and concepts employed for the integrated management of businesses that help effective use of resource, to improve the efficiency of an enterprise (Ahmed, 2003).

ERP systems are configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization (Kumar & Hillsgersberg, 2000). One database, one application and a unified interface across the entire enterprise (Tadjer,1998). ERP systems are computer-based systems designed to process an organization’s transactions and facilitate integrated and real-time planning, production, and customer response (O’Leary, 2001).

2.1.4. A Brief History of ERP

The evolution of ERP systems closely followed the development in the field of computer hardware and software systems and the history of ERP systems starts with efforts of automating inventory control systems in the 1960s when most organizations designed, developed and implemented centralized computing systems for their inventory control systems (Rashid et al, 2002).

During the 1960s most organizations designed, developed and implemented centralized computing systems, mostly automating their inventory control systems using inventory control packages (IC). These were legacy systems based on programming languages such as COBOL,

ALGOL and FORTRAN. Material requirements planning (MRP) systems were developed in the 1970s, which involved mainly planning the product or requirements according to the master production schedule. Following this route new software systems called manufacturing resource planning (MRP II) were introduced in the 1980s with an emphasis on optimizing manufacturing processes by synchronizing the materials with production requirements. MRP II included areas such as shop floor and distribution management, project management, finance, human resource and engineering (Rashid et al, 2002).

According to Mohammad A. Rashid, (2002) on the book *The Evolution of ERP Systems: A Historical Perspective* ERP systems first appeared in the late 1980s and the beginning of the 1990s with the power of enterprise-wide inter-functional coordination and integration. Based on the technological foundations of MRP and MRP II, ERP systems integrate business processes including manufacturing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, and transportation, providing accessibility, visibility and consistency across the enterprise (O’Leary, 2001).

During the 1990s ERP vendors added more modules and functions as “add-ons” to the core modules giving birth to the “extended ERPs”. These ERP extensions include advanced planning and scheduling (APS), e-business solutions such as customer relationship management (CRM) and supply chain management (SCM) (Rashid et al 2002). Figure 1 summarizes the historical events related with ERP.



2000s	Extended ERP
1990s	Enterprise Resource Planning (ERP)
1980s	Manufacturing Resources Planning (MRP II)
1970s	Material Requirements Planning (MRP)
1960s	Inventory Control Packages

Fig 2.1: ERP evolution (source Rashid, et al 2002)

2.1.5. ERP Systems Characteristics and Benefits

ERP systems are greatly known for their characteristics that qualify them as being highly dependable integration solutions for the core business solutions of organizations. They provide an all-inclusive system that covers all aspects of the business that can be easily accessed and shared across the different departments in organizations. They provide data for strategic decision making and have full access to organization-wide information that is fully integrated into one system to facilitate rapid decision making, cost reductions, and greater managerial control (Holland and Light, 1999). Depending on the ERP system, different components of data can be accessed. According to Davenport (1998), there is a single central database where data is collected and dispersed into the different modules of an organization where information on all the business activities across the organization can be accessed internally and across multi-sites even if they were around the world. Davenport (1998) further explains that when information is inserted into the system by one user, any information related to that is directly updated accordingly.

For a better understanding, Sylvester (2004:71) has categorized characteristics of ERP system under three dimensions in regards to their nature, namely technical, organizational and informational. The technical dimension regroups characteristics that refer to the capabilities or facilities for applications development offered by ERP systems in comparison to traditional systems.

This includes two basic characteristics: flexibility (adaptability) and openness (evolutionary). The organizational dimension refers to the system's deployment in the firm. These are the characteristics that best reflect the impact of an ERP system on the organization, on its structure as well as its practices. This includes integration, completeness (generic function), homogenization, transversally (process-oriented view) and best practices. The informational dimension regroups characteristics that relate to the quality and usefulness of the information provided by the system, namely real-time (update and consultation) and simulation (of actual business processes).

Al-Mashari et al. (2003) has highlighted that benefits of ERP systems are best realized when a business assesses its performance measurement after having implemented an ERP system within. It is expected that the benefits realized would be operational, managerial, strategic, IT

infrastructure and organization-wide. O'Leary (2004) adds that benefits realized are split into those that are tangible and intangible. These are described in Table 2-1.

Table 2 1 Tangible and intangible benefits of ERP systems

Tangible benefits realized	Intangible benefits realized
➤ Inventory reduction	➤ Information/visibility
➤ Personnel reduction	➤ New improved processes
➤ Productivity improvements	➤ Customer responsiveness
➤ Order management improvements	➤ Cost reduction
➤ Financial close cycle reduction	➤ Integration
➤ IT cost reduction	➤ Standardisation
➤ Procurement cost reduction	➤ Flexibility
➤ Cash management improvement	➤ Globalisation
➤ Revenue/profit increases	➤ Y2K
➤ Transportation/logistics cost reductions	➤ Business performance
➤ Maintenance reductions	➤ Supply/demand chain
➤ On-time delivery	

Table 2-1 has presented the tangible and intangible benefits that organizations realize. In terms of the inventory, personnel and IT reductions, among other benefits, that directly affect the cost of projects, these clearly are tangible benefits that organizations should realize after deploying a successful ERP system. Being flexible, their business performances, the integration of their work, among others benefits, are also considered as benefits realized except that they are not concrete items that can be touched to prove they exist.

2.1.6. Implementation of ERP

When implementing an ERP system within organizations, people need to realize that they will be investing a lot into it; financially and non-financially (Al-Mashari et al., 2003 and O'Leary, 2004). Financially, the costs that would be required include those of the hardware that runs licensed software along with the consultation fees required to ensure that knowledge is transferred from the ERP system provider to the end-user. The end-user would need to have a certain understanding of the ERP system as well as ERP project management since an ERP system is considered to be a project in itself (Whang et al., 2003). Therefore, financially, proper training would be required to those who would be utilizing it (Willis et al., 2001). Non-financially, time and effort would need to be dedicated into implementing and maintaining this system.

Without the proper support and understanding, implementation and post-implementation phases of the project are at risk of failure. Kapp (2001: cited in Whang et al., 2003) has studied and assessed a few organizations that endured the transformation into ERP systems and has concluded a few reasons as to why some ERP implementations fail. The main reason found through their research is due to not having proper and focused training plans that prepare end-users for the system. Whang & Lee (2002) add to that by suggesting that organizations may not have a clear and focused goal that directs them to ensure alignment with business strategies and opportunities. Implementing an ERP system requires dedication, goals, objectives and most importantly, for it to be treated as a project that receives devoted attention (Kansal, 2007). Not understanding the potentials of the ERP system and not dedicating enough time to integrate it well within the organization, may lead to the failure of it. It needs to be recognized that 'integrate' is the keyword, where business processes and functions are integrated into the system to substantially adjust it. Not only is it important to successfully implement an ERP system, maintaining and continuously improving it, have the same significance.

Furthermore, according to Capaldo and Rippa (2009), the various reasons as to why some ERP implementation projects fail relate to the technical implementation aspect as well as the organizational aspect and failure to be attentive to both aspects could lead to negative risks in choosing the implementation strategy during implementation. According to them, if the factors relating to the technical and organizational aspect are not identified properly, they could lead to affecting the project outcome as issues may arise during implementation and it becomes difficult

to deal with them if they are not already anticipated. Markus (2004) highlights that organizations usually implement ERP systems following two different strategies referred to as the “Big Bang” and the “Incremental” strategy. The big bang strategy deals with implementing the ERP system and going live in one go. No pilot approach is followed as opposed to the incremental strategy where the risk of implementation decreases since critical problems realized from stage one of the 'go-live' phase can be fixed for stage 2 prior to the go-live phase. It allows for a timely resolution of critical situations (Markus, 2004). As ERP systems have their benefits and failure to meet their success factors could lead to failure, the implementation strategy that an organization chooses to deploy the ERP system also has its benefits and risks associated with it. Benefits of the big bang strategy include that the organization adjusts to the characteristics of the system with minimal customization to meet the maximum benefits of the system. Total integration of the system in a designated time period allows for the benefits that include going-live as early as possible. Of course, risks are also associated with that, and for that reason, the right people need to be a part of the implementation team (Bhatti, 2005). Benefits of the incremental strategy include a decrease in technical difficulties but also have fewer benefits since resources are engaged for a longer time period. This adds costs to the project.

To adopt an ERP system into an organization, there are two main technical ways of doing so. Organizations can purchase and directly implement a standard ERP pack, with little digression from default settings, or they can customize an ERP pack to suit their requirements (Brehm et al., 2001). The implementation of an ERP system entails much planning and adequate research to ensure that the implementation of it runs smoothly and benefits of it are realized as opposed to criticized. To guarantee that the business procedures, technical aspect of the system and software are configured and integrated to align with the business processes is the key to having confidence of a positive transformation to the ‘new’. Much research into the implementation of an ERP system has been done factoring out the CSF’s and developing process models.

When it comes to configuring an ERP system, Davenport (1998) advises that an organization needs to make compromises of finding the best way to balance the way they want to work and the way the system promotes you to work. When it comes to the ERP system selection, you need to know your requirements in order to properly assess the modules that you would need to install against those that are not necessary for your organization. After that, each module is adjusted

against certain configuration tables in order to present and reach the best fit possible with the business processes.

2.1.7. ERP Life-Cycle Stages

(Jose M. Esteves, 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.

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 minimizes 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 technologies.

2.1.8. Risks in ERP Implementation

There are unique challenges and risks involved in ERP implementation projects. Sumner (2005) lists four different categories of risks that pose a threat to successful implementation project. These four risk categories are: technology, organization, people and project size. The common risks associated with ERP projects are discussed in this section in accordance with Sumner's categories. Technology risks vary according to how well the new system fits with the current corporate technology infrastructure and operating system environment.

When a company implements a technology that is inconsistent with current operating system, database and network environments, the system implementation will require fundamental changes in technology infrastructure. Changing the technology infrastructure will raise the technology risk and might lead to a situation where the company's internal technical expertise is inconsistent with the new infrastructure. To keep the technology risks low, the technical requirements for the chosen ERP system should be consistent with the company's technical know-how and the technology infrastructure.

Despite the efforts to mitigate these risks, technological bottlenecks often occur when implementing a new ERP software package, especially when attempting to build bridges to legacy applications. These issues pose risks to the project and can result in lack of integration. Technological issues must be taken into account when selecting the ERP software package in order to avoid unnecessary exposure to technology risks (Sumner, M. 1999).

The organizational risks deal with company's business processes and organizational factors (Sumner, M. 1999). When the features of the ERP software do not fit the company's business requirements there are two possible strategies in implementing the software. First

option is to re-design the business processes (reform) to fit the software with minimal tailoring and the second possibility is to modify the software to fit the processes.

The first option should reduce errors and help to take advantage of newer versions and updates of the system. On the other hand, changing business processes to fit the system could mean changes in established ways of doing business, which can lead to worker resistance and even to loss of competitive advantage.

The second option includes modification of the software, which slows down the project and raises implementation costs, could affect the stability of the system, and make managing future releases more difficult. On the other hand, modifying the software implies less organizational changes. (Themistocleous 2005) For the success of ERP implementation project, in terms of project constraints, the less modifying needed, the lower the risk of budget overrun and schedule delays.

The organizational risks also vary according to the amount of business processes that the ERP implementation project affects. If the scope of the project affects nearly all the company's business processes, the risk is greater than if it affects only 25% of the processes, for example. (Sumner, M. 1999).

The third area of risk is associated with people resources. If the company's IT professionals are familiar with the application-specific ERP modules, then the probability of successful implementation is enhanced. Insufficient training and re-skilling of the staff and failure to efficiently mix internal and external expertise raise the risks of project failure.

People factors that affect the level of risk also include the know-how of the ERP user staff and their involvement in the project. Inadequate training of end-users, ineffective project communications and lack of sensitivity to user resistance all lower the chances of success. Risk of failure raises significantly if the users are not fully committed to completing their activities in the implementation project (Sumner, M. 1999) .

The fourth source of risk deals with project size. As an ERP implementation project can be the largest single investment in corporate technology for many organizations, the sheer size of the project poses considerable risk. Any project, that is as large and important as an ERP

implementation project, needs senior management support, a proper management control structure and effective communications in order to be successful (Sumner, M. 1999).

2.1.9. Critical Success Factors (CSFs) in ERP implementation

According to Li & Sylvia (2005) CSFs are defined as “those few critical areas where things must go right for the business to flourish”. Understanding the critical success factors in ERP implementation would give some guidelines on what factors that should be given more attention in order to bring the implementation process into success. The CSFs could either be a risk or opportunities, depends on how the organizations handle them.

Critical success factors in ERP implementation is the most reheard area, one of the first researches about CSF in ERP implementation is accomplished by Holland in 1999 titled “A Critical Success Factors Model for ERP Implementation. He divided CSF in two dimensions including of strategic and technical then he classified legacy system, business vision, ERP strategy, top management support and project schedule and plans under strategic dimension and client consultation, personal, software configuration, client acceptance, monitoring and feedback, communication and trouble shouting under technical dimension (Holland & Light, 1999).

After investigating critical success factors in ERP implementation in Malaysia, Jafari, Osman & Tang concluded that there are 10 critical factors that contributed for successful ERP implementation. These are top management support, clear goals and objectives, communication, effective project management, business process reengineering, data accuracy and integrity, suitability of software and hardware, vendor support, education and training, and user involvement are critical in Malaysia (Jafari, Osman, & Tang, 2006).

CSFs for ERP projects have been studied from a number of different perspectives. Elisabeth et al. (2003) emphasized social enablers such as strong commitment by top management, a great implementation team, extensive education and training, clear understanding of strategic goals and empowered implementation team as necessary qualifications to a successful implementation.

The success or failure of ERP implementation is closely related to how the companies handle the process. The ERP implementation process could differ in every company. The differences might concern to the implementation goals, the scope, or the available resources. But

among all the differences in every implementation process there are some general points that are important in the process and would strongly result in the success or failure in the implementation of ERP. Those important points were identified as critical success factors (Li & Sylvia 2005).

In this study, the student researcher has examined the effects of seven key CSFs on the ERP's successful implementation. These CSFs are top management support, project management, use of consultants, business process reengineering, project team competence, change management and communication. The selected CSFs are among those that are widely cited as having a notable impact on the implementation success of the ERP systems (e.g., Ağaoğlu, Yurtkoru, & Ekmekçi, 2015; Ahmad & Cuenca, 2013; Dezdar & Sulaiman, 2009; Jahangir et al., 2007; Leyh, 2016; Ngai, Law, & Wat, 2008).

A. Top Management Support

Top management support was supposed by many articles to be one of the top critical factors in a successful ERP implementation. Top management support, plays a significant role in the ERP implementation success because ERP are normally large-scale and require extensive resources. According to Zhang et al. (2005), top management support has two major aspects in ERP implementation projects: providing the necessary resources and providing leadership. The responsibilities of top management in ERP implementation include communicating the company strategy to all members of the organization, developing an understanding of the restrictions and abilities, demonstrating commitment, and establishing rational objectives for the ERP implementation (Umble et al., 2003).

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).

Top 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).

Top management support and commitment is needed throughout the ERP implementation process because the project must receive approval and align with strategic business goals. Top managers must commit themselves to involve in the project for allocating the required personnel resource for implementation and giving appropriate time to finish the job. A share vision of the company and the role of the new system and structures should be communicated between managers and employees. Moreover, top managers should be the persons to harmonize any conflicts between internal and external parties (Nah et al., 2001)

Many studies provided evidences that top management support is essential during the entire ERP implementation process and how it remained critical in order to reap the benefits (Bradford and Florin, 2003). Willcocks and Sykes (2000) noted that senior-level sponsorship, championship, support, and participation are one aspect of organizational factor that influences ERP success. Implementing ERP does not only involve changes in software systems usage rather it involves the repositioning of a company and transformation of all business practices. Therefore, as Somers and Nelson, (2004) said top management should publicly, explicitly, and sincerely show their support (financial and non-financial) to emphasize the precedence of the ERP implementation.

H1: Top management support has a positive impact on ERP implementation success

B. Business Process Reengineering (BPR)

An ERP project pushes organizations to revisit their business processes and scrutinizes the ways of doing things relative to the best practices already embedded in the system. According to Bingi, (1999) implementing an ERP system requires 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 organization implements ERP a certain level of BPR (reform) 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 benefits provided by an ERP system, it is authoritative that the business processes are aligned with the ERP system. According to Somers T.M., (2001) 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.

H2: Business Process Reengineering (BPR) has a positive impact on ERP implementation success

C. 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.

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.

H3: Change Management has a positive impact on ERP implementation success

D. Use of Consultants

In the review by Dezdar and Sulaiman (2009), the CSF referred as “Use of consultants” were considered to have been one of the less frequently cited CSF. Welti, (1999) argues that the success of a project depends on the capabilities of the consultants, because they have in-depth knowledge of the project. ERP consultants can play a major part in the implementation process. This is because they have the required knowledge and expertise to assist the adopting organizations in the effective use of the system and realize both managerial and operational benefits. It was indicated that the consulting process is a necessary step for organizations that are willing to implement such system (Maditinos, Chatzoudes, & Tsairidis, 2011; Zhu et al., 2010). This necessity originated from the ERP’s integrative nature, which makes its implementation more complex than that of traditional systems (Wang & Chen, 2006). ERP complexity comes in many facets including difficulties in configuring a large number of modules and coordination of operations (Jahangir et al., 2007), thus the increased failure rates. Consequently, lack of consultant support might make the implementation process quite hard for the adopting organizations and could be a success inhibitor (Schniederjans & Yadav, 2013).

Consultants can be involved in several stages of the implementation process, including performing requirements analysis, recommending suitable solutions, configuring modules, and managing the implementation process (Somers & Nelson, 2001). Thus, they should be carefully selected by considering their experience in the technical aspects and business processes conducted in the adopting organization.

