



ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

**DEVELOPING ERP PRE-IMPLEMENTATION READINESS
ASSESSMENT FRAMEWORK FOR ETHIOPIAN CONTEXT: A MULTI
STAKEHOLDERS' PERSPECTIVE**

By

RAHEL TEKLESELASSIE

DECEMBER, 2018

ADDIS ABABA, ETHIOPIA



ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

**DEVELOPING ERP PRE-IMPLEMENTATION READINESS
ASSESSMENT FRAMEWORK FOR ETHIOPIAN CONTEXT: A MULTI
STAKEHOLDERS' PERSPECTIVE**

A Thesis Submitted to School of Graduate Studies of Addis Ababa University in
Partial Fulfillment of the Requirements for the Degree of
Master of Science in Information Science

By: Rahel T/selassie

Advisor: Lemma Lessa (PhD)

December, 2018

Addis Ababa, Ethiopia



ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE

SCHOOL OF INFORMATION SCIENCE

**DEVELOPING ERP PRE-IMPLEMENTATION READINESS
ASSESSMENT FRAMEWORK FOR ETHIOPAN CONTEXT: A MULTI
STAKEHOLDERS' PERSPECTIVE**

By: Rahel Tekleselassie

Name and signature of Members of the Examining Board

Lemma Lessa (PhD) _____

Advisor

Signature

_____ Date

Dereje Teferi (PhD) _____

Examiner

Signature

_____ Date

Wondwossen Mulugeta (PhD) _____

Examiner

Signature

_____ Date

Declaration

This thesis has not previously been accepted for any degree and is not being concurrently submitted in candidature for any degree in any university.

I declare that the thesis is a result of my own investigation, except where otherwise stated. I have undertaken the study independently with the guidance and support of my research advisor. Other sources are acknowledged by citations giving explicit references. A list of references is appended.

Signature: _____

Rahel Tekleselassie

This thesis has been submitted for examination with my approval as university advisor.

Advisor's Signature: _____

Lemma Lessa (PhD)

Acknowledgements

I would first like to thank the Almighty God for giving me the strength to start and finalize the whole journey.

This thesis would not have been possible without the guidance and help of several individuals who in one way or the other contributed and extended their valuable assistance in the preparation and completion of this study.

I would like to thank my research advisor Dr. Lemma Lessa for his sociable and unreserved guidance and support on those tough times. I have been struggling to finish my Thesis paper due to various obstacles at work. He was the reason why I can be able to finish this paper. He was always there to provide feedbacks and advises.

I am thankful to Ato Girma Chanie for his valuable advice, encouragement and constructive reviews throughout the study. This study would not have been possible without the help of Ato Abenet Habte from Ethiopian Electric Utility. He was helpful through organizing employees who participated in the survey and interview. I would like to express my special thanks of gratitude to my manager at work Woy Tseday Taye who kept on supporting and encouraging me during challenging times throughout the study.

Last but not least, I would like to thank my beloved family and friends for their kind understanding, encouragement and patience while I was not giving them ample time due to my study.

Rahel Tekleselassie

December 2018

Table of Contents

| | |
|--|------|
| Declaration | i |
| Acknowledgements | ii |
| List of Tables | vi |
| List of Figures | viii |
| List of Acronyms | ix |
| Abstract | x |
| CHAPTER ONE | 1 |
| INTRODUCTION | 1 |
| 1.1. Background | 1 |
| 1.2. Statement of the problem | 4 |
| 1.3. Research question..... | 6 |
| The following is the research question that will be answered in the research | 6 |
| 1.4. General Objective..... | 6 |
| 1.4.1. Specific objective..... | 7 |
| 1.5. Significance of the study | 7 |
| 1.6. Scope of the study | 7 |
| 1.7. Organization of the thesis..... | 8 |
| CHAPTER TWO | 9 |
| LITERATURE REVIEW | 9 |
| 1.8. Overview of Enterprise Resource Planning (ERP) | 9 |
| 1.8.1. Meaning of ERP..... | 9 |
| 1.8.2. ERP implementation..... | 13 |
| 1.8.2.1. ERP implantation approaches | 13 |
| 1.8.2.2. Motivation for EPR..... | 15 |
| 1.8.2.3. Advantages and Disadvantages of implementing ERP | 16 |
| 1.8.3. Stakeholders of ERP system and their role | 19 |
| 1.8.4. Critical Success Factors (CSFs) In ERP Systems | 23 |
| 1.8.5. Critical failure factors of ERP system | 32 |
| 1.8.6. ERP pre-implementation readiness assessment: an empirical review | 33 |