H4: Consultant support has a positive impact on ERP implementation success

E. Project team competency

Project management requires efforts and it is certainly not an easy job. It involves several steps; from the initiation, planning, executing, and controlling to the closing of a project. The

most challenging part is that the project is delegated to a team with specific goals to achieve over a defined timeline for a determined budget. A successful and effective project manager is one who can keep projects and the team on track. This normally takes more than just technical know-how. The key, of course, is being able to manage a project on time and on budget, by gaining the confidence of all stakeholders and leading a highly motivated team to a successful outcome.

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

H5: Project team competency has a positive impact on ERP implementation success

F. Project management

Project management for ERP implementations includes aspects pertaining to identification of a clear scope and plan for the implementation process, setting a realistic time frame, having an effective project leader, and tracking the project progress (Nah et al., 2003; Umble et al. 2003; Zhang et al., 2003). Effective project management has been considered in a large number of studies as a significant factor for the successful implementation of the ERP systems (e.g., Ngai et al., 2008; Tsai et al, 2011; Zhang et al., 2003). A typical reason is that the implementation of such systems is a complex process due to many issues, including their complex configurations and difficulties in making the required changes in the organization's processes and environment to fit the system. Thus, effective project management is imperative for the success of the implementation process. It enables organizations to plan, coordinate, and monitor various implementation activities (Ngai et al., 2008). Additionally, Zhu, Li, Wang, and Chen (2010) indicated that effective project management ensures the successful automation of many routine operations by the system, which leads to many operational benefits, including high processing speed and productivity.

H6: Project Management has a positive impact on ERP implementation success

G. Communication

Strong communication within the entire organization during the implementation process increases success for ERP implementation. It allows the organization's stakeholders to understand the goal and the expected benefits of the project as well as to share the progress of the project. An "open information policy" protects the various communication failures for the project. (Al-Mashari, Al-Mudimigh, and Zairi, 2003).

For successful implementation of ERP systems, communication across the various functions and levels of a company is needed. Since the communication assists the ERP adopting company to minimize user resistance, it is critical from the initiation to the system acceptance phases Somers and Nelson, (2004). Esteves-Sousa and Pastor-Collado (2000) stated that both internal communication among ERP project team members and outward communication to the entire company are very essential. communication among different levels and functions of ERP implementation projects needs a communication plan to guarantee that open communication happens in the whole organization and with customers and suppliers Kumar et al., (2003).

Communication is one of most challenging and difficult tasks in any ERP implementation project. Nah et al., (2007) argued that it is important that ERP project team and employees are informed about the scope, objectives, activities and updates in advance to make ERP implementation more efficient. In ERP system implementations, communication among stakeholders to report project progress and user input and communicating project expectations to all stakeholders are important Sedera and Dey, (2006).

According to Nah and Delgado (2006), communication should start early, be consistent and continuous, and include an overview of the system, the reasons for implementing it, and a vision on how the business will change and how the system will support these. The effective communication CSF in an ERP implementation includes the communication between departments in the organization Al-Mashari, Al-Mudimigh, & Zairi, (2003) and between the implementation parties. Chang et al. (2008) also suggested, close cooperation between different parties among the project and different departments within the company can effectively increase employees' system using, as the employees can receive expectations and pressures from those parties whom they are interacting with in daily work.

For the interdepartmental communication, Stefanou (1999) argued that creating collaborations among the departments and a close work relationship between them can be effective for some technical issue resolutions, and can further facilitate the overall project success. For the way to achieve such communication the researcher considered the trust and willingness about information sharing is a matter of the organizational culture that cannot be resolved by any form of technologically support Stefanou, (1999).

On the other hand, among the communication between implementation parties in the project, a case study by Sumner (1999) indicated the project team should let everyone in the enterprise be aware of the meaning of the project, as well as the scope and schedule of it Sumner, (1999). For the difficult and tough issues that existed in one party or between a few parties in the preparation phase of the project, they should be addressed directly and in time, to prevent more issues emerged and even harder to resolved in later phases Sumner, (1999).

Despite the meaning of communicating among social groups, the effective communication can also represent broadcasting the meanings and benefits of ERP adoption to employees, as suggested by Aladwani (2001). The researcher proposed that communication is an effective strategy to affect users' attitudes toward the new system and further improve the situation of user resistance. The researcher also believed the awareness of knowledge about ERP and how it operates can build anticipation and virtuous expectation for employees. To achieve this, management can play the role of explaining how ERP system will work, whereas reputable individuals and opinion leaders are also effective for spreading the spirit of supporting the project activities (Aladwani, 2001).

Under the setting of the project team members are representatives from business functional departments, Akkermans and van Helden (2002) concluded that the interdepartmental communication and collaboration is the core process for ERP project progress, while the key stakeholders (top management, project champion, and ERP vendor) were identified to be the root causes for the performance of this core process.

H7: Communication has a positive impact on ERP implementation success

2.2. 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 student researcher tries to see the relationship between Independent variables (top management support, Project management, business process reengineering, consultant, change management, communication and project team competency) and Dependent variable (successful implementation of ERP). The student researcher tool 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 crux of the study.

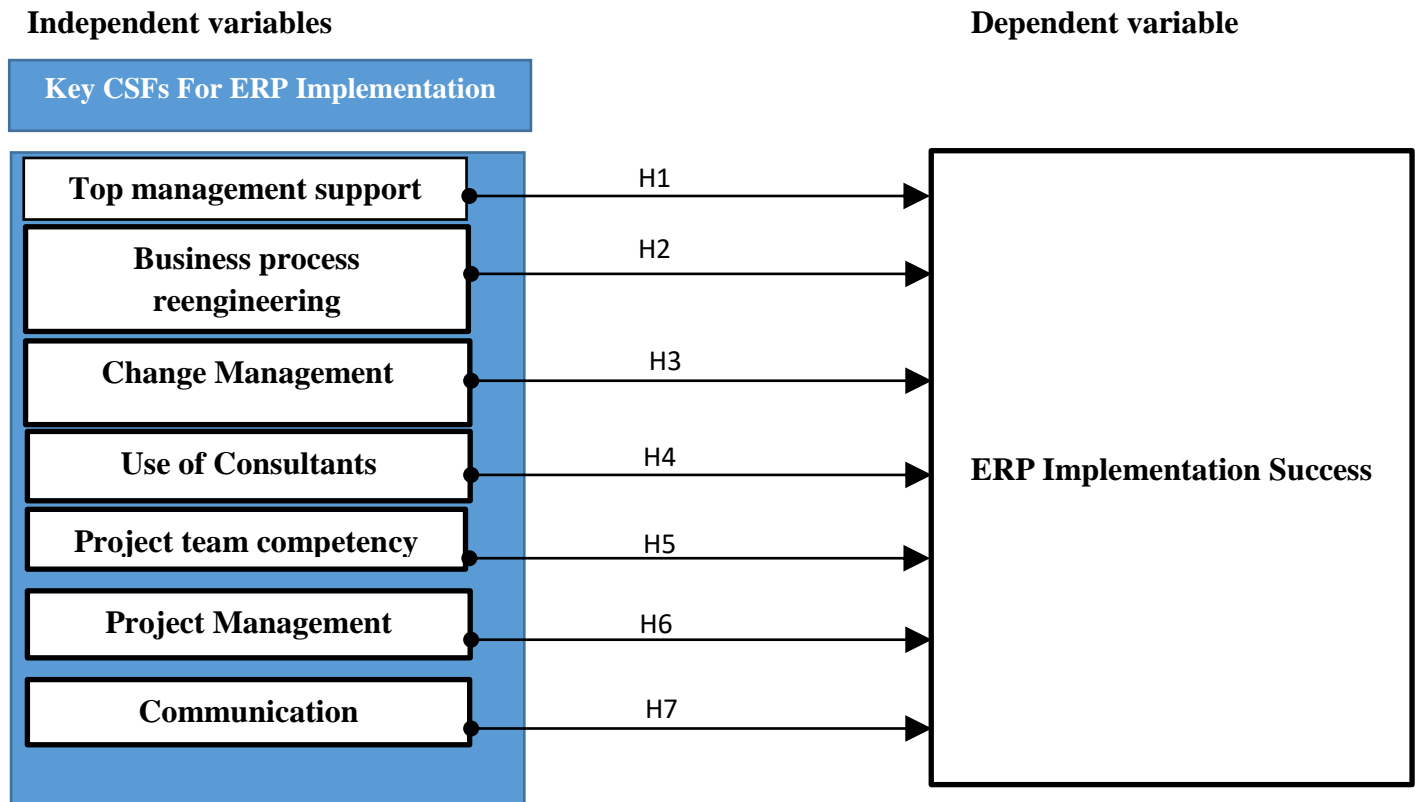


Fig 2.2: Conceptual Framework Developed for the research

2.3. Summary of the Literature Review

The literature review above has highlighted what a project is and different characteristics, benefits, implementation, role of the project manager, critical success factors

of ERP systems and their implementations. To ensure and fulfill the benefits of the ERP systems, it would be significant to understand the factors that hinder the system implementation so as to ensure that they are avoided or create risk management plans that can act as buffers in case a failure is convened upon, unexpectedly. Understanding what the critical success factors are can assist implementers in paving the way for a successful ERP system implementation. Understanding the success factors and negating them is a method that can be used to ensure that most factors that lead to successful implementations could also lead to failure implementations if not considered during the planning phase of the project.

CHAPTER THREE:

Research Design and Methodology

In this chapter the practical method used in order to answer the research questions and fulfill the purpose of the research are presented. In addition, the research approach, research design, sampling design, instrument used for data gathering, target population, source of data, method of data analysis, presentation and interpretation are discussed in detail.

3.1. Research approach

As stated by Paul. D, Leedy (1993), quantitative research as a formal, objective, systematic process is used to describe and test relationships and examine cause and effect interactions among variables. It is a kind of research used to answer questions on relationships within measurable variables with an intention to explain, predict and control phenomena Paul. D, Leedy (1993). Quantitative research deals with numerical data or data that can be transformed into numbers. It shows the relationship of variables involved in the research through cause-and-effect fashion. On the other hand, the qualitative method presents a descriptive and non-numerical approach to collect the information in order to present understanding of the phenomenon Brue's, L. Berg, (2004). In this research, quantitative data was collected, thus quantitative approaches was used to address the main objectives of the study and to deal with all research questions and hypothesis.

3.2. Research Design

Polity and Beck (2003) describe a research design as the overall plan for obtaining answers to the questions being studied and for handling some of the difficulties encountered during the research process. In this study, the research design is mixed between explanatory, exploratory and descriptive methods. The purpose of the study was exploratory since the study is to assess ERP implementation in light of CSFs and understand what is happening in ERP implementation case through use of questioner and document review. The study is partly descriptive since it tries to measure the extent of ERP implementation success. And it is explanatory, because the study examines the relationships between seven independent variables,

which are top management support, project management, business process reengineering, use of consultants, change management, communication and project team competency.

3.2.1. Sampling Frame

A sampling frame has all the sampling components from which a sample is obtained Kombo and Tromp, (2006). The sampling frame for this study were the list of 20 top management of the organization, 13 department team leaders, 7 human resource domain experts, 10 finance domain experts, 5 material management domain experts, 9 members of ERP project office, 15 change management team and 9 IT experts is purposively included in the population. Therefore the total number of target population of the study was 86. These are employees of Ethiopian Postal Service enterprise that are directly or indirectly involved in financial reform and ERP project in various hierarchical levels.

3.2.1.1. Sampling technique (Census)

Cooper and Schindler (2003), argues that population units from where the sample is obtained is found in a sampling frame. Sampling techniques provide a range of methods that facilitate to reduce the amount of data need to collect by considering only data from a sub-group rather than all possible cases or elements. But if it is possible, practical, and not too expensive to collect data from all the potential units' elements and if the unit of population is manageable size, we can use the population frame as the required respondents or elements of subjects for the study. As it is supported by Kothari (2004), this technique is a non-probability sampling method and basically it is purposive sampling where the student researcher will purposively select those groups in the scope of the study who are directly or indirectly involved in financial reform and ERP project. Therefore, for the study all the population participated in the study.

3.2.1.2. Total population as a sample size

Since the number of target population stated above is manageable, the sample size will be taken to be the total population. Therefore, the study will take all the 86 respondents from top management of the organization, department team leaders, human resource domain experts,

finance domain experts, material management domain experts, and members of ERP project office, change management team and IT experts.

Based on this, the total numbers of respondents and their related departments are listed in Table 3.1 below:

Table 3. 1 : Target Population which was used as a sample size

No	Target populations	Number of population	Remark
1	Top management of the organization	20	
2	Finance, HR and IT department Team leaders	8	
3	ERP project team	18	
4	HR domain experts	7	
5	Finance domain experts	8	
6	Material management domain experts	5	
9	Change management team	11	
10	IT experts	9	
	TOTAL	86	

Source; *Financial reform and ERP project office and Human Resource department of the organization.*

3.3. Data source and Type

The necessary data for this study was collected from both primary and secondary sources. The reason for this is because of its advantage as it is stated by O'Leary, (2009). As he advocates in its theory, the major advantages of questionnaires are that they can be administered to groups of people simultaneously, and they are less costly and less time-consuming than other measuring instruments. The primary data was collected through questionnaires which contained closed ended questions related to the subject matter. The secondary data was collected from the company's work processes, policies, procedures, forms and other documents which are linked with the ERP implementation and also different literatures on the area.

3.4. Data collection Procedures

Data collection refers to the procedure through which a student researcher collects information to be used for a study. A survey was a major method of collecting data in which people are asked to answer a number of questions (usually in the form of a questionnaire). This information can either be primary or secondary. In this research project, both primary and secondary data was considered. Only close ended questions were used to test different attributes in the questionnaire.

3.5. Measurement Instruments

A questionnaire was developed for this study to test the research model and its related hypotheses. It included two parts. The first part encompasses the basic information of the respondent, such as age, gender, qualification, job category, and experiences. The second part comprised the measurement items, which were grouped by the model constructs. The questionnaire included 47 items to measure the model constructs. The measurement items were selected based on conducting an extensive review of the ERP literature to determine the most valid and relevant items. Minor adaptations were made on these items to fit the context of this research. Table 3.2 lists the sources of the items that were adapted from the literature or developed based on it. A five point Likert scale was used to collect participant responses with the following values: 1 = strongly disagree; 2= Disagree; 3= Neutral; 4= Agree; 5= strongly agree.

Table 3 2: The references of the measurement items

Variables	Reference	Remark
Top Management Support (TMS)	Bradford and Florin (2003), Rajan and Baral (2015), Xu, Ou, and Fan (2017), Ahmed Abed El-Raziq El-Kurd, (2016)	Adapted
Business Process Reengineering (BPR)	Bradford and Florin (2003), Ram et al (2013), Ahmed Abed El-Raziq El-Kurd, (2016)	Adapted
Use Of Consultant (UC)	Schniedrjan and yadv (2013), Zhu et al (2010), Ahmed Abed El-Raziq El-Kurd, (2016)	Adapted
Communication	Ahmed Abed El-Raziq El-Kurd, (2016)	Adapted
Team Competency (C)	Ahmed Abed El-Raziq El-Kurd, (2016)	Adapted
Change Management	Miguel Maldonado (2009)	Adapted
Project Management	Somers and Nelson (2003), Zhang et al, (2003), Zhu et al (2010)	Adapted
ERP implementation	Ahmed Abed El-Raziq El-Kurd, (2016)	Developed Based on it

3.6.Data Analysis and Presentation Techniques

The analysis part starts from simple description statistics and proceed to inferential statistical techniques like; correlation test and multiple regressions and IBM SPSS statistics (statistical Package for social scientists) software version 20 is used to process the data. Once the data was collected, verification was conducted and complete questionnaires were identified. Then the data is coded in to SPSS according to the variables selected and the questions asked. In general, the data were presented and analyzed in a way that can produce important information which answers the basic research questions and ensures the objective of the study to be achieved.

3.6.1. Descriptive statistical Analysis

The final report of the relevant demographic variables was produced through central tendency measurements (frequency and frequency distribution, valid and cumulative percentage and comparison of mean). The data then presented in form of figures, tables, graphs and charts.

Pie and bar charts and graphs were also the methods used to present the result with the help of SPSS.

3.6.2. Inferential statistical Analysis

In inferential statistical analysis, correlation and multiple linear regression methods were utilized using SPSS software. The use of these statistical tools and methods of presentation are described below.

A. Model Specification

Multiple linear regression models are reasonably the most important and extensively used multivariate statistical techniques in most relationship studies that involve ratio/interval variables. This model uses when there will be two or more independent variables to predict the value of one dependent variable. The model is chosen to be used in this study owing to its suitability to analyze the causal relationship between dependent and independent variables. The model can be specified as:

Model (1) $y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7$ (second order linear model)

The multiple linear regression models have two orders. However, because of its simplicity and suitability with the empirical data that will be collected, the study adopted to use the second order model.

Where:

y = the dependent variable

β_0 = the constant term/intercept

x_1, x_2, \dots, x_7 = the independent variables

$\beta_1, \beta_2, \dots, \beta_7$ = the slope coefficient of continuous variable

e = Random error/ residual term

B. Correlation (r)

Correlation (r) is used to describe the strength and direction of relationship between two variables. Since all variables are measured as an interval level, Pearson product moment

correlation was used. Correlation “r” output always lies between -1.0 and +1.0 and if “r” is positive, there exists a positive relationship between the variables. If it's negative, the relationship between the variables is negative. While computing a correlation, the significance level shall be set at 99 % and 95% with alpha value of 0.01 and 0.05 or a chance of occurrence of odd correlation is 5 out of 100 observations.

C. Multiple Regression Analysis

Multiple Regression Analysis is a major statistical tool for predicting the unknown value of a variable from the known value of variables. And it is about finding a relationship between variables and forming a model. The Model for this study was developed using seven independent factors or predictors which have influences on the implementation of the ERP project.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \varepsilon$$

Where Y is the dependent variable, β_0 is the constant term/intercept, x_1, x_2, \dots, x_7 are the independent variables, $\beta_1, \beta_2, \dots, \beta_7$ are the slope coefficient of continuous variable and Random error/ residual term.