| | |
|--|-----|
| 2. CHAPTER THREE | 42 |
| RESEARCH DESIGN AND METHODOLOGY | 42 |
| 2.1. Introduction | 42 |
| 2.2. Research approach..... | 42 |
| 2.2.1. Research process map | 43 |
| 2.3. Study design | 44 |
| 2.3.1. SampleTechniques and sample size..... | 44 |
| 2.3.2. Data collection Instrument..... | 46 |
| 2.4. Techniques for CSF Identification | 47 |
| 2.4.1. CSF Identification..... | 47 |
| 2.4.1.1. Validation of the CSF framework and a process model..... | 50 |
| 2.4.1.2. Questionnaire development..... | 50 |
| 2.5. Procedure..... | 53 |
| 2.6. Data Analysis | 53 |
| 2.6.1. How primary and secondary quantitative and qualitative analyzed | 53 |
| 3. CHAPTER FOUR | 55 |
| FINDING AND DISCUSSION | 55 |
| 3.1. Introduction | 55 |
| 3.2. Data collection context..... | 55 |
| 3.3. Result of identifying CSFs relevant for pre-implementation stage..... | 56 |
| 3.3.1. 4.2.2. Result of identifying CSFs critical for pre-implementation stage | 66 |
| 3.3.2. 4.2.3. Conceptual framework based on the identified CSFs..... | 68 |
| 3.4. Result and discussion on measurement of readiness level of the case company | 73 |
| 4.3.1. Result of readiness level of the company from organization perspective | 73 |
| 4.3.2. Result of readiness level of the company from Technical perspective..... | 89 |
| 4.3.3. Result of readiness level of the company from user perspective..... | 100 |
| 4.3.1. Result of readiness level of the company from consultant perspective | 103 |
| 4.3.2. Result of readiness level of the company from vendor perspective | 106 |
| 5. CHAPTER FIVE..... | 107 |
| CONCLUSION AND RECOMMENDATION..... | 107 |
| 5.1. Conclusion..... | 107 |

| | |
|--|-----|
| 5.2. Recommendation..... | 109 |
| 5.3. Limitations of the study..... | 110 |
| 5.4. Suggestions for future works..... | 111 |
| 5. REFERENCES | 112 |

List of Tables

| | |
|--|----|
| <i>Table 2. 1. Definition of ERP in Research Literature</i> | 10 |
| <i>Table 2. 2. ERP Implementation Strategies</i> | 15 |
| <i>Table 2. 3. Tangible and Intangible benefits of ERP</i> | 16 |
| <i>Table 2. 4. Benefits of ERP system in different dimensions</i> | 17 |
| <i>Table 2. 5. Empirical literatures reviewed</i> | 34 |
| | |
| <i>Table 3. 1. Sample Taken</i> | 45 |
| <i>Table 3.2. Techniques for CSF Identification adopted from (Zewdu, 2016)</i> | 47 |
| <i>Table 3.3. CSFs Category under Five Perspectives</i> | 48 |
| | |
| <i>Table 4. 1. Identified CSFs Relevant for Pre-Implementation</i> | 57 |
| <i>Table 4. 2. Identified CSFs Critical for Pre-Implementation Stage</i> | 66 |
| <i>Table 4. 3. Category of Selected CSFs</i> | 69 |
| <i>Table 4. 4. Top Management Support and Commitment</i> | 73 |
| <i>Table 4. 5. Experienced Project manager Leadership, Empowered Decision Makers, Good Project Scope Management and Project Management</i> | 74 |
| <i>Table 4. 6. Dedicated Resource</i> | 76 |
| <i>Table 4. 7. Steering Committee</i> | 77 |
| | |
| <i>Table 4. 8. Adequate ERP System Selection, Organizational fit for ERP and The use of ERP Implementation Consultant</i> | 78 |
| <i>Table 4. 9. Adequate ERP System Selection</i> | 79 |
| <i>Table 4. 10. Business Process Re-Engineering</i> | 80 |

| | |
|--|------------|
| <i>Table 4. 11. Business Process Re-Engineering</i> | <i>80</i> |
| <i>Table 4. 12. Training for Different User Group</i> | <i>81</i> |
| <i>Table 4. 13. Careful Change Management, Organizational Culture /Cultural Change /Political Issues and Focus on User Requirement</i> | <i>82</i> |
| <i>Table 4. 14. Management of Expectation</i> | <i>83</i> |
| <i>Table 4. 15. Project Team Composition/Team Skill and Competency</i> | <i>84</i> |
| <i>Table 4. 16. Interdepartmental Cooperation and Team Work.....</i> | <i>84</i> |
| <i>Table 4. 17. Interdepartmental Cooperation and Team Work.....</i> | <i>85</i> |
| <i>Table 4. 18. Vendor/Customer Partnership and Managing Consultants</i> | <i>86</i> |
| <i>Table 4. 19. Empowered Decision Makers</i> | <i>89</i> |
| <i>Table 4. 20. Training for Different User Group</i> | <i>90</i> |
| <i>Table 4. 21. Dedicated Resource</i> | <i>91</i> |
| <i>Table 4. 22. Steering Committee</i> | <i>92</i> |
| <i>Table 4. 23. Adequate ERP system selection</i> | <i>93</i> |
| <i>Table 4. 24. Focus on User Requirement, Organizational Culture /Cultural Change /Political Issues.....</i> | <i>95</i> |
| <i>Table 4. 25. IT Department Capability.....</i> | <i>96</i> |
| <i>Table 4. 26. Communication among the Implementation Team Members, Team Work.....</i> | <i>97</i> |
| <i>Table 4. 27. Minimal Customization of Packages</i> | <i>97</i> |
| <i>Table 4. 28. Data and Information Quality and Reducing Trouble Shooting-Project Risk</i> | <i>99</i> |
| <i>Table 4. 29. Result of Readiness level of the Company from User Perspective</i> | <i>101</i> |

List of Figures

| | |
|--|----|
| <i>Figure 2.1. Structure of ERP System</i> | 12 |
| <i>Figure 3. 1. Research Process Map</i> | 44 |
| <i>Figure 3. 2. Research Process Model</i> | 50 |
| <i>Figure 4. 1. Conceptual framework</i> | 71 |

List of Acronyms

| | |
|------|----------------------------------|
| ERP | Enterprise Resource Planning |
| BPR | Business process reengineering |
| CRM | Customer relationship management |
| CSFs | Critical success factors |
| ERP | Enterprise resource planning |
| IT | Information technology |
| IS | Information system |
| DC | Data center |
| DR | Data recovery |

Abstract

Unlike developing countries, developed ones use ERP systems extensively and 88% of ERP market share is owned by North America and Europe. Such fact drove ERP vendors to turn towards developing countries - considered as a promising market – to promote their products. Now a days Ethiopia is one of the developing countries in which several organizations are implementing ERP system with the purpose to survive in a marketplace and to gain a competitive advantage. This created a golden opportunity for ERP vendors to promote their packages as if they are providing the magic tool for business diseases but most vendors do not apply a comprehensive study before adopting such technology to surf for pre-required infrastructure and capabilities especially in developing countries. Even though there are studies, multi stakeholders' perspectives were not considered in their ERP pre-implementation readiness assessment framework. Besides, most of them are done on the context of developed nations.

The purpose of this study is to investigate ERP Pre-implementation readiness from multi-stakeholders perspectives such as organizational, technical, user, consultant and vendors perspective in the context of Ethiopian Electric Utility (EEU) Company with the view to develop a framework for evaluation of ERP Pre-Implementation readiness and design a solution framework to address those issues. The Pre-implementation aspect is a critical step in the implementation process.

In order to answer the research questions and achieve the objective of the study, a set of critical success factors were identified from peer-reviewed literatures. Interview and survey questionnaires were used for collecting data. Using literature review CSFs were identified. Interview and (primary& secondary) survey questioner were prepared based on the identified CSFs. Primary questioner was used to identify appropriate CSFs for pre-implementation stage and their criticality. Secondary questioner and interview were used to validate (assess feasibility of) the framework by applying to the case company.

Based on the result of primary survey questioner a multi stakeholder's perspective ERP pre-implementation readiness assessment framework has been proposed. It is recommended that any organization interested in implementing ERP can use the proposed pre-implementation framework to addresses all aspects of an organization to attain implementation success. The feasibility assessment of the proposed framework result revealed that the case company has limitations on the number of dimensions and has also shows areas the company must pay a attention to fill the gap.

Keywords: ERP, Pre-implementation, Readiness, ERP Pre-Implementation Readiness

CHAPTER ONE

INTRODUCTION

This chapter presents an overview of this research. It provides background of the study, background of the organization, statement of the problem, research questions, and objectives of the study, scope of the study and organization of the paper.

1.1. Background

Enterprise applications are systems that span functional areas, focus on executing business processes across the business firm, and include all levels of management. There are four major enterprise applications: enterprise resource planning systems, supply chain management systems, customer relationship management systems, and knowledge management systems. ERP systems integrate business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into a single software system (Laudon et.al 2012). It is a key businesses that helps the organizations to gain a competitive advantage by integrating all business processes, managing and optimizing the resources available. It is not just a software package but an efficient way of doing business consisting of software support modules where information is flowing between them and they share a central database.

One of the major benefits of ERP systems is that all enterprise data are collected during the transaction, stored centrally, and updated in a real time. This ensures realistic plans upon which an enterprise can be managed effectively and data are updated in real time (Bancroft et al., 1998)

ERP is beginning to appear in many organizations of developing countries. Little research has been conducted to compare the implementation practices of ERP in developed vs. developing countries. ERP technology also faces additional challenges in developing countries related to economic, cultural, and basic infrastructure issues (Huang & Palvia, 2001).

Many ERP implementations have limited success and the failure rate is high between 60% and 90% as found (Abeer et.al 2011). One of the reasons for ERP implementation failure is lack of organizational readiness in terms of business process maturity, cultural, technological and organizational aspects. In addition, in case the implementation process takes longer than the plan,

the implementation team loses its motivation (Ptak and Schragenheim 2004). The other reason is difference in interests between customer and organizations that aim to provide the optimum solutions for business problems and ERP vendors who prefer a generic solution applicable to a broader market and the resistance of users to change or non-acceptance of new systems (Abeer et.al 2011).

Problems associated with an ERP implementation are often classified into technical and organizational aspects. Technical aspects include the technology readiness of an organization, the complexity of ERP software, data loss due to the incompatibility of data architectures between the old legacy systems and the new ERP software and inadequacies of newly redesigned business processes. Common organizational factors may include employees' resistance to change, inadequate training, underestimated cost and time of implementation, unwillingness to adopt new business processes, and strategic view of technology adoption (Slater, 1998, Joshi and Lauer, 1999, Mabert et al., 2001).

In this research, Ethiopian electric utility is being considered for the case study to examine ERP pre-implementation readiness issues. The Ethiopian Electric Utility (EEU) as public utility enterprise was established for indefinite duration by regulation No. 691/2010. EEU's purposes and duties are construct and maintain electric distribution networks, contract out the distribution networks construction to contractors as required, initiate electric tariff amendments and, upon approval, to implement same, administer electric distribution networks, purchase bulk electric power and sell electric energy to customers; In line with directives and policy guidelines issued by the Ministry of Finance and Economic Development, sell and pledge bonds and negotiate and sign loan agreements with local and international financial sources and undertake any other related activities necessary for the attainment of its purposes.