Table 3 3: Model Specification of Variables

S.No	Predictor Variable (X)	Beta Coefficient (β)	Predictor X-Value
1	Top Management Support	β_1	X1
2	Business Process Reengineering	β_2	X2
3	Consultant	β_3	X3
4	Project management	β_4	X4
5	Team Competency	β_5	X5
6	Change Management	β_6	X6
7	Communication	β_7	X7
8	ERP Implementation	Constant	Y

3.7.Validity and Reliability

3.7.1. Validity

Although, most of the measurement items used in the questioner was validated in prior studies, a further evaluation was conducted in this study for the validity in terms of content

validity and construct validity. All possible efforts were exerted to make the data collection instruments easily understandable by the respondents so that the intended information can be collected thereby increasing trustworthiness of the ultimate findings. After the questionnaire was constructed, pre-testing was done with individuals who have knowledge of the area by allowing them to read and comment on it. Constructive comments were collected from the individuals and the questionnaire was adjusted accordingly. Then, validation of the instrument was given by academic advisor prior to the data collection

3.7.2. Reliability

Reliability is an indicator of a measure's internal consistency. Consistency is the key to understanding reliability (Zikmund, 2013). A measure is reliable when different attempts at measuring something converge on the same result. Among the models of reliability, Alpha (Cronbach) was used in this study to estimate the consistency /uniformity of the measurement of collected data.

Generally speaking, scales with a coefficient (α) between 0.80 and 0.95 are considered to have very good reliability. Scales with a coefficient (α) between 0.70 and 0.80 are considered to have good reliability, and when the coefficient (α) is below 0.7, the scale has poor reliability. A coefficient alpha of 0.7 percent and above implies that the data is reliable and can be used for analysis. So, based on this theory, Alpha (Cronbach) was calculated for the dependent variable of ERPI and the result is 0.956. This result was within the acceptable range of reliability coefficient. The scale consistency of the independent variables are described in Table 3.3

Table 3 4: Reliability Statistics/Cronbach's Alpha

No	Independent Variable	NO of Items	Alpha Value	
1	TMS	7	.878	Very good
2	BPR	3	.712	Good
3	UC	3	.777	Good
4	PM	4	.801	Very good
5	TC	7	.859	Very good
6	CM	10	.874	Very good
7	C	6	.877	Very good
8	ERPI	7	.956	Very good
	Total Cronbach's alpha	47	.959	Very good

Source: Respondents Survey Test Result, 2019.

3.8.Ethical Considerations

In this research study, the source of data for the study was questionnaire from employees of Ethiopian postal service enterprise. Issues relating to the ethical conduct of research such as informed consent, confidentiality and privacy was upheld. The respondents were assured that the information provided by them is confidential and used exclusively for academic purpose. In addition, respondents were informed not to include any identity detail and personal reference in the questionnaire. This minimized the baseness of the response collected from the respondents.

CHAPTER FOUR: Results and Findings

This chapter discusses the interpretation and presentation of the findings obtained from the analysis of data on the case company. Descriptive and inferential statistics were used to analyze the data. The target sample size was, in this case, which was a population, made up of 86 respondents and from which a total of 78 of them filled and returned the given questionnaires. This response rate represented 90.69 % of the total target sample size. This is shown in figure 4.1 below. This response rate was representative and satisfactory enough to draw conclusions for the study. Mugenda and Mugenda (1999), explain that a 50% response rate is adequate for reporting and analyzing the results; a response rate of 60% is said to be good while a response rate of 70% and above is said to be excellent which is a case for this research.

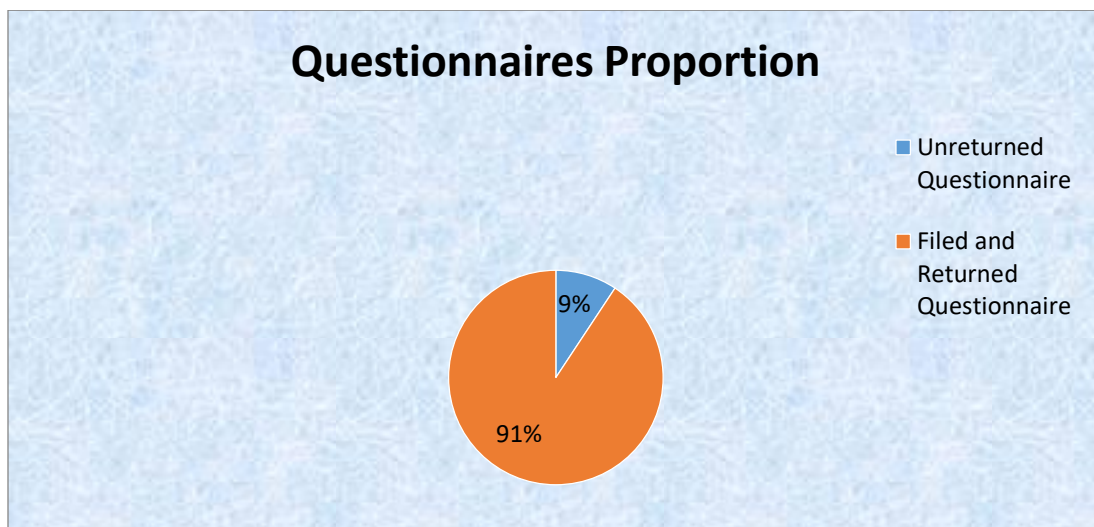


Fig 4. 1: Response Rate

Source: SPSS output of the survey, 2019

4.1. Demographics Information

4.1.1. Gender of the Respondents

From the finding, the studies revealed, majority of the respondents were males (69.2 %) whereas 30.8 % of the respondent indicated that they were female. This is an indication that the study involves more males. However, since both genders are represented in the sample, the study will not suffer from gender biases.

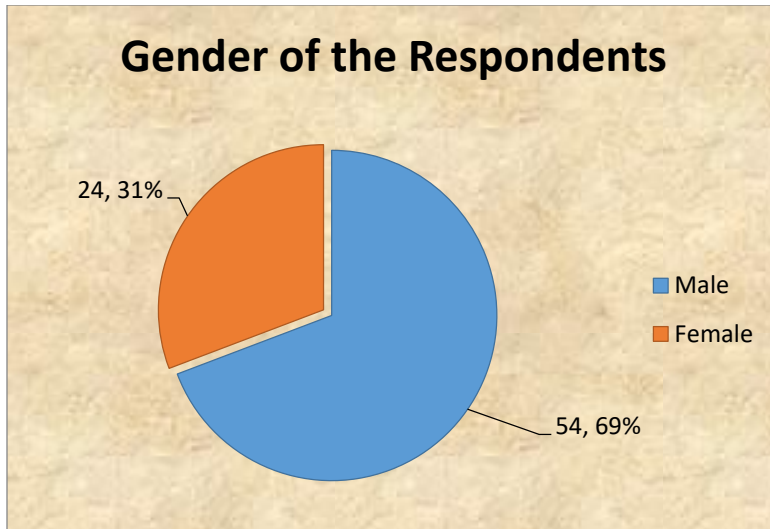


Fig 4. 2: Gender of the Respondents
 Source: SPSS output of the survey, 2019

4.1.2. Age of the Respondents

The response shows that 60% of the respondents were aged between 20 to 30 years, 16% were aged between 31 to 35 years, 4% of the respondent indicated that their age was above 41 years, and those respondents who indicated their age between 36 to 40 were 20%. This implies that respondents of the different age categories were engaged in this study and especially the majority of age group was between 20 to 30, which indicates young respondents who actually participate in ERP implementation were targeted for the study.

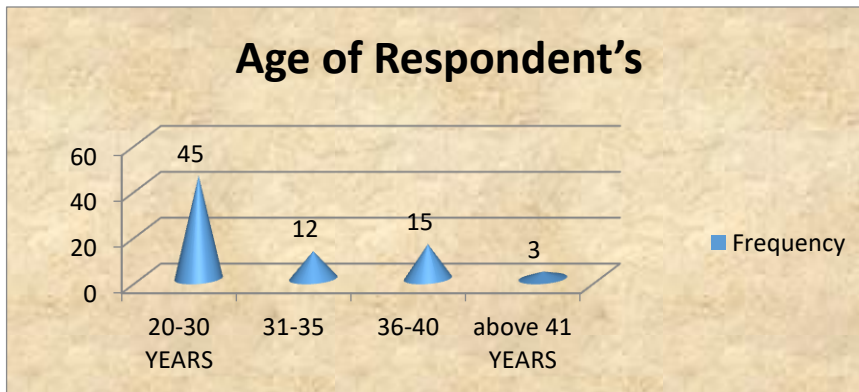


Fig 4. 3: Age of the Respondents
 Source: SPSS output of the survey, 2019

4.1.3. Education Level of the Respondents

As shown by Fig 4.4, from the research findings, majority of the respondents (65.4%) hold bachelor's degree, diploma level with 11.5%, 3.8% of the respondents indicated their highest level of education as other, whereas 19.2% of the respondents indicated their level of education as masters and above. This indicates that the respondents were educated well enough to understand the questions and thus would give credible results.

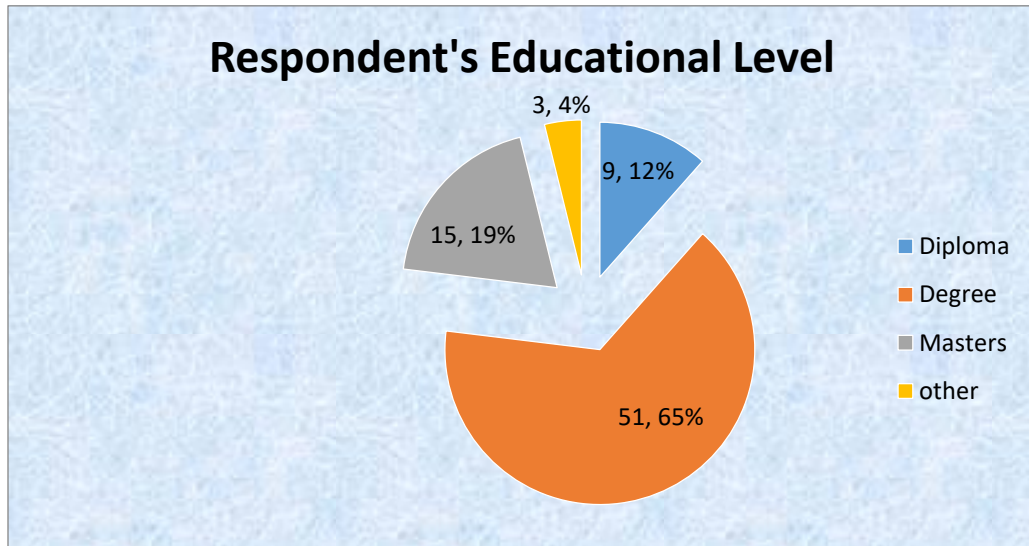


Fig 4. 4: Educational Level of the Respondents

Source: SPSS output of the survey, 2019

4.1.4. Employee's Job Experience

As shown by Fig 4.5, 41.36 % have served the organization for 6 to 10 years, 32 % of the respondents indicated that they have served the company for less than five years, 20 % indicated to have served in the organization for eleven to fifteen years, 8 % indicated to have served in the organization for sixteen to twenty years, whereas 4 % of the respondents indicated to have served for greater than twenty-one years. This implies that the majority of the respondents in Ethiopian Postal Service Enterprise, had worked for a considerable period of time and therefore they were in a position to give credible information relating to this study.

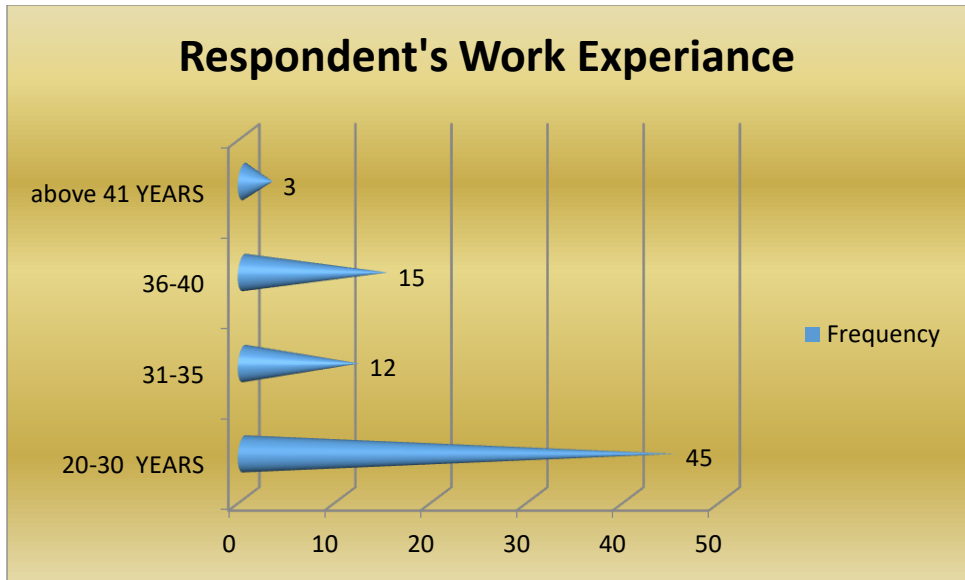


Fig 4. 5: Work Experience of the Respondents

Source: SPSS output of the survey, 2019

4.1.5. Respondent’s Department

From the study findings shown in Fig 4.6, 4.1, 30.8% of the respondents were from other departments (project team), 21.8% of the respondents were from Sourcing and facilities departments, also 21.8 % of the respondents were from information technology department, 14.1% were from finance and 11.5% of the respondents were from Human resource department. These findings depict that all concerned departments have participated in this research, and this shows the research targeted the user department where first hand and credible information about the project current status is obtained.

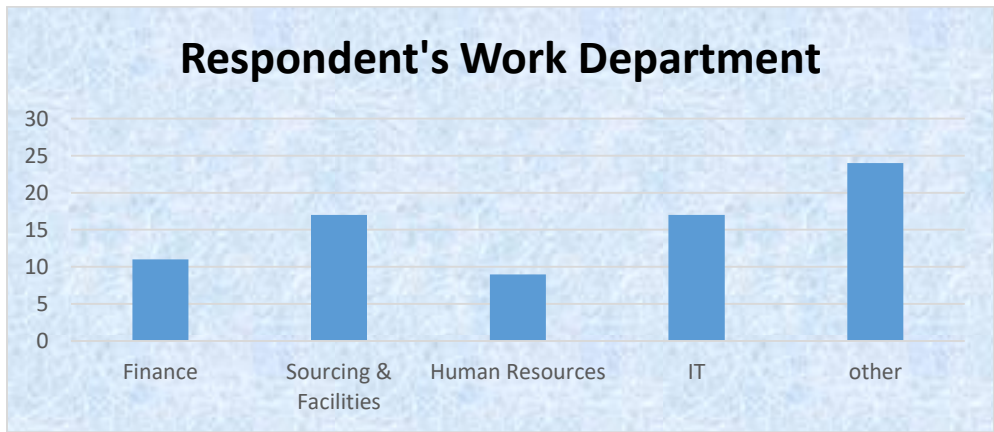


Fig 4. 6: Department of the Respondents

Source: SPSS output of the survey, 2019

4.1.6. Respondent's Position

As it can be seen from the Fig 4.7, 38.5 % of the respondents are experts (staff), 19.2% of the respondents were officers, 11.5 % of the respondents were (chef officers, Supervisors and domain experts) and 7.7% of the respondents were supervisors since these are the peoples who actually involved in ERP project implementation, they are expected to give the reality in the current status of ERP project. So, we can conclude that the responses were worthwhile since all the relevant respondents are involved in this study.

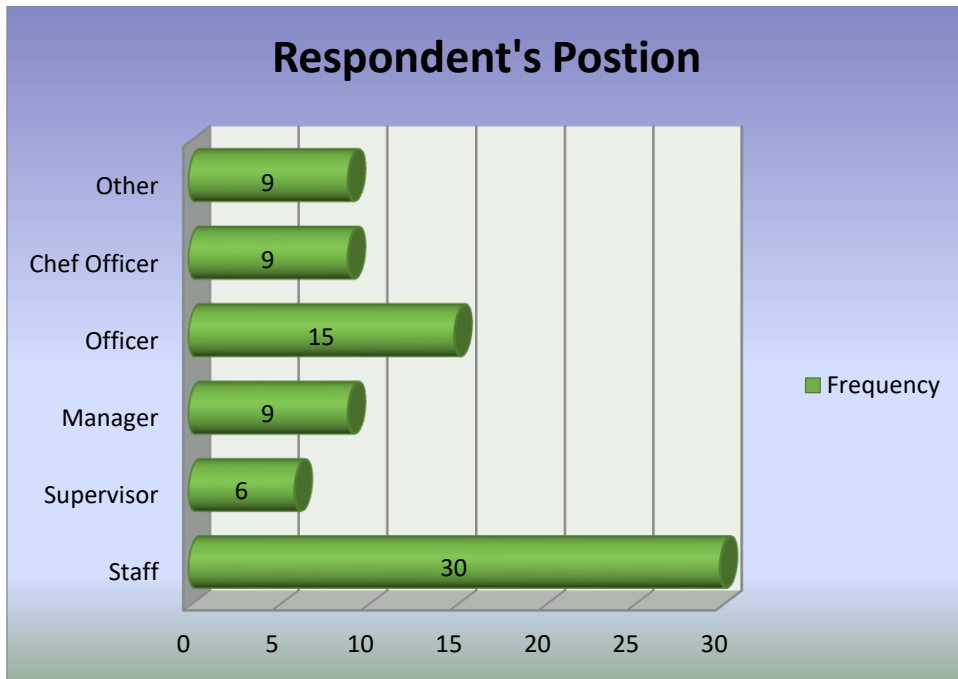


Fig 4. 7: Position of the Respondents

Source: SPSS output of the survey, 2019

4.2. Descriptive Analysis

This section tries to assess the relationship between each of the independent variables (Top Management Support, Business Process Reengineering, Use of Consultant, Project management, Team Competency, Change Management, and communication) to the dependent variable of ERP Implementation. To do so, the section will look at the independent variables one by one and finally all in one. Picking each independent variable at once, it first assessed the status of the project in relation to independent variables, and then it has tried to assess the effect of the variable ERP Implementation.