EEU's Vision is "Energizing Ethiopia's sustainable growth and enabling it to be power hub of Africa. **EEU's Mission** is "To be a world-class utility and contribute towards nation building by ensuring delivery of cost effective, safe, reliable and high quality power and to enable interconnections across the African Continent for exporting surplus power. EEU shall strive towards achieving international standards of customer care through sustained capacity building,

operational and financial excellence, state-of-the-art technologies while ensuring highest standards of corporate governance and ethics.”

This company is one of the biggest companies in Ethiopia with many branch offices and a huge business process which will help the researcher to see the technical and organizational aspect along with the multi stakeholders’ perspective. In addition The Company is on the process of implementing ERP system so it will be a good opportunity to get all the stakeholders together to gather sufficient information for the study.

The main reason that the study focused on pre-implementations is unlike developing countries, developed ones use ERP systems extensively since 88% of ERP market share is owned by North America and Europe. Such fact drove ERP vendors to turn towards developing countries - considered as a promising market – to promote their products (Khalifa et.al 2015). Now a days Ethiopia is one of the developing countries in which organizations implementing ERP system with the purpose to survive in a marketplace and gain a competitive advantage. This created a golden opportunity for ERP vendors to promote their packages as if they are providing the magic tool for business diseases but most vendors do not apply a comprehensive study before adopting such technology to surf for pre-required infrastructure and capabilities especially in developing countries (Khalifa et.al 2015).

Hence as a developing nation, before implementing any large scale software projects, the researcher believe that it is advisable to know the readiness level of companies for the intended projects before any information systems’ investments. According to (A. Nazir et al., 2013), On a study to measure ERP implementation readiness in small and medium enterprises, as the failures of ERP implementation is still considered quite high, they proposed a self- assessment of open source ERP implementation readiness which focused on the pre-implementation aspects of ERP. In addition to the above, previous studies report unusually high failure in ERP projects. Thus, (J. Razmi et al., 2008) recommend that it is necessary to perform an assessment at the initial stage of an ERP implementation program to identify weaknesses which may lead to project failure. Decision makers are also urged to investigate the readiness of businesses to move into automated and integrated business activities and also paying attention to user involvement and acceptance in advance is a critical issue for successful ERP implementation (Khalifaet.al 2015).

Therefore, based on the above reviewed facts it is necessary to perform a readiness assessment at the initial stage of an ERP implementation project to identify weakness areas which may encounter the project with failure and to measure readiness level of companies for the intended projects.

1.2. Statement of the problem

The researcher has tried to review recent literatures on the ERP readiness assessment frameworks to show what other researchers have published on the problem, what gaps of knowledge still exist, and what additional research needs to be done. The following are researches that have been done on this area and their gap.

(Ahmadi et al. 2014) developed Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System by selecting three strategic issues and critical factors under the issues which are **Organizational readiness**(Organization strategically readiness, Organization structural readiness and Organizational readiness for doing required planning), **Social readiness**(Organization cultural readiness, Achieving right user intention for interacting with ERP system and Achieving decent level of communication inside the organization) **Technical readiness**(Choosing proper application for implementation, Achieving proper IT capability in organization, Providing proper IT infrastructure in organization and Managing organization information properly). A research by (Nizar A., et al 2013) was conducted to formulate the framework of self-assessment of open source ERP implementation readiness, which focused on the ERP pre-implementation aspects. The proposed ERP implementation readiness assessment framework was developed using the Fuzzy-based ANP (Fuzzy ANP), where the examined readiness factors are grouped into three categories, namely project management, organizational, and change management readiness. Another research done by (Shiri, S et.al 2014) was to identify and prioritize organizational readiness factors for implementing ERP based on organizational agility. This study extends McKinsey 7S model (strategy, structure, systems, skills, style, staff, and shared values) to 9S (7S+ self-evaluation and supportive factors).

Ptak and Schragenheim (2004) suggested an Enterprise Resource Management (ERM) assessment checklist with twenty-five questions. The readiness of an organization on implementing an ERP system is scored in terms of a number of criteria each one varying in a

range between zero and four. Despite the fact that this research can be considered as one of the important ones on assessing the readiness of an organization for successful implementation of ERP, this approach has some shortcomings. For instance, the approach has considered customer orientation and effective implementation of 6 Sigma as main factors affecting successful implementation of an ERP system whereas factors such as IT infrastructure, the degree of business processes maturity and their integration have been ignored. (Shafaei R. et al, 2008)

The main factors affecting the implementation of ERP in an enterprise and suggested a ranking mechanism whereby the readiness of an enterprise can be assessed in terms of a number of different aspects. One of the works mostly related to this research belongs to Wongnum et al. (2004) who developed a framework to assess the readiness of an enterprise for implementing an ERP system. The project called BEST (Better Enterprise System implementation). It is a Process-based Model for Organizations (PMO). They considered three processes co-existing and interacting in an enterprise system implementation project and called them dimensions. The level of maturity of each dimension indicates the degree of maturity (Shafaei and Dabiri) or alignment between different dimensions in the reference framework. The dimensions are the design and tuning of a new enterprise system which includes project management, implementation process and permanent business processes. The elements of the model are called aspects which include strategy and goals, management, structure, process, knowledge and skills and social dynamics which refers to the behavior of people. Despite the fact that the proposed approach was claimed to be a good framework for assessing the readiness of an enterprises, the authors opt for further investigations to provide more comprehensive aspects and dimensions whereby the readiness of an enterprise to implement ERP systems can be assessed effectively plus its done 14 years ago which is difficult to apply it on current situations.

(Zewdu 2016) In his study, ERP Pre-implementation readiness evaluation issues were discussed using critical success factors as a starting point and finally framework for Evaluation of ERP Pre-Implementation Readiness was developed on the case company. This was one-time survey conducted using questionnaires. As future work the author recommended the framework could be improved if the study can include **consultants, clients and vendors** so that we can assess the internal reliability, validity and perceived value.

While having all this prior studies there is still the need for developing new readiness assessment framework. one of the reason is that the studies are done in the previous years with different context and on a limited amount of factors but now a days many new additional CSFs are there and incorporating them will result in a multidimensional measuring readiness assessment framework. Besides, most of them are done on the context of developed nations depending on the selected critical success factors on limited stakeholders of the system which can't be applicable for countries like Ethiopia because companies in our country do not have a stable and same way of doing business like developed countries. In addition as we can see from the recent reviewed literatures two of them are prepared for the developing nations context but the one research done in Tanzania by Mdimba B. et.al (2017) proposes a practical model for assessment of pre-implementation of an enterprise in Tanzania prior to implementation based on success factors related to business -Information technology alignment which does not incorporate multi stakeholders' perspective and a research done by (zewdu 2016) in our country proposes ERP pre-implementation readiness assessment framework based on selected CSF depending organizational, technical and cultural perspectives and finally the researcher suggested that as future work to include client, vendor and consultants perspective to make the framework measure the readiness of the company from multi stakeholders' perspective. This shows that comprehensive studies and systematic studies on ERP pre - implementation are missing in developing countries. Since assessing the readiness of the company for ERP implementation is critical for the successful implementation the researcher believes that it's better to assess it from multi stakeholders' perspective which I plan to do my research on.

1.3. Research question

The following is the research question that will be answered in the research

1. What are the pre-implementation specific factors?
2. How can a comprehensive organizational readiness assessment framework for ERP pre-implementation be developed?

1.4. General Objective

The general objective of this research is to propose comprehensive ERP pre-implementation framework based on multi stakeholders' perspective which will be useable for companies to measure the readiness level and to identify their weakness to implement ERP system.

1.4.1. Specific objective

To achieve the general objective of the study the following are identified specific objectives

1. Identifying Critical Success Factors (CSFs) from different stakeholders' perspective
2. Identifying CSFs relevant and critical for Pre-implementation stage
3. Developing the conceptual framework based on the identified CSFs
4. Validate (assess feasibility of) the framework by applying to the case company

1.5. Significance of the study

Organizations that take time to plan and insure they are ready for the new ERP software before go-live even though no organization is ever 100% ready are much better positioned for success. Therefore, the practical contribution of this research is after the framework is developed it will be significant to transform organizations into "ERP READY" companies before the real implementation commences. The conceptual contribution of this research is filling the gaps that are found in the previous researches.

1.6. Scope of the study

Stakeholders in ERP projects are individuals or group of people within an organization whose support is required for successful implementation. Therefore this study assessed multi stakeholders' perspectives which are the client, vendors and consultants' perspective along with organizational, technical and cultural aspect so as to develop a comprehensive ERP pre-implementation framework.

1.7. Organization of the thesis

The research report comprises five chapters; the first chapter contains introduction of the study which consists of background of the study, background of the organization, statement of the problem, research questions, objectives of the study, scope of the study and organization of the paper.

The next chapter which is chapter two contains assessment of different literatures both on the area which discusses various theories and concepts on Enterprise Resources Planning system and related empirical reviews in relation to the research problem And in chapter three the research methodology and design has been detailed and the sample size and was also determined. Then, chapter four presents all the collected data in a clear manner and the analysis accordingly.

And finally, the last chapter is about is the conclusion and recommendation, which portrays the summary, conclusion and recommendation part.

CHAPTER TWO

LITERATURE REVIEW

1.8. Overview of Enterprise Resource Planning (ERP)

This chapter reviews the academic and practitioners literature published on Enterprise Resource Planning (ERP) systems with the aim of understanding what is already done and what is left on the focus of this research. The main topics that the researcher is going to cover in this part are: Meaning of ERP, ERP implementation, Key stakeholders of ERP system, ERP pre-implementation readiness assessment, critical and failure factors and ERP readiness assessment frameworks.

1.8.1. Meaning of ERP

An Enterprise resource planning system is an integrated business management system (software) covering functional areas of an enterprise like Logistics, Production, Finance, Accounting and Human Resources. It organizes and integrates operation processes and information flows to make optimum use of resources such as men, material, money and machine (Zewdu A., 2016). It provides the backbone for an enterprise-wide information system. At the core of this enterprise software is a central database which draws data from and feeds data into modular applications that operate on a common platform, thus standardizing business processes and data definitions into a unified environment. With an ERP system, data needs to be entered only once and the system provides consistency and visibility or transparency across the entire enterprise. Similarly, ERP facilitates information sharing across organizational units and geographical locations. It enables decision-makers to have an enterprise-wide view of the information they need in a timely, reliable and consistent fashion (Pramod Kumar et. al.2010).