4.2.1. Top Management Support

For the aim of this research, the top management support refers to the provision of necessary financial and other resources, establishing policies and procedures, delegating implementation authority, taking risk and responsibilities during implementation. Top management support is one of the CSFs that expected to be a major factor to examine the implementation of ERP. Seven statements were presented for respondents to rate them on a Likert scale. The following table presents the responses in each statement and the average reaction of respondents in all of the statements. The average result is found by computing the responses in each statement.

Table 4. 1 Responses Related to Top Management Support

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
The organization top management has provided the necessary financial and other resources to design and implement the ERP system	N	11	6	29	28	4	3.10	1.100	78
	%	14.1	7.7	37.2	35.9	5.1			
The organization top management establishes policies and procedures to monitor the implementation of the ERP system	N	9	18	24	22	5	2.95	1.115	78
	%	11.5	23.1	30.8	28.2	6.4			
The organization Top management has delegated implementation authority for project managers.	N	8	14	23	33		3.04	1.012	78
	%	10.3	17.9	29.5	42.3				
The organization Top management has taken a self-motivated role in leading the ERP implementation.	N	10	16	31	17	4	2.86	1.066	78
	%	12.8	20.5	39.7	21.8	5.1			
The organization Top management has taken all the necessary risks and responsibilities during ERP implementation.	N	5	17	32	16	8	3.06	1.049	78
	%	6.4	21.8	41.0	20.5	10.3			
The top management intervenes when needed, to resolve disputes between interest groups (consultant, project team and departments), willing to provide the necessary resources and follow the implementation.	N	9	21	11	32	5	3.04	1.189	78
	%	11.5	26.9	14.1	41.0	6.4			
The organization top management always supports and encourages the use of the ERP system for job-related work	N	8	21	27	18	4	2.86	1.053	78
	%	10.3	26.9	34.6	23.1	5.1			

* Source: SPSS output of the survey, 2019

As we can see from table 4.1, all of the respondents were neutral responses for the seven different questions in relation to top management support. The respondents were asked about the organization top management has provided the necessary financial and other resources to design and implement the ERP system 37.2% of the respondents with the mean average result of 3.10 were neither agree nor disagree, when asked the organization top management establishes policies and procedures to monitor the implementation of the ERP system 30.8% of the respondents with the mean average result of 2.95 were neither agreed nor disagree, when asked

the organization top management has delegated implementation authority for project managers. 42.3% of the respondents with the mean average result of 3.04 were agree, when asked the organization top management has taken a self-motivated role in leading the ERP implementation 39.7% of the respondents with the mean average result of 2.86 were neither agreed nor disagree, when asked the organization's top management has taken all the necessary risk and responsibilities during ERP implementation. 41.0% of the respondents with the mean average result of 3.06 were neither agree nor disagree, when asked the organization top management has delegated implementation authority for project managers 41.0% of the respondents with the mean average result of 3.04 were agree, when finally the respondent asked that the organization top management always supports and encourages the use of the ERP system for job-related work 34.6% of the respondents with the mean average result of 2.86 were neither agreed nor disagree. Even though the top management support is important in ERP implementation, the average responses of the respondent shows neutral level of agreement, this implies that the majority of the respondent indifference on top management support. This means that the top management has not played an instrumental role in the implementation process. Thus the organization should pay more attention to top management support in order to realize the benefits after the implementation of the ERP project.

4.2.2. Business Process Reengineering

The same way as it is done to top management support three statements that can measure business process engineering issues were posed to the respondents. The first question was about the organization in redesigning business processes before adopting the ERP system, the second question was about the changes in business processes to fit the ERP system and the third was about the ability and willingness to change procedures to fit any new services provided by the ERP system. Almost all statements provided to each respondent being responded as a neutral/moderate level of agreement, but it was expected that this variable as being a major factor in examining the implementation of ERP. The results of the respondents' responses were compiled and presented in the following table. The table presents the responses in each statement and the average reaction of respondents in all of the statements.

Table 4. 2: Responses Business Process Reengineering

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
The organization spent much time in redesigning business processes before adopting the ERP system	N	12	12	24	24	6	3.04	1.191	75
	%	15.4	15.4	30.8	30.8	7.7			
The organization performed the required changes in its business processes to fit the ERP system to these processes	N		27	27	21		2.92	.801	75
	%		36.0	36.0	28.0				
The organization has the ability and willingness to change its procedures to fit any new services provided by the ERP system	N	3	21	33	21		2.92	.850	75
	%	3.8	26.9	42.3	26.9				

* Source: SPSS output of the survey, 2019

As we can see from table 4.2, majority of the respondents selected neutral as their responses for the three different questions in relation to business process reengineering. The respondents were asked about the organization spent much time in redesigning business processes before adopting the ERP system 30.8% of the respondents with the mean average result of 3.04 were neither agree nor disagree, when asked if the organization performed the required changes in its business processes to fit the ERP system to these processes 36.0% of the respondents with the mean average result of 2.92 were neither agree nor disagree, when finally the respondent asked that the organization has the ability and willingness to change its procedures to fit any new services provided by the ERP system 42.3% of the respondents with the mean average result of 2.92 were neither agreed nor disagree. Even though the execution of BPR in terms of business process modification and organizational structure change was important in ERP implementation, the average responses of the respondents' neutral level of agreement, this implies that majority of the respondents' indifference with business process reengineering. This means that the organization did not made appropriate change in the existing business processes before adopting the system. Thus the organization should pay more attention to business process reengineering in order to realize the benefits after the implementation of the ERP project.

4.2.3. Use of Consultant

Three questions were presented to the respondents to assess their level of agreement towards the consultant involvement in the project. The first question was about obtaining advice and support from consultants to effectively implement the ERP, the second question was about the selection and experience of the consultant and the third question was about the support obtained from the consultants. The following table presents the summarized result of the questions.

Table 4. 3: Responses Related to Consultant

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
The organization obtained advice and support from consultants to effectively implement the ERP system	N		6	18	42	12	3.77	.805	78
	%		7.7	23.1	53.8	15.4			
The organization selected the consultants carefully based on their experience in the technical aspects and business processes conducted in the organization environment	N		6	15	48	9	3.77	.755	78
	%		7.7	19.2	61.5	11.5			
Without the help of the consultants, operating the ERP system in the organization could be troublesome and might be a success inhibitor	N	3	9	9	42	15	3.73	1.028	78
	%	3.8	11.5	11.5	53.8	19.2			

* Source: SPSS output of the survey, 2019

As we can see from table 4.3, all of the respondents were satisfied with questions related to the use of a consultant. The respondents were asked about the organization obtained advice and support from consultants to effectively implement the ERP system, 53.8% Agreed, when asked if the organization selected the consultants carefully based on their experience in the technical aspects and business processes conducted in the organization environment 61.5% Agreed, when finally the respondent were asked without the help of the consultants, operating the ERP project in the organization could be troublesome and might be a success inhibitor 53.8% Agreed. From the response, it can be seen that the respondents believe that use of a consultant (consultant involvement) as the crucial factor while implementing ERP.

4.2.4. Project Management

Effective project management is one of the factors which is very critical in successfully implementing an ERP project. To assess the level of agreement towards the project management, four statements were posed for respondents to rate them on a Likert scale. Table 4.5 below outlines the responses in each statement and the average reaction of respondents in all of the statements. The average result is found by computing the responses in each statement.

Table 4. 4: Responses Related to project management

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
A clear scope and plan for implementing the ERP project were established by the organization	N	10	36	15	17		2.50	.977	78
	%	12.8	46.2	19.2	21.8				
The implementation of the ERP project was managed by an effective leader selected from the organization	N	8	33	23	9	5	2.62	1.035	78
	%	10.3	42.3	29.5	11.5	6.4			
A realistic time frame was set for the different stages of the implementation process of the ERP system	N	11	32	23	11	1	2.47	.950	78
	%	14.1	41.0	29.5	14.1	1.3			
The organization is having periodic meetings for evaluating the progress of the ERP implementation	N	22	28	12	16		2.28	1.092	78
	%	28.2	35.9	15.4	20.5				

* Source: SPSS output of the survey, 2019

As it can be seen from the above table, 46.2 % of the respondents with the mean average result of 2.5 disagree with a clear scope and plan for implementing the ERP project were established by the organization which is a clear indication for the organization to have a clear scope and well-prepared plan for the project in advance. 42.3 % of the respondents with the mean average result of 2.62 disagree with the implementation of the ERP project was managed by an effective leader selected from the organization, which is a clear indication for the organization that the project was managed by ineffective project manager, in order to successfully implement the project an effective project manager or leader has to select. 41.0 % of the respondents with the mean average result of 2.47 disagree with a realistic time frame was set

for the different stages of the implementation process of the ERP project, which is a clear indication for the organization to set a realistic time frame for the different stages of the implementation process in advance. 35.9 % of the respondents with the mean average result of 2.28 disagree with statement that says the organization is having periodic meetings for evaluating the progress of the ERP implementation, which is a clear indication for the organization that to successfully implement the project the organization must have a regular periodic meeting with the stakeholders to evaluate the progress of the project. Even though the project management is important in ERP implementation, the average responses of the respondent shows low level of agreement, this implies that the majority of the respondents disagree on project management process. This means that the organization shouldn't pay more attention to the project management process in the implementation process. Thus the organization should pay more attention to the project management process in order to finish the project on time, within budget and with the expected functionalities.

4.2.5. Project Team competency

Seven questions were presented to the respondents to assess project team competency. The following table presents the summarized result of the questions related to project team competency.

Table 4. 5: Responses Related to project team competency

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
The ERP project team has a specific goal which is achievable over the defined timeline	N	5	40	11	21	1	2.65	.991	78
	%	6.4	51.3	14.1	26.9	1.3			
The ERP project team has a project manager who is capable of managing a project on time and on budget.	N	4	34	22	13	5	2.76	1.009	78
	%	5.1	43.6	28.2	16.7	6.4			
The ERP project has been the top and only priority for the team.	N	15	29	15	16	3	2.53	1.136	78
	%	19.2	37.2	19.2	20.5	3.8			
The ERP team members had knowledge of the key issues relating to ERP implementation.	N	8	40	19	11		2.42	.861	78
	%	10.3	51.3	24.4	14.1				
The ERP team members have carefully been selected based on their skill or qualification, knowledge and ability to accept change.	N	5	30	24	16	3	2.77	.979	78
	%	6.4	38.5	30.8	20.5	3.8			
The project team had experienced in previous ERP Implementations.	N	18	39	14	6	1	2.14	.908	78
	%	23.1	50.0	17.9	7.7	1.3			
The team members had business and technical knowledge	N	2	32	22	20	2	2.85	.927	78
	%	2.6	41.0	28.2	25.6	2.6			

*Source: SPSS output of the survey, 2019

From the above table, we can see that the majority of the respondents were neutral with the questions related to project team competency. The respondents were asked if the ERP project team has a specific goal which is achievable over the defined timeline, and 51.3% of them disagreed to the statement. The respondents were asked the extent of their agreement on the

statement that says the ERP project team has a project manager who is capable of managing a project on time and on budget 43.6% of the respondents with the mean average result of 2.76 disagreed. The respondent also asked if the ERP project has been the top and only priority for the team 37.2 % of the respondents with the mean average result of 2.53 disagreed, the respondent further asked that if the team members had a knowledge of the key issues relating to ERP implementation 51.3% of the respondents with the mean average result of 2.42 disagreed. When asked if the team members have carefully been selected based on their knowledge and ability to accept change 38.5% of the respondents with the mean average result of 2.77 disagreed. When asked if the project team had experienced in previous ERP implementations 50.0% of the respondents with the mean average result of 2.14 disagreed, when finally asked if the team members had a business and technical knowledge 41.0% of the respondents with the mean average result of 2.85 disagreed. The overall responses of the respondent shows the project team was not capable to manage the project implementation process. Thus the organization should incorporate more skilled, qualified and experienced people who had a good knowledge in business and technical aspects in the project team.

4.2.6. Change Management

Ten statements were presented to respondents to look at the change management related issues. The issues were related to the existence of appropriate organizational culture, communication systems, standards, and regulations. The following table presents the summarized result of the responses.

Table 4. 6: Responses Related to Change Management

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
The organization tries to establish an appropriate organizational culture for the ERP project	N	27	18	33			3.12	.869	75
	%	34.6	23.1	42.3					
The organization made the members recognize the necessity of the ERP	N		9	39	24	6	3.40	.753	75
	%	11.5	50.0	30.8	7.7				
The organization has an established communication system related to the ERP.	N	6	21	27	18	6	3.00	1.065	75
	%	7.7	26.9	34.6	23.1	7.7			
The organization carried out sufficient education and training related to ERP for the members	N		24	30	15	9	3.08	.983	75
	%		30.8	38.5	19.2	11.5			
The organization has established standards and regulations for the ERP	N	3	33	30	12		2.68	.791	75
	%	3.8	42.3	38.5	15.4				
The organization held a working-level meeting for change management	N		3	33	39		3.48	.578	75
	%		4.0	44.0	52.0				
Management approach to change was successful in managing the transition to ERP	N	6	9	30	33		3.24	.819	75
	%	7.7	11.5	38.5	42.3				
The organization/management recognized employee for contribution to change Initiative	N	6	9	48	15		3.00	.697	75
	%	7.7	11.5	61.5	19.2				
Management asked the employee what should change more than they told employees what will	N	9	21	30	18		2.80	.900	75
	%	11.5	26.9	38.5	23.1				
The organization/management allocate adequate resource for change	N	3	18	18	39		3.28	.831	75
	%	3.8	23.1	23.1	50.0				

* Source: SPSS output of the survey, 2019

As it is shown in table 4.6, the average mean score of responses 3.12 and about 42.3% of the respondent response for this specific statement either agree or disagree (neutral) to the organization tries to establish an appropriate organizational culture for the ERP project which directly affects the successful implementation of the project. About 61.5% of the respondents disagreed and strongly disagreed with an average mean of 3.4 does not believe and their level of agreement were neutral to the organization has not made the members being recognizing the

necessity of the ERP system, 34.6% of the respondents disagreed with an average mean of 3.00 are either agree or disagree (neutral) to the organization has an established communication system related to the ERP, 38.5 % of the respondents with an average (mean of 3.08) are either agree or disagree (neutral) that the organization carried out sufficient education and training related for ERP members, 42.3 % of the respondents with an average (mean of 2.68) does not believe (disagree) that the organization has established standards and regulations for the ERP project, 52.0% of the respondents with an average (mean of 3.48) believe (strongly agree) that the organization held a working-level meeting for change management, 42.3% of the respondents with an average (mean of 3.24) believe (strongly agree) that the management approach to change was successful in managing the transition to ERP, 61.5 % of the respondents with an average (mean of 3.00) believe (agree) that the organization/management recognized employee for contribution to change initiative, 38.5 % of the respondents with an average (mean of 2.8) agree that the organization or the management asked employee what should change more than they told employees what will, and 50% of the respondents an average (mean of 3.28) strongly agree that the organization or management allocate adequate resource for change. Although the organization allocates adequate resource, participating employees and recognized an employee for contribution to change, the organization have to establish an appropriate organizational culture, must create awareness of the change and establish communication system for the success of ERP implementation.

4.2.7. Communication

Establishing an effective communication system is one of the factors which is very critical in successfully implementing an ERP project and to assess the level of agreement towards the communication, six statements were presented for respondents to rate them on a Likert scale. Table 4.8 below outlines the responses in each statement and the average reaction of respondents in all of the statements. The average result is found by computing the responses in each statement.

Table 4. 7: Responses Related to Communication

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
There were regular communications among the different departments	N	3	30	18	24		2.79	.918	72
	%	3.8	38.5	23.1	30.8				
There were regular cross-functional meetings to discuss the ERP.	N	6	18	18	36		3.00	1.007	72
	%	7.7	23.1	23.1	46.2				
There were regular internal group meeting to share a new method of using ERP.	N	9	18	24	24		2.79	1.006	72
	%	11.5	23.1	30.8	30.8				
ERP improvement suggestions had been regularly collected from multiple employees levels	N	3	30	30	9	6	2.83	.993	72
	%	3.8	38.5	38.5	11.5	7.7			
Information technology (IT) staff fully supports all functional users during ERP Implementation.	N		27	9	33	9	3.29	1.106	72
	%		34.6	11.5	42.3	11.5			
Communication team was set to solve the departmental conflicts that arise during the implementation.	N	6	15	21	30	6	3.21	1.087	72
	%	7.7	19.2	26.9	38.5	7.7			

* Source: SPSS output of the survey, 2019

As Table 4.7 shows most of the respondent’s levels of agreement were neutral respect to the specific questions provided to the communication success factor. 42.3% of the respondents with an average mean of 2.79 asked if there were regular communications among the different departments, 30.8% of the respondents with average mean of 2.79 asked if there were regular cross-functional meeting to discuss about the ERP, 34.6% of the respondents with an average mean of 2.79 when asked if there were regular internal group meeting to share new method of using ERP ,42.3% of the respondents with average mean of 2.79 asked if ERP improvement suggestions had been regularly collected from multiple employees levels , 34.6% of the respondents with average mean of 3.29 asked if IT staff fully support all functional users during ERP and 26.9 % of the respondents with average mean of 2.79 asked if communication team was set to solve the departmental conflicts that arise during the implementation and level of agreement respectively for all statements as disagree and strongly disagree level. In general when

we investigating that for all statements respondent's mean score were as a neutral level of agreement based on this result communication dimensions/ factors of ERP implementation in average for all six statements 25.65% has got a neutral level of agreement and this implies that communication barriers to successful ERP implementation respondents are biased or indifference to answer those statements as agree or disagree level of agreement. This means that there were no regular and proper communications among different departments in the implementation process. Thus the organization should pay more attention to communication in order to realize the benefits after the implementation of the ERP project.