In addition to the above definitions (Abeer et.al 2011) stated that ERP is the key businesses that help the organizations to gain a competitive advantage by integrating all business processes, managing and optimizing the resources available. It is not just a software package but an efficient way of doing business consisting of software support modules where information is flowing between them and they share a central database. It is not only complex but also challenging, time-consuming, expensive and resource intensive as agreed with most researchers.

To generalize (Abbas, 2013) stated that ERP system is a packaged business software system that enables a company to manage the efficient and effective use of by providing a total, integrated solution according to the organization's information-processing needs.

Table 2.1. Definition of ERP in Research Literature

| Definition of ERP | Source |
|---|---------------------------------------|
| <p>An IT solution to provide a centralized IT application for business processes and functions within a company or group of companies. It is a software solution that integrates information and business processes to enable information entered once into the system to be shared throughout an organization. It covers manufacturing and production planning, order management, financial management, asset management, human resources management, marketing automation, electronic commerce, sales and supply chain systems.</p> | <p>(McAdam & Galloway, 2005)</p> |
| <p>A new breed of Information Technology (IT) solutions that promise to effectively integrate islands of information and structure systems to reflect best practices ensuring total transparency and real-time information sharing across the intra-organizational processes (major functional areas) as well as inter-organizational processes (suppliers and customers).</p> | <p>(Gupta & Kohli, 2006)</p> |
| <p>Integrates all departments and functions throughout an organization into a single IT system (or integrated set</p> | <p>(Baltzan & Phillips, 2008)</p> |

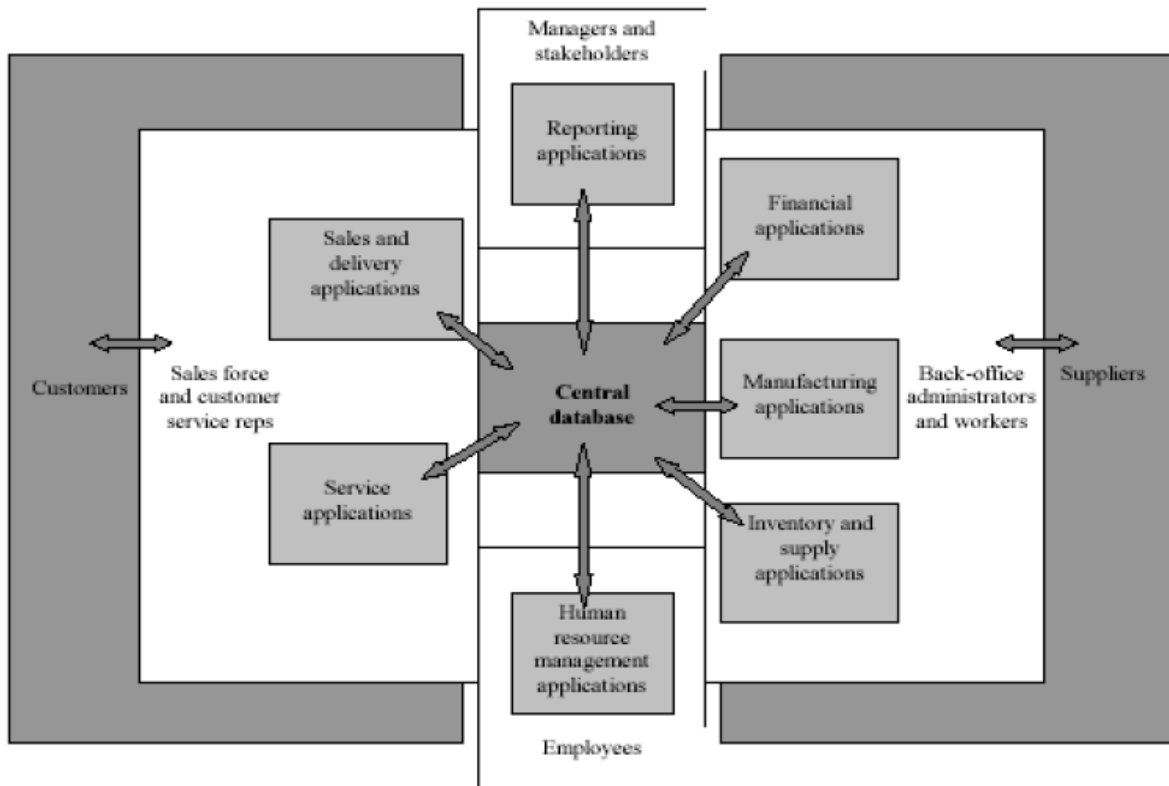
| | |
|---|------------------------------------|
| <p>of IT systems) so that employees can make decisions by viewing enterprise wide information on all business operations. An ERP system provides a method for effective planning and controlling of all the resources required to take, make, ship, and account for customer orders in a manufacturing, distribution, or service organization.</p> | |
| <p>Enterprise applications are systems that span functional areas, focus on executing business processes across the business firm, and include all levels of management. There are four major enterprise applications: enterprise systems, supply chain management systems, customer relationship management systems, and knowledge management systems. ERP systems, to integrate business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into a single software system.</p> | <p>(Laudon & Laudon, 2012)</p> |
| <p>Ability to deliver an integrated suite of business applications. These tools share a common process and data model, covering broad and deep operational end-to-end processes, such as those found in finance, HR, distribution, manufacturing, service and the supply chain.</p> | <p>(Gartner, Inc., 2012)</p> |

Source(adopted from Zewdu A. 2016)

1.8.1.1. The Anatomy of ERP system

The following picture is the anatomy of ERP system. Essentially, an ERP system consists of different modules. (Dahlen and Elfsson, 1999) state that, traditionally, a system must integrate three modules from the core group of manufacturing, distribution, finance and human resources to belong to the ERP classification. As figure 1 below from (Davenport, 2006) demonstrates the main structure of common ERP systems on the market.