4.2.8. Summary of survey results for the dependent variable.

Seven statements were presented to respondents to look at different issues that can measure the dependent variable ERP implementation success. The following table summarizes the views of respondents with regard to ERP implementation success.

Table 4. 8: Responses related to ERP implementation success.

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
Overall, ERP implementation was successful.	N	21	27		15	15	2.69	1.523	78
	%	26.9	34.6		19.2	19.2			
ERP implementation has realized the expected benefits to the business.	N	9	21	6	18	24	3.35	1.449	78
	%	11.5	26.9	7.7	23.1	30.8			
The planned objectives of ERP were successfully achieved	N	12	27	9	15	15	2.92	1.394	78
	%	15.4	34.6	11.5	19.2	19.2			
ERP was completed at its expected completion time	N	21	27	18	12		2.27	1.028	78
	%	26.9	34.6	23.1	15.4				
ERP was completed within planned budget	N	18	24	15	21		2.50	1.125	78
	%	23.1	30.8	19.2	26.9				
All the quality standards expected by Ethiopian Postal service from the project were successfully delivered.	N	12	27	12	21	6	2.77	1.227	78
	%	15.4	34.6	15.4	26.9	7.7			
ERP was completed in a way that can contribute to its designed goal	N	12	24	9	21	12	2.96	1.353	78
	%	15.4	30.8	11.5	26.9	15.4			

* Source: SPSS output of the survey, 2019

As Table 4.8 shows the majority of the respondents were unsatisfied with questions related to ERP implementation evaluation. When the respondent asked that overall ERP implementation was successful 34.6% and 26.9% of the respondents with an average mean of 2.69 were in agreement level of disagree and strongly disagree respectively, when asked ERP

implementation has realized the expected benefits to the business 30.8% and 23.1% of the respondent with an average mean of 3.35 were in agreement level of strongly agree and agree respectively, when asked the planned objective of ERP were successfully achieved half of (50%) the respondent with an average mean of 2.92 were in agreement level of disagree and strongly disagree, when asked ERP was completed at its expected completion time 34.6% and 26.9% of the respondent with an average mean of 2.27 disagree and strongly disagree level of agreement, when asked ERP was completed within planned budget 30.8% and 23.1% of the respondent with an average mean of 2.5 were in agreement level of disagree and strongly disagree respectively, when asked all the quality standards expected by Ethiopian Postal service from the project were successfully delivered 34.6% of the respondent with an average mean of 2.77 were in agreement level of disagree, when finally asked ERP was completed in a way that can contribute to its designed goal 30.8% of the respondent with an average mean of 2.96 were in agreement level of disagree. From the response, it can be seen that the respondent disagreed that the overall ERP implementation were successful and effectively implemented. From all response we can conclude that majority of the respondent believe the ERP project not successful. Thus the organization should pay more attention to the project in order to realize the benefits after the implementation of the project.

4.2.9. Summary of frequency results of each variable and Mean Score for dependent and independent variables

As it is known, the mean value or score of a certain set of data is equal to the sum of all the values in the data set divided by the total number of values. In this context, the mean of the response and score of all statements for each independent variables and dependent variable is calculated and the meaning of the score is interpreted accordingly. In this research Top Management Support, Business Process Reengineering, Use of Consultant, Project management, Team Competency, Change Management, and Communication were the independent variables and ERP implementation as dependent variable. Statements under this variables are scaled 1 to 5 with a meaning of 1= strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree. To match the result of the mean score of each variable with the respondent level agreement in Likert scale and to summarize the narrative outcomes; the researcher used criterion-referenced definitions for rating scales to describe the collected data. Unlike norm-referenced scales, criterion-referenced scale measure response scores against a fixed set of criteria.

Table 4. 9: Frequency of respondents for each level of agreement

		Strongly Disagree	Disagree;	Neutral	Agree	Strongly Agree	Mean	Std. Deviation	N
TMS	N	11	6	29	28	4	3.10	1.10	78
	%	14.1	7.7	37.2	35.9	5.1			
BPR	N	21	36	21			3.00	0.74	78
	%	26.9	46.2	26.9					
UC	N	6	15	48	9		3.77	0.75	78
	%	7.7	19.2	61.5	11.5				
PM	N	3	44	13	18		2.59	0.89	78
	%	3.8	56.4	16.7	23.1				
TC	N	45	22	10	1		2.58	0.76	
	%	57.7	28.2	12.8	1.3				78
CM	N	9	48	21			3.15	0.60	78
	%	11.5	61.5	26.9					
C	N	3	12	42	15	6	3.12	0.90	78
	%	3.8	15.4	53.8	19.2	7.7			
ERP	N	9	33	9	27		2.69	1.07	78
	%	11.5	42.3	11.5	34.6				

* Source: SPSS output of the survey, 2019

As the percentage of each level of agreement shows in the above table, except for the variable UC almost all the respondents are moderate or neutral with the statements given to them to rate it on the Likert scale.

Table 4. 10: Criterion – referenced scale definitions

Mean rating	Respondents level of	Description of respond
1.00 - 1.49	Strongly disagree = SD	Very low= VL
1.50 - 2.49	Disagree = D	Low = L
2.50 - 3.49	Neutral = N	Medium =M
3.50 - 4.49	Agree = A	High =H
4.50 - 5.00	Strongly agree = SA	Very high =VH

Source; (MacEachron, 1982)

Based on the Likret scale “3” means “neither agree nor disagree, while value “4” means “agree”, etc. Here in criterion-referenced scale, if value of 3 is recorded as any of the subsequent

measurement, it means that level is neither high nor low, or in other words, it is in “average or medium level”. If a value of (4) is obtained, it means s “high” level. Similarly, value one (1) and five (5) mean “very low” level and “very high” level respectively while value two (2) means “low” level.

Therefore, based on the above criterion-referenced scale definition table, the researcher discussed the findings of the descriptive statistics of each independent variables mean score and its impact on the dependent variable ERP implementation success by providing criterion-referenced definitions of each scale.

Table 4. 11: Mean score result summary according to Criterion–referenced scale

Variables	TMS	BPR	UC	PM	TC	CM	C	ERPI
Mean Score	3.10	3.00	3.77	2.59	2.58	3.15	3.12	2.69
Degree/level of agreement	N	N	A	N	N	N	N	N
Description	M	M	H	M	M	M	M	M

*Source: SPSS output of the survey, 2019

As it is shown in the Table 4.11, the average mean score of the respondents for TMS, BPR, UC, PM, TC, CM, C is 3.10, 3.00, 3.77, 2.59, 2.58,3.15, and 3.12 respectively towards “ERPI implementation success .”

Based on criterion- referred definitions of Table 4.10,the mean of TMS, BPR PM, TC, CM and C shown as medium, this implies that the response for those individual question to those independent variables were neutral level of agreement, this implies the respondents opinion on CSFs impact for the success of ERP implementation is moderate. Respondents opinion on consultant support shown as high; this implies that the response for individual questions to this independent variable was respond to an agreed level and those respondents have high scored relative to this independent variable.

The grand or cumulative mean score of the dependent variable ERP implementation is 2.69. This implies that all and nearly all have got a neutral level of agreement which indicates that the status of ERP implementation in mind of employees has moderate success.

4.3. Correlation analysis

Research often uses inferential statistics (correlation and regression) to determine if there is a relationship between an independent and an outcome variable as well as the strength of that relationship. So, inferential statistics are used to reach on conclusion about associations between the variables of the study and is designed to test hypotheses that states about relationship between predictor(s) and an outcome(s) variables.

The objective of this research is to explore whether the seven CSFs namely; top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication can significantly determine the successful implementation of the ERP project. To do so, the researcher undertook hypothesis testing using correlation and regression analysis to illustrate the conclusion in the study area.

Correlation is one of the inferential statistics methods for assessing the relationship between variables. To be more precise, it measures the extent of association between the ordering of two random variables (Leech, Barrett and Morgan, 2008). As a rule, we can categorize the type of correlation by considering as one variable increases what happens to the other variable. That is, we can say there is a positive correlation if the increase in the independent variable will result in a tendency to increase the other variable. We can say there is a negative correlation, if the increase in independent may result in the other variable to decrease; No correlation means the increase or decrease in independent variable does not affect the other variables.

In measuring correlation and to express the strength of the relationship, we make use of the linear product-moment correlation coefficient, also known as Pearson's correlation coefficient; this coefficient is generally used when variables are of quantitative nature, that is, ratio or interval scale variables. Pearson's correlation coefficient is denoted by r . Pearson moment correlation Chen (1998) (Li, Feng and Chen, 1999) provides the following guidelines on the strength of the relationship of variables.

Table 4. 12: Measures of Associations and Descriptive Adjectives

Measure of Association	Descriptive Adjective
> 0.00 to 0.20 ; < -0.00 to – 0.20	Very weak or very low
> 0.20 to 0.40; < -0.20 to – 0.40	Weak or low
> 0.40 to 0.60; < -0.40 to – 0.60	Moderate
> 0.60 to 0.80; < -0.60 to – 0.80	Strong or high
> 0.80 to 1.0; < -0.80 to – 1.0	Very high or very strong

Source: This table is from MacEachron, (1982) *Basic Statistics in the Human Services: An Applied Approach*, page 132.

4.3.1. Correlation analysis between independent and dependent variables

The following correlation tests are made to assertion whether or not a relationship exists between independent variables (top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication) and dependent variables ERP implementation. Then, the correlation output of each dependent variable with the independent variables is interpreted based on the following tables.

Table 4. 13: Correlation between independent variables and dependent variable

Correlations		ERPI
UC	Pearson Correlation	0.204
	Sig. (2-tailed)	0.073
CM	Pearson Correlation	.566**
	Sig. (2-tailed)	0
C	Pearson Correlation	.603**
	Sig. (2-tailed)	0
TMS	Pearson Correlation	.514**
	Sig. (2-tailed)	0
TC	Pearson Correlation	.709**
	Sig. (2-tailed)	0
PM	Pearson Correlation	.833**
	Sig. (2-tailed)	0
BPR	Pearson Correlation Weak or low	-.300**
	Sig. (2-tailed)	.008

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

Source: SPSS output of the survey, 2019

Based on the guideline (Table 4.12) of degree of correlation, Weak and positive correlation is found between use of consultant (consultant support) with ERP implementation success, with ($R = 0.204$), with calculated p – value (0.073) which is statistically insignificant value for use of consultant > 0.01 level of P value and similarly Weak or smaller/low and a negative correlation is found between BPR with ERP implementation success, with ($R = -0.300$), with calculated P – value ($.008$) which is statistically significant value for BPR > 0.01 level of P value. And also correlation between change management, top management support with ERP implementation success found, moderate and statistically significant positive correlation with ($R = 0.566, 0.514$), with calculated P – values 0.000 , and 0.000 respectively which is < 0.01 level of P value, Strong or high statistically significant positive correlation is found between communication and team competency with ERP implementation success with ($R = 0.603, 0.709$), with calculated P – values 0.000 , and 0.000 respectively which is < 0.01 level of P value lastly Very high or very strong positive correlation is found between project management with ERP implementation success, with ($R = 0.833$), with calculated P – values 0.00 which is statistically significant value for project management < 0.01 level of P value, Hence the value of correlation coefficients of consultant support, BPR with ERP implementation success fell in a weak or smaller degree of relationship. Meaning ERP implementation dimensions of the use of a consultant, and business process reengineering result in or contribute a less significant impact on ERP implementation success, given that the correlation between the two independent variables change management and top management support with dependent variable ERP implementation is moderate. This implies that, if different positive support is given by EPSE top management there will be a positive impact / outcome in the successful implementation of ERP project. Similarly if the organization establishes an effective change management strategy, there will be a positive impact/outcome to the successful implementation of the project. As the correlation result found on the communication and team competence with ERP implementation have got a correlation of strong or high this implies that these two variables have a great impact or effect on the success of ERP implementation. Finally, the degree of association project management with ERP implementation has a very high or very strong correlation this depicts that having effective project management process will result in the success of ERP implementation based on this descriptive data analysis.

4.3.2. Correlation matrix analysis between independent variables

Table 4. 14: Correlation Matrix within dependent variables

		BPR	UC	CM	C	TMS	TC	PM
BPR	Pearson Correlation	1						
	Sig. (2-tailed)							
UC	Pearson Correlation	.290*	1					
	Sig. (2-tailed)	.010						
CM	Pearson Correlation	.301**	.415**	1				
	Sig. (2-tailed)	.007	.000					
C	Pearson Correlation	.241*	.384**	.823**	1			
	Sig. (2-tailed)	.034	.001	.000				
TMS	Pearson Correlation	.232*	.456**	.422**	.447**	1		
	Sig. (2-tailed)	.041	.000	.000	.000			
TC	Pearson Correlation	.150	.276*	.659**	.623**	.510**	1	
	Sig. (2-tailed)	.190	.014	.000	.000	.000		
PM	Pearson Correlation	-.170	.303**	.562**	.544**	.486**	.638**	1
	Sig. (2-tailed)	.136	.007	.000	.000	.000	.000	

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

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

Source: SPSS output of survey questionnaire, 2019

In the above inter-correlation matrix table (Table 4.14), association among seven independent variables (top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication) was tested and found to be positive and they are significantly correlated, to each other at the given level of significance.

4.4. Multiple Linear Regression Analysis

Before running multiple linear regression analysis, the researcher has conducted basic assumption tests for the model. These are normality of the distribution, the linearity of the relationship between the independent and dependent variables and multicollinearity tests. Each test is explained below.

4.4.1. Assumptions of Multiple Regressions

Assumption 1 - Normality Distribution Test

Multiple regressions require the independent variables to be normally distributed. Skewness and kurtosis are statistical tools that enable the researcher to check if the data is normally distributed or not. According to Smith and Wells (2006), kurtosis is defined as “property of a distribution that describes the thickness of the tails. The thickness of the tail comes from the number of scores falling at the extremes relative to the Gaussian/normal distribution” Skewness is a measure of symmetry. A distribution or data set is symmetric if it looks the same to the left and right of the center point.

If the skewness and kurtosis test results of the data are within the acceptable range (-1.0 to +1.0), it can be concluded that the data is normally distributed. For this purpose and taste of normal distribution, the kurtosis and skewness results are shown in table 4.15

Table 4. 15: Normality of data distribution**Descriptive Statistics**

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
TMS	78	3.1026	1.10006	-.628	.272	-.303	.538
BPR	78	3.0000	.73855	.000	.272	-1.139	.538
UC	78	3.7692	.75461	-.704	.272	.552	.538
MC	78	3.1538	.60468	-.077	.272	-.312	.538
C	78	3.1154	.89705	.100	.272	.425	.538
ERPI	78	2.6923	1.07278	.066	.272	-1.420	.538
TC	78	2.5769	.76480	1.075	.272	.211	.538
PM	78	2.5897	.88912	.575	.272	-.963	.538
Valid N (listwise)	78						

Source: SPSS output of survey questionnaire, 2019

The acceptable range for normality for both statistics is between -1.0 and + 1.0. as shown in table 4.15, all variables for both skewness and kurtosis statistics are fall in the acceptable standard of normality (-1.0 -, +01.0) except the variable TC is not fallen in the region of skewness and variable ERPI and BPR is not fall in the region of kurtosis. Graphically this normality assumption distribution is shown below.

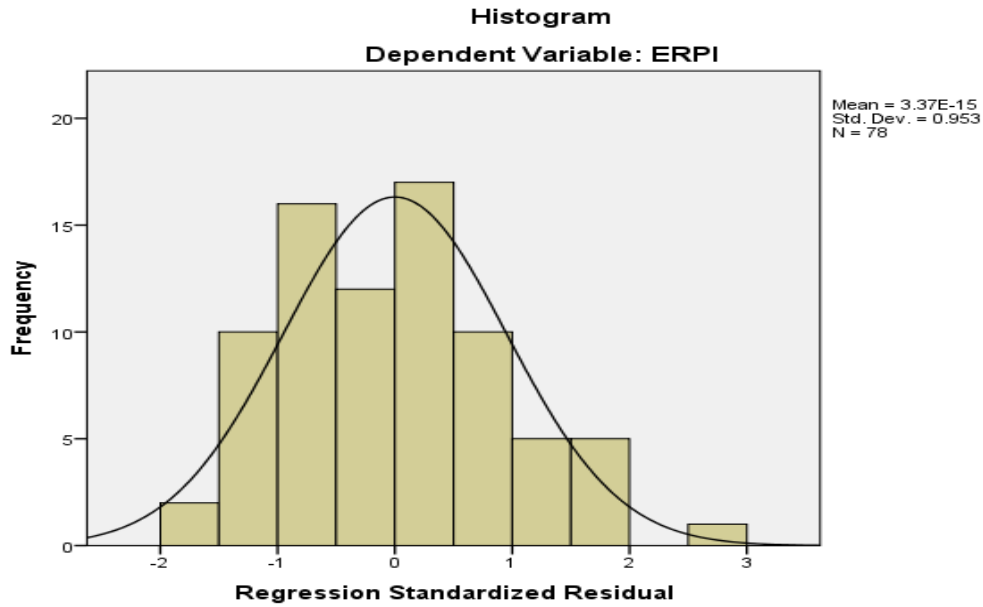


Fig 4. 8: Normality distribution taste figure

Source: SPSS output of survey questionnaire, 2019

Assumption 2 - Linearity of the Relationship Test

The second assumption for computing multiple regressions is the test of the linearity of the relationships between dependent and the independent variables. As depicted below, the visual inspections of the scatter plot shows there exists a linear relationship between the dependent variable (ERPI) and independents variables.