Figure 1.1. Structure of ERP System (DAVENPORT, 2006)



As this figure demonstrates, the heart of an ERP system is the central database that feeds data among a series of applications supporting diverse enterprise functions. A single database provides consistency and serves to streamline the flow of information throughout a business (Zewdu A., 2016).

1.8.2. ERP implementation

The implementation (project) phase of an ERP system lifecycle begins after the system and the implementing partner have been chosen, and ends after the system “go-live” (Lech, 2013). It is an ongoing process where new functionality, modules, updates, and corrections need are carried out in conjunction with changes in business processes (Mdima1B et.al 2017).

Implementing an ERP system is a major project requiring a significant level of resources, commitment and changes throughout the organization. Often the ERP implementation project is the single biggest project that an organization has ever launched. As a result, the issues surrounding the implementation process have been one of the major concerns in industry. And it further worsens because of numerous failed cases including a few fatal disasters which lead to the demise of some companies (Moon Y., 2007).

Supporting the above idea (Zewdu A., 2016) states that implementation of a large ERP system requires not only substantial time and effort, but also a wide range of expertise and knowledge of the following: functional aspects of the package; system configuration and system integration; technical knowledge of the related hardware and software; project management and change management; making knowledge transfer and organizing user trainings. ERP- adopting organizations typically lack this expertise and usually outsource these activities to the ERP vendor, hardware vendor, and consulting firms.

1.8.2.1. ERP implantation approaches

1. Comprehensive (All-inclusive or Wide Ranging)

Apart from the physical scope of the project, there is implementation of the full functionality of the ERP, and occasionally this may involve the commissioning of industry specific modules .An ERP such as SAP R/3 for example consists of 12 main modules, each with a range of sub-modules. Accepting the full functionality of the ERP may mean executing all or most of the 12 modules, together with execution of an industry specific module. In addition, because there are multiple sites, typically with separately evolved business processes, the scope and level of BPR required is much more. A further trait concerns the method of connecting the ERP module to legacy systems. This may be either the 'module-by-module' or the 'full ERP' method. In the

'Module-by-module' method, the process is to execute a module, then link it to the legacy systems, then execute the next module, and link it to the legacy systems, and so on until all modules are executed. The 'full ERP' method involves executing all the required ERP modules and then connecting the whole ERP to the legacy systems. The difficulty described above involves large resource allotment. One such execution, for example, took seven years, and the cost was measured in tens of millions of dollars (Parr A. et.al 2000& Aiman J. 2015).

2. Middle-road

This category is, as the name suggests, mid-way between a Complete and a Vanilla implementation. Characteristically, there are multiple sites (although there may be only one Extensive site), and a major choice is to execute a selection only of core ERP modules. For example, with the SAP R/3 system it might be decided to execute Financials, Controlling and Asset management and Project systems. The level of BPR is important, but not as extensive as that required for a complete execution. Such systems may take 3-5 years to implement, and cost about \$A3M (Parr A. et.al 2000 & Aiman J. 2015).

3. Vanilla

This is the slightest single-minded and slightest hazardous execution/implementation approach/methodology. In general, the execution is on one site only, and the number of forthcoming system users is small (less than 100). A choice is made to have core ERP functionality only, and to do negligible BPR in order to exploit fully the process model built in to the ERP. This decision basically is a decision to line up company processes to the ERP rather than modify the ERP to reflect sole business processes. These systems are the least complex, and normally they may be executed in 6-12 months, and cost \$A1-2M (Parr A. et.al 2000& Aiman J. 2015).

Table 2.2. ERP Implementation Strategies

| | Physical Scope | BPR Scope | Technical Scope | Modules | Resources |
|-------------|----------------|-----------|-----------------|------------|-----------|
| Big Bang | All | High | High | Full | High |
| Middle Road | Some | Medium | Medium | A la Carte | Medium |
| Vanilla | Very Few | Low | Low | Skeletal | Low |

1.8.2.2. Motivation for EPR

(Parr and Shanks, 2000) mentioned the motivation for implementation varies between companies and they have cited six cite six common motivations for ERP adoption based on (Ross and vitale, 2000).

1. Need for a common platform
2. Process improvements
3. Data visibility
4. Operating cost reductions
5. Increased customer responsiveness
6. Improved strategic decision making.

Another study by Deloitte which is also stated by (Parr and Shanks, 2000) Consulting of individuals from 62 companies found that motivations for an ERP implementation fell into two broad categories: a resolution of technological problems and a vehicle for solving operational problems such as uncompetitive business performance and ineffective business processes. These differences in rationale will to some extent determine the type and scope of ERP implementation.