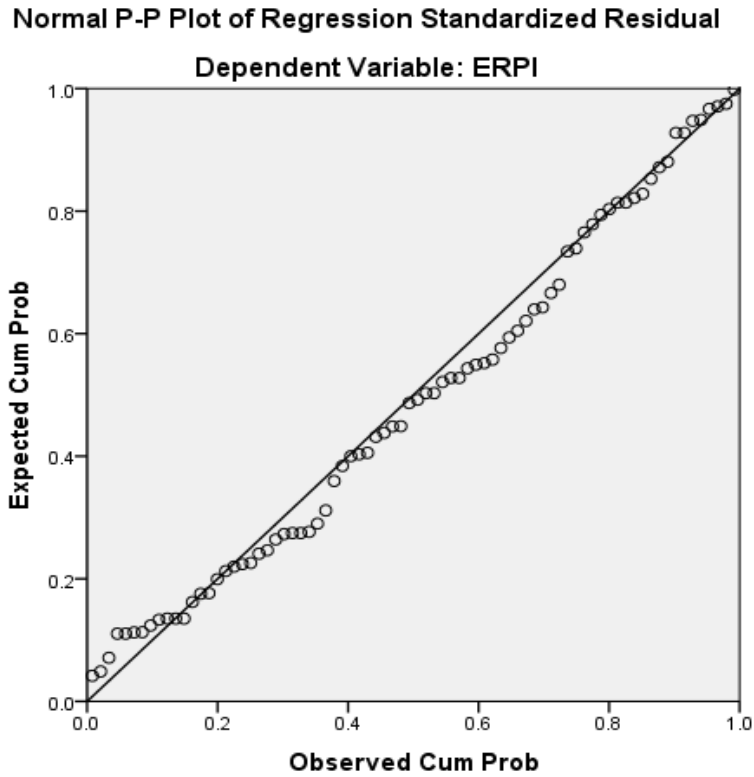


Fig 4. 9: linear relationship test figure.
 Source: SPSS output of survey questionnaire, 2019

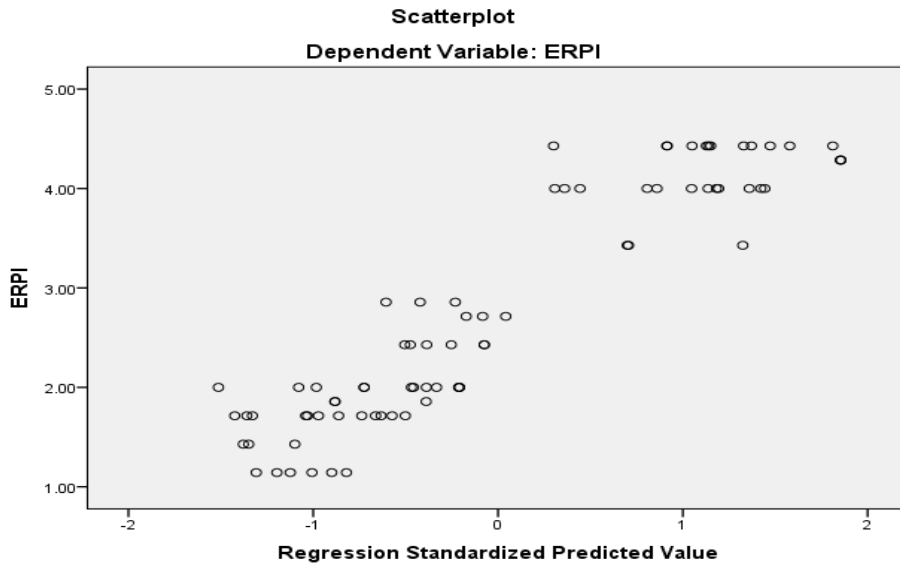


Fig 4. 10: Scatter plot for linearity test
 Source: SPSS output of survey questionnaire, 2019

Assumption 3 - Multicollinearity Test

Multicollinearity refers to the situation in which the independent/predictor variables are highly correlated. When independent variables are multicollinear, there is “overlap” or sharing of predictive power. This may lead to the paradoxical effect, whereby the regression model fits the data well, but none of the predictor variables has a significant impact in predicting the dependent variable. This is because when the predictor variables are highly correlated, they share essentially the same information. Thus, together, they may explain a great deal of the dependent variables, but may not individually contribute significantly to the model. Meaning, they can be considered as one variable than two separate variables. The existence of multicollinearity can be checked using “Tolerance” and “VIF” values for each predictor variable. Tolerance values less than 0.10 and VIF (variance inflation factor) greater than 10 indicates the existence of multicollinearity (Robert, 2006). As can be seen from the table below, multicollinearity is not an issue for this current data.

Table 4. 16: Multicollinearity Test Table

Coefficients^a

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
BPR	.643	1.556
UC	.695	1.439
CM	.256	3.906
C	.303	3.304
TMS	.574	1.743
TC	.421	2.378
PM	.392	2.551

Source: SPSS output of survey questionnaire, 2019

As it is stated above for the assumption to be met values of Variance Inflation Factor (VIF) scores must be below 10, and tolerance scores to be above 0.1; which is the case in as shown in table 4.16, the tolerance and VIF of top management support, business process reengineering, use of consultant, project management, team competency, change management

and communication are .574, .643, .695, .392, .421, .256 and .303 respectively. For this reason, this research model fits the requirement and colinearity is not a problem.

Summing up: the three assumptions of multiple regressions are met and the next step is processing the regression analysis to determine the values of the model summary (R and R²), the model fit (ANOVA) and the beta coefficients. With the aid of multiple linear regression analysis, model summary, ANOVA and Beta coefficient were determined and the regression model is developed. In view of that, the qualified effect of independent variables on ERP implementation is identified.

4.4.2. Model Summary

According to Ho (2006), a measure of strength of the computed prediction equation is R-square, sometimes called the coefficient of determination. In the regression model, R-square is the square of the correlation coefficient between the observed and predicated value of dependent variable. If R-square is 1(100%), there exists a perfect linear relationship between the predictors (x_i 's) and dependent variable (y). An R-square of 0 indicates no linear relationship.

Table 4. 17: Model Summery Table

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.929 ^a	.863	.849	.45253

a. Predictors: (Constant), PM, BPR, UC, TMS, C, TC, CM

b. Dependent Variable: ERPI

Source: SPSS output of survey questionnaire, 2019

R is the multiple correlation coefficients that show the relationship between the study variables. From the findings shown in Table 4.17, there is a positive relationship of .929 between ERP implementation and the seven independent variables.

R-Square is the proportion of variance in the dependent variable (ERP implementation) which can be predicted from the independent variables (top management support, business process reengineering, and use of consultant, project management, team competency, change

management and communication and ERP implementation). Analysis shows a value that indicates 86.3% of the variance in ERP implementation. This can be predicted from the variables top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication. Note that this is an overall measure of the strength of association, and does not reflect the extent to which any particular independent variable is associated with the dependent variable.

$R^2 = .863$ shows that the model accounts for 86.3% of the variation in the ERP implementation is explained by the linear combination of all the independent variables. And the remaining 13.7% of the variation is not explained by these factors in this research.

Adjusted R squared is the coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table 4.18 since adjusted R-square of all the seven variables is 0.849, we can say that 84.9% of the variability in the level of ERP implementation is accounted for by determinants or factors of ERP implementation. In other words, the value of adjusted R squared was 0.849 and this is an indication that there was a variation of 84.9% of the success in ERP implementation is due to the independent variables, at 95 percent confidence interval. This shows that 84.9 percent of changes in ERP implementation could be accounted for by the combination of all the independent variables.

4.4.3. ANOVA Model Fit

The regression model overall fit can be examined with the help of ANOVA (analysis of variance) which provides F value. As per the approval standard rule, the significance (P-value) has to be < 0.05 and table 4.19 below showed that F is 62.799. This means the F Statistics is significant at 0.000 levels which show the fitness of the model. This indicates that the model is fitted for this study. Therefore, it can be said that there is a relationship between ERP implementation and the predictors (the different seven independent factors).

Table 4. 18: Anova Model Fit

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	90.02	7	12.86	62.799	.000 ^b
Residual	14.335	70	0.205		
Total	104.355	77			

a. Dependent Variable: ERPI

b. Predictors: (Constant), PM, BPR, UC, TMS, C, TC, CM

Source: SPSS output of survey questionnaire, 2019

The F Value is the Mean Square Regression (90.020) divided by the Mean Square Residual (14.335), yielding $F = 62.799$ the p-value associated with this F value is very small (0.000). These values are used to answer the question do the independent variables top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication reliably predict the dependent variable (ERP implementation). P value is compared to alpha level (typically 0.05) and, if smaller, we can conclude “Yes, the independent variables reliably predict the dependent variable” and the model is fitted. We could say that the group of variables can be used to reliably predict ERP implementation. If the P value were greater than 0.05, we would say that the group of independent variables does not show a significant relationship with the dependent variable, or that the group (joint) of independent variables do not reliably predict the dependent variable. This is an overall significance test assessing whether the group of independent variables when used together (jointly) reliably predict the dependent variable, and does not address the ability of any of the particular (single) independent variables to predict the dependent variables. Here we can see that the ability of each individual independent variable to predict the dependent variable (ERP implementation) is addressed in the table below where each of the individual variables is listed.

4.4.4. Beta Coefficient

Standardized Beta Coefficient; the standardized coefficients are the coefficients that can explain the relative importance of explanatory variables. These coefficients are obtained from regression analysis after all the explanatory variables are standardized. These are the values for a

regression equation if all of the variables are standardized to have a mean of zero and a standard deviation of one. Because the standardized variables are all expressed in the same units, the magnitudes of the standardized coefficients indicate which variables have the greatest effects on the predicted value. This is not necessarily true of the unstandardized coefficients.

Table 4. 19: Beta Coefficient

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	.389	.337		1.152	.253		
BPR	-.570	.085	-.371	-6.705	.000	.643	1.556
UC	-.113	.085	-.070	-1.327	.189	.695	1.439
CM	.119	.164	.063	.724	.471	.256	3.906
C	.307	.120	.206	2.561	.013	.303	3.304
TMS	.231	.071	.191	3.259	.002	.574	1.743
TC	.450	.111	.278	4.073	.000	.421	2.378
PM	.540	.103	.373	5.270	.000	.392	2.551

a. Dependent Variable: ERPI

Source: SPSS output of survey questionnaire, 2019

Predicating the success level of ERP implementation from the seven factors; Table 4.19 coefficient's table values of standardized beta coefficients state that how intensely/strongly/ those seven independent variables namely; top management support, business process reengineering, use of consultant, project management, team competency, change management, and communication predict the successes of ERP implementation. Meaning, the significance tests of the seven explanatory variables indicate that five of the explanatory variables are significant with p-value ($P < 0.05$) for predicting on ERP implementation. The rest two factors have a p-value > 0.05 ($P > \delta$), and these factors are statistically insignificant to predict ERP implementation.

As it can be seen from the Table 4.19, the standardized coefficient of project management is the largest value, followed by team competency, communication, top management support, change management, use of consultant and business process reengineering respectively. The

larger the standardized coefficient, the higher is the relative effect of the factors (have the greatest effects on the predicted value) to ERP implementation. Another interpretation would be that ERP implementation (y) is not "statistically" dependent on the rest of the two insignificant independent variables. Meaning, this research could prevail that ERP implementation is known to depend on those five independent variables only.

4.4.5. Relationship of the variables

Unstandardized Beta Coefficient; these are the values for the regression equation for predicting the dependent variable from the independent variables. The regression equation is presented in many different ways, By refereeing to this respondent's analysis, the equation for ERP implementation with only significant β coefficients 'of the studied organization is:

$$Y_{ep}(\text{predicted}) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + E$$

$$Y_{ep} = \beta_0 + \beta_1 \text{BPR} + \beta_2 \text{C} + \beta_3 \text{TMS} + \beta_4 \text{TC} + \beta_5 \text{PM} + e$$

$$Y_{ep} = -0.389 - 0.57 \text{BPR} + 0.307 \text{C} + 0.231 \text{TMS} + 0.450 \text{TC} + 0.540 \text{PM}$$

Where;

$Y_{ep}(\text{predicted})$ = Success level of ERP implementation

E = Std. Error of the Estimate (disturbance)

BPR = Business Process Reengineering, C = Communication, TMS= Top Management Support,

TC = Team Competency, PM= Project management.

From the above estimates, we can talk about the relationship between the independent variables and the dependent variable. These estimates tell us the amount of increase/decrease in the success level of ERP implementation that would be predicted by a one unit increase in the predictor.

The intercept (β_0) is the point on the vertical axis where the regression line crosses the Y-axis. The value of β_0 is 0.389 which means the expected value of ERP implementation is 0.389 when all the five variables assume zero value.

For the independent variables which are not significant, the coefficients are not significantly affected ERP implementation, and we don't incorporate those insignificant variables into the model.

Table 4. 20: Summary of Hypothesis Testing Results from Regression Analysis Coefficients.

	Hypothesis	Result	Reason
1	Business Process Reengineering	Supported	Beta = -.570, at .sig.0.000
2	Communication	Supported	Beta=.0.307., at sig. 0.013
3	Top Management Support	Supported	Beta= 0.231., at .sig. 0.002
4	Use of Consultant	Not Supported	Beta= -0.113, at .sig. 0.189
5	Change Management	Not Supported	Beta= 0.119., at .sig. 0.471
6	Team Competency	Supported	Beta=0.450, at .sig.0.000
7	Project management	Supported	Beta= 0.540., at sig. 0.000

Source: SPSS output of survey questionnaire, 2019

4.5. Discussion of the Results

In this part, the main findings of the data presented in the previous sections were discussed in detail. Some of the key findings of the research were presented and have augmented with results of similar research endeavors in other settings.

4.5.1. Hypotheses test and findings

This research addresses issues related to implementation dimensions of ERP, for this, the researcher tried to identify the main factors affecting the success of ERP implementation, and examines the causal effects relationships of these factors.

Formulated or stated hypotheses were tested and the results are summarized in Table 4.19 and 4.20. The results from beta coefficient confirm that only five of the seven hypotheses are supported. These are business process reengineering, communication, top Management support, team competency, and project management. Majority of the CSFs affect ERP implementation positively except BPR. On contrary Use of Consultant and Change Management are not statistically significant predictors of ERP implementation. In general, from those significant

factors, four of them have a positive impact and one factor has a negative impact on the success of ERP project implementation in EPSE.

4.5.2. Effect of Business Process Reengineering on ERP implementation

The study established that business process reengineering related (in terms of redesigning business processes before adopting the ERP, changes in business processes to fit the ERP system and ability and willingness to change procedures to fit any new services) has a negative effect on ERP implementation.

When looking at their descriptive means relative to these three questions and calculating the average means is 2.96 (36.36%) of respondents and have a level of agreement as neutral with the effect of business process reengineering on ERP implementation project.

In this study finds, based on the mean score comparison of the seven ERP implementation factors (CSFs), business process reengineering is ranked third with a mean score value of (2.99) 3.00 and it is a moderate level of agreement. On average for all statements under this variable 32.4% of the respondents rated as disagree and strongly disagree and the respondents 31.13% have a positive answer as agree and strongly agree level of agreement as a factor of ERP implementation. From the above statements, the majority of the respondents impartial with BPR have absolutely impact on the implementation of ERP. This shows that this independent variable is not as such clearly important to affect ERP implementation based on this descriptive result. This variable is also negatively correlated with ERP implementation with $R = -0.300$ ($P < 0.01$). This means there is a negative weak correlation or relationship between BPR and ERP implementation. So, the increase or decrease in business processes reengineering dimensions or factors there will be opposite in magnitude in the result of ERP implementation. But this factor is a statistically significant predictor of ERP implementation since its significance level of at 0.000 with a beta coefficient - 0.57. This means BPR is statistically significant determinant of ERPI(y) having inverse relationship. In general the regression analysis result was found to be inconsistent with hypothesis H2: that states business process reengineering (BPR) has a positive impact on ERP implementation success.

Literature and empirical researches also indicate that business process reengineering is influential in the implementation of ERP N Gai, (2008). This finding could imply that business

process reengineering is one of the critical success factors for the successful implementation of ERP in Ethiopian postal service enterprise. Business Process Reengineering which is strongly related with identifying the existing business structure, process at the beginning of ERP project and relates this to the business process contained within ERP system helps the company to simplify the process, eliminate redundant activities and use all of the functionalities of ERP.

4.5.3. Effect of Communication on ERP implementation

The study established that Communication (in terms of or relative to statements provided to respondents) positively affects the ERP implementation of EPSE.

Similarly, based on the mean score comparison of the seven ERP implementation factors (CSFs), Communication is ranked first with a mean score value of (3.115) 3.12 and it is 25.65 % of the respondents as a moderate level of agreement. On average for all statements under this variable 35.25 % of the respondents rated as disagree and strongly disagree and the respondents 37.83% have a positive answer as agree and strongly agree level of agreement as a factor of ERP implementation. From the above discussion, the majority of the respondents have answers communication has an impact on the implementation of ERP saying that they have a positive opinion on those statements they were provided to respond. This shows that this independent variable is clearly important to have an impact on ERP implementation. This variable is also positively correlated with ERP implementation with $R= 0.603$ ($P < 0.01$). This means there is a strong positive relationship between this independent variable and ERP implementation where the increase (good condition) in communication there will be a similar increase in ERP implementation successes. Also, this factor is statistically significant predictor of ERP implementation since its significance level 0.013 with a beta coefficient 0.307 this means; ERPI (y) is statistically dependent on this significant independent variable. But based on the result of the mean score communication moderately affects ERP implementation even though the majority of the respondents (37.83%) agreed to regular communications among the different departments, regular cross-functional meetings to discuss the ERP, regular internal group meeting to share a new method of using ERP, improvement suggestions had been regularly collected from multiple employees levels, IT staff fully supports all functional users during ERP Implementation, and communication team was set to solve the departmental conflicts that arise during the implementation. In general, the results of the regression analysis conforms the

established hypothesis H7: that states communication has a positive impact on ERP implementation success.

It is also identified in the literature with empirical evidence that communication is influential in the implementation of ERP (Al-Mashari, Al-Mudimigh, and Zairi, 2003). This finding implies that communication is one of the critical success factors for the successful implementation of ERP in Ethiopian Postal service enterprise. Effective communication allows the organization's stakeholders to understand the goal and the expected benefits of the project as well as to share the progress of the project. As a result, all organization's stakeholders would be able to be informed and know what is expected from them and be committed to it.

4.5.4. Effects of Top Management Support on ERP implementation

The study established that top management support (in terms of or relative to statements provided to respondents) positively affect the ERP implementation project.

Similarly, based on the mean score comparison of the seven ERP implementation factors, top management support is ranked second with a mean score value of (2.99) 3.10 and it is 37.82% of the respondents as a moderate level of agreement. On average for all statements under this variable 36.95 % of respondents rated as disagree and strongly disagree, 37.17% of respondents have a positive answer as agree and strongly agree level of agreement as a factor of ERP implementation. From the above discussion, the majority of the respondents have answers Top Management Support has not clearly impact on the implementation of ERP saying that they have indifference opinion on those statements they were provided to respond. This shows that this independent variable has not prevailed clear decision of the respondent's opinion neither or not Top Management Support affects ERP implementation based on this descriptive result. This variable is also correlated with ERP implementation with $R = 0.514$ ($P < 0.01$). This means there is a moderate positive correlation or relationship between this independent variable and ERP implementation where the increase in top management support may bring about a moderate change in the success of ERP project implementation. Also, this factor is statistically significant predictor of ERP implementation since its significance level of at 0.002 with a beta coefficient of 0.231. This means ERPI (y) is statistically dependent on this significant independent variable Top Management Support. But based on the result of the mean score, Top Management Support

moderately affects ERP implementation even though the majority of the respondents (37.83%) respond to agreed. In general, with the regression result test the variable is consistent with the established hypothesis H1 that states top management support has a positive impact on ERP implementation success.

This is also supported by literature and empirical evidence that confirms top management support is one of the critical success factors for the successful implementation ERP project. Having top management support ensures the success of ERP implementation by providing leadership and necessary resources and making relevant decisions. (Bingi, 1999).

4.5.5. Effects of Team Competency on ERP implementation

The study established that Project Team Competency (in terms of or relative to statements provided to respondents) positively affect the ERP implementation project.

Here, based on the mean score comparison of the seven ERP implementation factors, Team Competency is ranked fifth with a mean score value of (2.58) 2.59 and it is 23.26% of the respondents as a moderate level of agreement. on average for all statements under this variable 55.14 % of respondents rated as disagree and strongly disagree, 17.57% of respondents have a positive answer as agree and strongly agree level of agreement as a factor of ERP implementation. This result shows that, the majority of the respondents have negative answers team competency is not well functioning for the successful implementation of ERP saying that they disagree with the statements related to team competence they were provided to respond to. This shows that this independent variable prevailed more respondent's opinion were disagree Team Competency affect ERP implementation based on this descriptive result. This variable is also positively correlated with ERPI with $R = 0.709$ ($P < 0.01$). This means there is a strong positive relationship between team competency and ERP implementation where increase (good condition) in team competency could also result in an increase in the success of ERP project implementation. Also, this factor is statistically significant predictor of ERP implementation since its significance level of at 0.000 with a beta coefficient 0.450 this means; ERPI (y) is statistically dependent on this significant independent variable (Team Competency). But based on the result of the mean score, it is found that team competency moderately affects ERP implementation even though the majority of the respondents (55.14 %) respond to disagreed. In

general the regression analysis result was found to be consistency with hypothesis H5 that states project team competency has a positive impact on ERP implementation success.

Literature and empirical researches also indicate that project team competency is influential in the implementation of ERP. This finding implies that project team competency is one of the critical success factors for the successful implementation of ERP in Ethiopian Postal service enterprise. An effective competent project team commits personnel that only focuses on the project and promotes organizational support by organizing the implementation process. In addition, effective project team also monitors activities to ensure that the stated objectives of ERP implementation projects are achieved.

4.5.6. Effects of Project management on ERP implementation

The study established that Project management (in terms of or relative to statements provided to respondents) positively affect ERP implementation project.

Here, based on the mean score comparison of the seven ERP implementation factors, project management is ranked fourth with a mean score value of (2.59) 2.47 and it is 23.40% of the respondents as a moderate level of agreement. On average for all statements under this variable 57.7 % of respondents rated as disagree and strongly disagree, 18.90% of respondents have a positive answer as agree and strongly agree level of agreement as a factor of ERP implementation. This result shows that the majority of the respondents have negative answers that project management is not well functioning for the successful implementation of ERP saying that they disagree with the statements related to project management they were provided to respond to. This shows that this independent variable prevailed more respondent's opinion were disagree on project management degree off affecting ERP implementation based on this descriptive result. This factor is also positively correlated with ERPI with $R = 0.833$ ($P < 0.01$). This means there is a very high relationship between project management and ERP implementation where the increase (good condition) in project management process could also result in an increase in the success of ERP implementation. Also, this factor is statistically significant predictor of ERPI since its significance level of at 0.000 with beta coefficient 0.540 this means; ERPI (y) is statistically dependent on this significant independent variable project management. But based on the result of mean score, it is found that project management

moderately affects ERP implementation even though the majority of the respondents (57.7%) disagreed. In general the regression analysis result was found to be consistent with hypothesis H6 that states project management has a positive impact on ERP implementation success

This is also supported by literature and empirical evidence that confirms project management is influential in the implementation of ERP (Ngai et al., 2008; Tsai et al., 2011; Zhang et al., 2003). This finding implies that project management is one of the critical success factors for the successful implementation of ERP in Ethiopian Postal service enterprise. Having effective project management enables organizations to plan, coordinate, and monitor various implementation activities. In addition, it also monitors activities to ensure that the stated objectives of ERP implementation projects are achieved.

CHAPTER FIVE:

Summary, Conclusions, and Recommendations

5.1. Introduction

The motivating force behind this research with the subject matter of “Examining Factors that affecting ERP implementation success” taking EPSE as a case company stems from my vested interest in the topic because I have been working in this organization as head of in house application and customization which is ERP implementation directly related, ERP implementation success is a concern and point of discussion that comes to my consideration frequently. So, the concern of investigating this research was to find out the factors that affect ERP implementation success and how could EPSE take appropriate and strategic actions to the success of ERP implementation project.

Therefore, this chapter presents the data findings, the conclusions that are drawn from these findings and the recommendations that can be made from these conclusions. The conclusions and recommendations discussed in this chapter look to meet the main objective of the study.

5.2. Summary of the Findings

The totals of 86 questionnaires were distributed to the respondents out of which, 78 questionnaires were returned with a response rate of 90.69%. The sum of the independent variables average Cronbach’s alpha value is ($\alpha = 0.959$) and the reliability test of the study is located on the “Acceptable” range. Out of 78 respondents, 69.2% (54) of the respondents were male and the remaining 30.8% (24) were Female. 84.6% (66) of the respondents have educational level of first and second degree and 15.3% (12) of the respondents have education level of diploma and other. 68% (51) of the respondents have company experience of more than five years while 32% (24) of them have less than five years of company experience. These all indicate that the respondents were educated well enough to understand the questions and thus would give credible results, since the majority of the respondents had worked for a considerable period of time in Ethiopian Postal Service Enterprise, therefore they were in a position to give credible information relating to this study, since all the relevant positions were part of the

respondents this research response were valuable, the research targeted the user departments specifically directly or indirectly involved in the project implementation process where first hand and credible information about the ERP project current status is obtained. Therefore, it is concluded that the result were all worthwhile and praiseworthy.

The research is designed according to the structure of the sub-questions. Therefore, based on these sub-questions, the key findings and relevant implications derived from this thesis are summarized and presented in response to each sub-question respectively.

The first established hypothesis of the study was top management support has a positive impact on ERP implementation success in EPSE. Based on the mean comparison of the seven ERP implementation success factors, top management support is ranked second with a mean value of 3.1. The correlation analysis also discovered that this variable has a positive, moderate, and significant correlation with ERP implementation at $R = 0.566$ ($P < 0.01$). The output from regression analysis also indicated that top management support is statistically significant predictor of ERP implementation with a beta coefficient of 0.231 at significance level of 0.002. This means ERP implementation (y) is statistically dependent on this significant independent variable. Therefore, the study findings proved that this factor positively affects the project success.

The second established hypothesis of the study was business process reengineering has a positive impact on ERP implementation success in EPSE. Based on the mean comparison of the seven ERP implementation success factors (CSFs), business process reengineering is ranked third with a mean value of 3.00. The correlation analysis also revealed BPR has a negative, weak, but significant correlation with ERP implementation at $R = -0.300$ ($P < 0.01$). The output from regression analysis also indicated that BRR is statistically significant predictor of successful implementation of ERP with a beta coefficient of - 0.57 at significance level of 0.000. This means, ERP implementation (y) is statistically dependent on BPR. Therefore, the study findings proved that this factor negatively affects project success of ERP.

The fifth established hypothesis of the study was team competency has a positive impact on ERP implementation success in EPSE. Based on the mean comparison of the seven ERP implementation success factors, team competency is ranked fifth with a mean value of 2.58 The

correlation analysis also revealed that this variable has a positive, strong, and significant correlation with ERP implementation at $R = 0.709$ ($P < 0.01$). The output from regression analysis also indicated that team competency is statistically significant predictor of ERP implementation with a beta coefficient of 0.450 at significance level of 0.000. This means ERP implementation (y) is statistically dependent to team competency. Therefore, the study findings proved that this factor positively affects project success.

The sixth established hypothesis of the study was project management has a positive impact on ERP implementation success in EPSE. Based on the mean comparison of the seven ERP implementation success factors (CSFs), project management is ranked fourth with a mean value of 2.59. The correlation analysis also discovered that this variable has a strong, significant and positive correlation with ERP implementation at $R = 0.833$ ($P < 0.01$). The output from regression analysis also indicated that project management is statistically significant predictor of ERP implementation with a beta coefficient of 0.540 at significance level of 0.000. This means, ERP implementation (y) is statistically dependent to project management. Therefore, the study findings proved that this factor positively affects the project success.

The seven established hypothesis of the study was communication has a positive impact on ERP implementation success in EPSE. Based on the mean comparison of the seven ERP implementation success factors (CSFs), communication is ranked first with a mean value of 3.12. The correlation analysis also discovered that this variable has a significant, strong, and positive correlation with ERP implementation at $R = 0.603$ ($P < 0.01$). The output from regression analysis also indicated that communication is statistically significant predictor of ERP implementation with a beta coefficient of 0.307 at a significance level of 0.013. This means ERP implementation (y) is statistically dependent on this significant independent variable. Therefore, the study findings proved that this factor positively affects the project success.

Based on the regression result, the regression model overall fit can be examined by ANOVA (analysis of variance) which provides F of 62.799. This means, the F Statistics is significant at 0.000 levels of significance which show the fitness of the model. This indicates that in general the model is fitted for this study. Therefore, it can be said that there is a relationship between ERP implementation and the predictors (the different five independent factors).

Based on model summary, R which show the relationship between the study variables, there is a positive relationship of 0.929 between ERP implementation and the five independent variables, R² (which measure of strength or coefficient of determination of the computed predication) = 0.863 shows that the model accounts for 86.3% of the variation in the project success of ERP implementation is explained by the linear combination of all the independent variables. And the remaining 13.7 % of the variation is not explained by these factors.

5.3.Conclusion.

The main purpose of this study was to analyze the factors affecting the successful implementation of ERP project in the case company and based on the findings presented in the previous section, the following conclusions are drawn.

From the five factors, this study confirmed that Business Process Reengineering has a negative significant effect on ERP implementation and identified as one of the important CSFs for ERP project success. Meaning, based on the result, Business Process Reengineering in terms of redesigning business processes (before adopting the ERP system), changes its business processes (in order to fit the ERP system) and having ability and willingness (to change its procedures to fit any new services) is proved that negative significant effect in determine/ predicating ERP implementation. The study, therefore, concludes that Business Process Reengineering affect negatively the successes of ERP implementation. This is important observation for the company to focus and work on strengthening or improving the relationship between these important factors in order to achieve a successful implementation of ERP.

Top management support was also proved as one of the most determining factors of ERP implementation. As the result indicates, top management support has a positive and very strong relation with ERP implementation. The regression shows this factor is a significant predictor and positively affects ERP implementation. The study therefore concludes that, if different positive support is given by the top management, through providing of necessary financial and other resources, establishes policies and procedures to monitor ERP implementation, delegating implementation authority, taking self-motivated role in leading and necessary risk and responsibilities in the ERP implementation, intervening to resolve disputes and frequent support

and encourages use of ERP system this motivates directly and indirectly stakeholders of ERP project and in return will increase the successful implementation of the project.

The study also shows project management is another important factor that is identified as having great extent of effect on ERP implementation. Based on the regression result, project management was found to be a significant predictor and positively affects ERP implementation. The study, therefore, concludes that a positive performance change in project management process will result in the better success of ERP implementation. This is valuable feedback to the company to focus and work on adopting a clear scope, project plan, realistic time frame, selecting or assigning effective project leader, and monitor and evaluate the progress periodically.

Team Competency was also proved that the next factor which has a great extent effect in determining of ERP implementation. As the result indicates, team competency has a positive and strong or high relation with ERP implementation. The regression shows this factor is a significant predictor and positively affects ERP implementation. The study, therefore, concludes that the increase (good performance) in team competency can be through having specific and achievable goal, a manager capable of managing the project, top and only priority for the team , knowledge of the key issues relating to ERP implementation and team members skill or qualification, knowledge and ability to accept change. Existing of those competencies factors in the project team will enhance in achieving the success of ERP implementation.

Communication was also confirmed that the third factor which has great extent effect in determining of ERP implementation. As the result indicates, Communication has a positive and strong or high relation with ERP implementation. The regression shows this factor is a significant predictor and positively affects ERP implementation. The study, therefore, concludes that, the increase (good performance) in communication, through existing of regular communications, cross-functional meeting, internal group meeting to share new method of using ERP, collection of suggestions from multiple employee's levels, and full supports from (IT) staff to all functional users during ERP implementation. Accessible of those ways or strategies of communication factors in the project team and with other stakeholders will intensify in achieving the success of ERP implementation.

Finally, from Descriptive statistics of this study result of mean scores and average means of percentage response rate for each statement regarding a particular variable indicates all of the responses (78 respondents) for the dependent and independent variable fall inside the medium or moderately category. This illustrates the level of opinion employees of the company have to those of CSFs of ERP implementation. This result enables us to conclude that the current position or state of ERP project implementation at EPSE is moderately successful.

5.4.Recommendations

Based on the empirical findings of this study, the specific comments of the respondents and the researcher's own observation working at the organization for more than a decade, the following recommendations are provided. These recommendations are believed to help the enterprise to fully succeed ERP implementation project and as a result increase organizational performance in all functional units relative to this system. In order to improve the success of upcoming projects, the researcher recommends the following points. The company:-

- Top management should strengthen supporting the project from the very beginning and should inform and motivate employees of the company in all stages of ERP implementation or any project implementation.
- Top management should have the ability and willingness to change its rules, regulations and procedures to redesign the business processes before adopting the system.
- Change management team to bring out a positive outcome and to reduce the resistance from employees should give training and create other awareness creation mechanism to the concerned employees.
- Should strengthen providing training to the project team in order to increase their knowledge and expertise for the success of project implementation.
- Should have a professionally, socially and personally competent project team.
- Should have a clear communication method and should improve both horizontal and vertical transparent communications between project teams and concerned departments.

5.5.Limitation and Suggestion for Future research

A limitation of this study is that not all CSFs identified in the previous studies were considered in this study. In this regard, Ram, Wu, and Tagg (2014) pointed out that it is difficult for a single study to actually assess the impacts of all possible CSFs or even most of them. This indicates that additional empirical examinations are needed to investigate the effects of the rest of the CSFs. This study was conducted based on seven CSFs and accounted for 86.3% of the variation of the ERP implementation. Other researchers may consider other factors and study the reason for the remaining variation (13.7%). Another limitation is that the study concentrated on analysis of a single case company. Hence, the findings must be validated by further studies. Moreover, the findings need to be confirmed in further studies using different data testing techniques

Reference

- Adel, M. (2001), "Change Management Strategies for Successful ERP Implementation" Department of QM and IS, College of Administrative Science, Kuwait University.
- Aladwani, A. (2001). Change management strategies for successful ERP implementation. *Business Process Management Journal*, 7(3), pp.266-275.
- Aldammas, A., & Al-Mudimigh, S., (2005).Critical Success and Failure Factors of ERP implementations. *Journalof Theoretical and Applied Information Technology*.Vol 28 No.2,pp. 73-82.
- Ahmed, F. (2003), "Implementation of ERP System in SMEs" Cranfield university school of applied sciences MSc thesis Cranfield university school of applied sciences MSc thesis (modeling in ERP).
- Akkermans, H. and van Helden, K. (2002). Vicious and virtuous cycles in ERP implementation: a case study of interrelations between critical success factors. *European Journal of Information Systems*, 11(1), pp.35-46.
- Al-Mashari, M., Al-Mudimigh, A. and Zairi, M. (2003). Enterprise resource planning: A taxonomy of critical factors. *European Journal of Operational Research*, 146(2), pp.352-364.
- APM, (2011). Directing Change, A guide to governance of project management, Princes Risborough
- APM, (2012). Body of knowleage,6th edn,high Wycombe: APM publication
- Beheshti, H. M. (2006). What managers should know about ERP/ERP II. *Management Research News*, 29(4), pp. 184-193
- Belassi, W. and Tukel, O. (1996). A new framework for determining critical success/failure factors in projects. *International Journal of Project Management*, 14(3), pp.141-151.
- Bhatti, T.R. (2005). 'Critical Success Factors for the implementation of Enterprise Resource Planning (ERP): Empirical Validation'. The Second International Conference on Innovation in Information Technology (IIT'05).
- Bingi, P., Sharma, M. K., & Godla, J. K. (1999). Critical issues affecting an ERP implementation. *Information Systems Management*, 16(3), 7-14.
- Boersma, K., & Kingma, S. (2005). Developing a cultural perspective on ERP. *Business Process Management Journal*.Vol11 No.2, pp.123-136

- Bradford, M. and Florin, J. (2003), "Examining the role of innovation diffusion factors on the implementation success of enterprise resource planning systems", *International journal of Accounting Information Systems*, Vol. 4, pp. 205-25
- Brehm, L., Heinzl, A. and Markus, M. (2001). 'Tailoring ERP Systems: A Spectrum of Choices and their Implications,' *hicss*, 8:8017, 34th Annual Hawaii International Conference on System Sciences (HICSS-34).
- Brue's L. B. (2004) Quantitative research method for social science. Pearson custom library, England.
- Capaldo, G. and Rippa, P., (2009). 'A planned-oriented approach for EPR implementation strategy selection', *Journal of Enterprise Information Management*, 22 (6): 642-659.
- Chang, H.H., (2006). Technical and management perceptions of enterprise information system importance, implementation and benefits. *Information Systems Journal*, 16, pp. 263-292.
- Chang, M., Cheung, W., Cheng, C. and Yeung, J. (2008). Understanding ERP system adoption from the user's perspective. *International Journal of Production Economics*, 113(2), pp.928-942.
- Collin, F. (2007). *Researching and Writing a Dissertation: A Guidebook for Business Students* Pearson Education Limited Edinburgh Gate Harlow Essex CM20 2JE Englan.d
- Cooper, D. R., &Schindler, P. S. (2003). *Business Research Methods*. 8th ed. Boston, Mass.: McGraw-Hill/Irwin.
- Creswell J. W., (2003) *Research design qualitative, quantitative, and mixed methods approaches* second edition.
- Davenport, T. (2000). *Mission Critical: Realizing the Value of Enterprise Systems*. Harvard Business School Press, Boston, MA.
- Davenport, T. H. (2000). *Mission Critical*. In *Realizing the Promise of Enterprise Systems*, Harvard Business School Press. Boston, MA: Harvard Business School Press,.
- Davenport, T.H. (1998). 'Putting the Enterprise into the Enterprise System', *Harvard Business Review* (July-August): 121 -131.
- Dixit, A. K., & Prakash, O. (2011). *A STUDY OF ISSUES AFFECTING ERP IMPLEMENTATION IN SMEs*.
- Esteves-Sousa, j. and Pastor-Collado, j. (2000), "Towards the unification of critical success factors for ERP implementation", *Proceedings of 10th Annual BIT (Business Information Technology) Conference*, Manchester, pp. 60-9.

- Fionia Fui- Hoon Nah & Santiago Delegado (2006). Critical success factors of Enterprise resource planning implementation and upgrade, *Journal of Computer information systems Special Issue* 2006, Vol. 47, p99
- Foziya. A (2017). Factors affecting the implementation of enterprise resource planning at commercial bank of Ethiopia
- Gargeya, V. B. (2005). Success and failure factors of adopting SAP in ERP system implementation. *Business Process Management Journal*, 11 (9)
- Gentile, S. (2012). Project Management in the Information Technology Industry Rabb School of Continuing Studies Division of Graduate Professional Studies Brandeis University
- Glaser, T. (1999). System selection strategies for county governments
- Holland, C. P., & Light, B. (1999). A critical success factors model for ERP implementation. *IEEE Software*, 16(3), (pp. 30-36).
- Jafari, S. M., Osman, R. M., Tang, Y., & Tang, S. H. (2006). ERP Systems Implementation In Malaysia: The Importance Of Critical Success Factors. *International Journal of Engineering and Technology*, 3(1), (pp.125-131).
- Jarrar. Y. F., A.-M. A. (2000). ERP Implementation Critical Success Factors. In *The Role And Impact Of Business Process Management* (pp. 122-127).
- Jose M. Esteves, J. A. (1999). An ERP Life-cycle-based Research Agenda.
- Kansal, V. (2007). 'Systemic Analysis for Inter-Relation of Identified Critical Success Factors in Enterprise Systems Projects', *Contemporary Management Research*, 3 (4):331-346.
- Kerzner H. (2009). *Project Management: A Systems Approach to Planning, Scheduling and Controlling*, 10th ed. John Wiley & Sons, Inc., New York.
- Kombo, K. D. and Tromp, L. A. D. (2006). *Proposal and thesis writing ; an introduction*. Nairobi: Pauline Publications Africa.
- Kumar, K. and Van Hillsgersberg, J. (2000). ERP experiences and evolution. *Communications of the ACM*, 43(4), 23-26.
- Kumar, V., Maheshwari, B. and Kumar, U. (2003), "An investigation of critical management issues in ERP implementation: empirical evidence from Canadian organizations", *Technovation*, Vol. 23 No. 9, pp. 793-807.
- Leech, N., Barrett, K. and Morgan, G. (2008). *SPSS for intermediate statistics*. New York: Psychology Press.

- Li Fang & Sylvia Patrecia(2005), Critical Success factor in ERP, Jönköping International Business School.
- Li, T., Feng, Y. and Chen, L. (1999). Temporal and Spectral Correlations of Cygnus X-1. *The Astrophysical Journal*, 521(2), pp.789-797.
- Loizos, C. (1998). ERP: Is it the ultimate software solution, *Industry Week* 7 33
- MacEachron. (1982). *Basic Statistics in the Human Services: an Applied Approach*.
- Markus, M.L. (2004). 'Technochange management: using IT to drive organizational change', *Journal of Information Technology*, 19(1): 4-20.
- Mohammad A. Rashid, Liaquat Hossain, Jon David Patrick (2002)" The Evolution of ERP Systems: A Historical Perspective "
- Monk, E.F., & Wagner, B.J.(2006). *Concepts in Enterprise Resource Planning*. 2nd edn. Boston: Thomson Course Technology.
- Mugenda O.M & Mugenda A.G (1999). *Research Methods.Quantitative and qualitative Approaches*. Nairobi. Acts press. Revised.2003.
- Nah, F., &Delgado, S.(2006). Critical success factors for enterprise resource planning implementation and upgrade *.Journal of computer information systems*, Special issue, pp.99-113
- Nah, F.H., Islam, Z. and Tan, M. (2007), "Empirical assessment of factors influencing success of enterprise resource planning implementations", *Journal of Database Management*, Vol. 18 No. 4, pp. 26-50.
- Nah, J. F., Lau, L. & Kuang, J. (2001). Critical factors for successful implementation of enterprise systems. *Business Process Management Journal*, 7(3), 285-296.
- Ngai, E. W. (2008). Examining the critical success factors in the adoption of enterprise resource planning. *Computers in Industry*, 548–564.
- O'Leary, D. E. (2001). *Enterprise Resource Planning Systems: Systems, Life Cycle, Electronic Commerce, and Risk*. UK: Cambridge University Press
- O'Leary, D.E (2004). 'Enterprise Resource Planning (ERP) Systems: An Empirical Analysis of Benefits', *Journal of Emerging Technologies in Accounting, Accounting & Tax Periodicals*, 1: 63-72.
- O'Leary, T. J. Williams, B.K., & O'Leary, L. (2009).McGraw Hill Microcomputing. Annual Edition McGraw-Hill.

- Patric W, (2005), Effective project Governance , The tools for success, Project management Institute of New Zealand
- Patric, W. (2007). A brief History of project management. Is our profession 50 or 500 years old?Project: Vol19 Issue
- Paul D Leedy (1993) practical research: planning and design. New Jersey Pearson Education, Inc.
- Polit and Beck (2003) Nursing Research: Principles and Methods, New York Williams Book Company
- Ranganathan, C. and Brown, C. (2006) “ERP Investments and the Market Value of Firms: Toward an understanding of Influential ERP Project Variables” Information Systems Research
- Rashid,et al. (2002); The Evolution of ERP Systems: A Historical Perspective Kuwait.
- Roberts, H. a. (1992). MRP II implementation key factors for success. Computer Integrated Manufacturing Systems, 31-8
- Rosario, J. (2000). critical success factors in ERP implementation projects.
- Saron,G. (2017) assessment of ERP implementation the case of Heineken breweries s.c Ethiopia.
- Saunders, M. (2003) Research method for business students. March, 2015 secondary or primary data collection
- Sedera, D. and Dey, S. (2006), “Multi- stakeholder assessment of critical success factors: insights from the world’s fastest SAP R/3 implementation”, Proceedings of the Twelfth Americas Conference on Information Systems, Acapulco.
- Somers T.M., a. N. (2001). The Impact of Critical Success Factors across the Stages of Enterprise Resource Planning Implementations. Proceedings of the 34th Hawaii International Conference on System Sciences.
- Somers, T. and Nelson, K. (2004). A taxonomy of players and activities across the ERP project life cycle. Information & Management, 41(3), pp.257-278.
- Stefanou, C.J., (1999), “Supply chain management (SCM) and organizational key factors for successful implementation of enterprise resource planning (ERP) systems”, Proceedings of the Americas Conference on Information Systems(AMCIS), 800.
- Sumner, M. (1999). Critical success factors in enterprise wide information management systems projects. Proceedings of the 1999 ACM SIGCPR Conference on Computer Personnel Research, 297-303.

- Sumner, M. (1999). Critical success factors in enterprise wide information management systems projects. Proceedings of the Americas Conference on Information Systems (AMCIS), 232-4.
- Sumner, M. (2000). Risk factors in enterprise-wide/ERP projects. *Journal of Information Technology*, 15(4), pp.317-327.
- Themistocleous, M., Irani, Z. and O’Keefe, R. (2001). ERP and application integration. *Business Process Management Journal*, 7(3), pp.195-204.
- Umble, E. J., & Umble, M. M. (2002). Avoiding ERP implementation failure. *Industrial Management*, 44(1), 25-33.
- Umble, E., Haft, R. and Umble, M. (2003). Enterprise resource planning: Implementation procedures and critical success factors. *European Journal of Operational Research*, 146(2), pp.241-257.
- Whang, J & Lee, S (2002). ‘A Study on the Implementation Strategy and Performance of Enterprise Resource Planning System’, *Journal of Information Technology Applications & Management*, 9(3): 47-56.
- Whang, J., Lee, M-B and Kim, K (2003). ‘A Case Study on the Successful Upgrade of ERP System’. 7th Pacific Asia Conference on Information Systems, 10-13 July 2003, Adelaide, South Australia.
- Willcocks, L. and Sykes, R. (2000). Enterprise resource planning: the role of the CIO and it function in ERP. *Communications of the ACM*, 43(4), pp.32-38.
- Willis, T.H., Willis-Brown, A.H. and McMillan, A. (2001). ‘Cost containment strategies for ERP system implementations’, *Production and Inventory Management Journal*, 42 (2): 36-42.
- Zhang, Z., Lee, M., Huang, P., Zhang, L. and Huang, X. (2005). A framework of ERP systems implementation success in China: An empirical study. *International Journal of Production Economics*, 98(1), pp.56-80.
- Zikmund, WG 2013, Business research methods, 9th. edn, South-Western, Mason, OH.

Appendices

Appendix: Questionnaire for Ethiopian Postal Service Enterprise Employees

Questionnaire

Addis Ababa University

School of Commerce, Department of project Management

Questionnaires to be filled by employees of Ethiopian Postal Service Enterprise

Dear respondents;

I am a post graduate student of Addis Ababa University, School of Commerce, who is conducting a research on: “Factor Affecting Successful Implementation of enterprise resource planning (ERP) Project: The Case of Ethiopian Postal Service Enterprise”. The research is conducted in partial fulfillment of the requirement for the Masters of project Management. The questioner contains 46 questions and will take long. You are kindly requested to complete this questionnaire. Your responses will be kept confidential and used for academic purpose only.

I want to thank you in advance for your time, willingness and participation.

Direction; Please put a thick mark (√) in the box that corresponds to your response about your profile.

Name (Optional): ----- Telephone (Optional):-----

Section 1: Background information:

1. Gender: Male Female
2. Age: 20-30 31-35 36-40 above 41
3. Qualification: Certificate Diploma Degree Masters

Other please specify _____

4. Your service year:

- ≤ 5 6 – 10 11 – 15 16 – 20
 21 and above

5. In which office/department are you working?

- Finance Sourcing & Facilities Human Resources IT other

6. The position you hold in the organization

- Staff Supervisor Manager Officer
 Chef Officer
 Other _____

Section 2: Issues related with the study area:

Please read each statement carefully and show the extent of your agreement on the statements by circling the numbers in the column using a five-point Likert scale with the following values:

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

1- Top Management Support (TMS)						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding top management support?						
#	Item	1	2	3	4	5
1	The organization top management has provided the necessary financial and other resources to design and implement the ERP system	1	2	3	4	5
2	The organization top management establishes policies and procedures to monitor the implementation of the ERP system	1	2	3	4	5
3	The organization Top management has delegated implementation authority for project managers.	1	2	3	4	5
4	The organization Top management has taken a self-motivated role in leading the ERP implementation.	1	2	3	4	5
5	The organization Top management has taken all the necessary risk and responsibilities during ERP implementation.	1	2	3	4	5
6	The top management intervenes when needed, to resolve disputes between interests groups (consultant, project team and departments), willing to provide the necessary resources, and follow the implementation.	1	2	3	4	5
7	The organization top management always supports and encourages the use of the ERP system for job-related work	1	2	3	4	5

2- Business Process Reengineering (Reform)						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding BPR?						
#	Item	1	2	3	4	5
1	The organization spent much time in redesigning business processes before adopting the ERP system	1	2	3	4	5
2	The organization performed the required changes in its business processes to fit the ERP system to these processes	1	2	3	4	5
3	The organization has the ability and willingness to change its procedures to fit any new services provided by the ERP system	1	2	3	4	5
3- Consultant						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding Consultant?						
#	Item	1	2	3	4	5
1	The organization obtained advice and support from consultants to effectively implement the ERP system	1	2	3	4	5
2	The organization selected the consultants carefully based on their experience in the technical aspects and business processes conducted in the organization environment	1	2	3	4	5
3	Without the help of the consultants, operating the ERP system in the organization could be troublesome and might be a success inhibitor	1	2	3	4	5
4- Project management						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding project management						
#	Item	1	2	3	4	5
1	A clear scope and plan for implementing the ERP project were established by the organization	1	2	3	4	5
2	The implementation of the ERP project was managed by an effective leader selected from the organization	1	2	3	4	5
3	A realistic time frame was set for the different stages of the implementation process of the ERP system	1	2	3	4	5
4	The organization is having periodic meetings for evaluating the progress of the ERP implementation	1	2	3	4	5

5- Team Competency (capability)						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding project team competences?						
#	Item	1	2	3	4	5
1	The ERP project team has a specific goal which is achievable over the defined timeline	1	2	3	4	5
2	The ERP project team has a project manager who is capable of managing project on time and on budget.	1	2	3	4	5
3	The ERP project has been the top and only priority for the team.	1	2	3	4	5
4	The ERP team members had knowledge of the key issues relating to ERP implementation.	1	2	3	4	5
5	The ERP team members have carefully been selected based on their skill or qualification, knowledge and ability to accept change.	1	2	3	4	5
6	The project team had experienced in previous ERP Implementations.	1	2	3	4	5
7	The team members had business and technical knowledge	1	2	3	4	5
6- Change Management						
1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.						
To what extent do you agree on the following statements regarding change management?						
#	Item	1	2	3	4	5
1	The organization tries to establish an appropriate organizational culture for the ERP project	1	2	3	4	5
2	The organization made the members recognize the necessity of the ERP	1	2	3	4	5
3	The organization has an established communication system related to the ERP.	1	2	3	4	5
4	The organization carried out sufficient education and training related to the ERP for the members.	1	2	3	4	5
5	The organization has established standards and regulations for the ERP	1	2	3	4	5
6	The organization held a working-level meeting for change management	1	2	3	4	5
7	Management approach to change was successful in managing the transition to ERP	1	2	3	4	5

8	The organization/management recognized employee for contribution to change Initiative	1	2	3	4	5
9	Management asked employee what should change more than they told employees what will	1	2	3	4	5
10	The organization/management allocate adequate resource for change	1	2	3	4	5

7- Communication

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

To what extent do you agree on the following statements regarding Communication?

#	Item	1	2	3	4	5
1	There were regular communications among the different departments	1	2	3	4	5
2	There were regular cross functional meeting to discuss about the ERP.	1	2	3	4	5
3	There were regular internal group meeting to share new method of using ERP.	1	2	3	4	5
4	ERP improvement suggestions had been regularly collected from multiple employees levels	1	2	3	4	5
5	Information technology (IT) staff fully supports all functional users during ERP Implementation.	1	2	3	4	5
6	Communication team was set to solve the departmental conflicts that arise during the implementation.	1	2	3	4	5

8- ERP Implementation Evaluation

1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

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.	1	2	3	4	5
2	ERP implementation has realized the expected benefits to the business.	1	2	3	4	5
3	The planned objectives of ERP were successfully achieved	1	2	3	4	5
4	ERP was completed at its expected completion time	1	2	3	4	5
5	ERP was completed within planned budget	1	2	3	4	5
6	All the quality standards expected by Ethiopian Postal service from the project were successfully delivered.	1	2	3	4	5
7	ERP was completed in a way that can contribute to its designed goal	1	2	3	4	5