1.8.2.3. Advantages and Disadvantages of implementing ERP

Decision to implement ERP system is taken by various reasons. There are a number of advantages of such systems. A study by Deloitte Consulting (1998) which was based on interviews conducted with 62 Fortune 500 firms concluded that there are tangible and intangible benefits that an organization will most likely gain from implementing an ERP system (Ismail A.,2014)

Table 2.3. Tangible and Intangible benefits of ERP

| Tangible benefit | Intangible benefits |
|---|---|
| Personnel Reduction | Improved Information Visibility |
| Inventory Reduction | New/Improved Processes |
| Productivity Improvement | Improved Customer Responsiveness |
| Faster Financial Close Cycle | Standardization |
| Order Management/Cycle Time Improvement | Integration |
| Procurement Cost Reductions | Improved Cost Structure |
| IT Cost Reduction | Greater Flexibility |
| Cash Management Improvement | Globalization |
| Revenue/Profit Enhancement | Y2K |
| Maintenance Cost Reduction | Business Performance |
| On-Time Delivery Improvement | Supply/Demand Chain Performance Improvement |
| Transportation/Logistics Cost Reduction | New Business Model |

(Ismail A., 2014)The main advantages of ERP system in organizations has different dimensions such as technical, operational, managerial, IT infrastructure, strategic, organizational and business benefits as shown in table 5 below.

Table 2.4. Benefits of ERP system in different dimensions

| Dimension | Benefits |
|-------------------|--|
| Technical | <ul style="list-style-type: none"> ✓ Improve internal communications ✓ Reduce or eliminate manual process ✓ Enables higher availability of administrative systems ✓ Support sophisticated data analysis for use in decision making ✓ Integrate workflow, industry best practice and reduced dependence on paper |
| Operational | <ul style="list-style-type: none"> ✓ Productivity improvement ✓ Cost reduction ✓ Quality improvement ✓ Customer satisfaction |
| Managerial | <ul style="list-style-type: none"> ✓ Enhance strategic decision making and planning capabilities ✓ Used for resource management ✓ Used for performance management |
| IT infrastructure | <ul style="list-style-type: none"> ✓ Business change flexibility ✓ IT cost reduction ✓ Increased IT capability |
| Strategic | <ul style="list-style-type: none"> ✓ Business growth |

| | |
|----------------|---|
| | <ul style="list-style-type: none"> ✓ Business cooperation ✓ Business leadership |
| Organizational | <ul style="list-style-type: none"> ✓ Common vision ✓ Empowerment ✓ Changing work patterns |
| Business | <ul style="list-style-type: none"> ✓ Platform for reengineering business practices and continued process improvements ✓ Used to develop and maintain consistent data definition ✓ Increase data integrity, validity and reliability ✓ Assure system wide security and protection of confidential information ✓ Create more seamless integration between technology and service delivery by providing platform based on the new technologies ✓ Access to data in real time |

Source (Adopted from Seo, 2013; Sintayehu, 2014)

However, such an improvement comes at high costs and also associated with a lot of risks. The following disadvantages are suggested (Barsukova D. 2013):

- It is troublesome to understand the logic behind ERP system (probably, it is mostly relevant for so-called “green field implementations” when the company implements ERP without any previous experience with it, with no legacy system).
- There are difficulties in the implementation process that are most commonly related to change management, top management commitment, resistance to change.
- Standard packaged solution provided by a vendor does not satisfy the business requirements.
- Complexity
- The system as it was selected implemented or configured various challenges in the implementation lead to report high failure rates of projects reports. According two surveys on the first, half of the 117 ERP implementation efforts failed to realize their business objectives. According to the other, 51% of organizations saw their ERP implementation as unsuccessful.

1.8.3. Stakeholders of ERP system and their role

Stakeholders are individuals or groups of people within an organization who have a vested interest in an ERP implementation software project’s outcome and/or whose support is required to launch such a project, drive it forward to a successful conclusion and ensure that the product is utilized to its fullest extent. They have the power to drive a project to failure just as much as they have the power to drive a project to success (Smiju Sudevan et al, 2014). The following are the list of key stakeholders that involves throughout ERP implementation project and their brief description.

According to (Sathish, 2004) ERP system stakeholder are categorized in to four groups which are management, end-users, IT staff and external parties. On a research by (Sathish, 2004) the researcher classified and describes the four stakeholders category based on different literatures in which most of the following descriptions about the stakeholders is adapted from.

The first key stakeholder category of ERP projects is management. This includes the steering committee and project managers of the ERP project. The steering committee consisting of senior

management from different corporate functions, senior project managers and system end users ensures their active involvement and is critical for the success of the project and they make an intense and close follow up during the entire time. Their impact is highest at the initiation, adoption, adaptation and acceptance stages and at the project life cycle. Project managers (Top Management) are the executive organ of the organization who will involve on key and strategic decision making process. Sustained management support and management's active involvement in monitoring the progress of the project and providing directions to project teams are essential throughout the implementation project (Engidayehu, 2014).

Moreover the active strong and committed support of management is important to the project. Such support signals the importance of the system and shows management's backing of the project which is crucial given its complexity and comprehensive, enterprise-wide nature (Sathish, 2004).

Their support helps to build acceptance and confidence in the system among the rest of the organizational stakeholders, to get them to contribute more effectively to the project. Such support needs to be evident throughout the project, from the start to roll it out, in the middle to keep it on track, and at the end to encourage its utilization. In particular, the project should be supported by a project champion who oversees the project's progress and allocates the resources required for successful implementation. This person needs sufficient strength and authority over the stakeholders to energize them to work (Sathish, 2004).

The second major stakeholder category of ERP projects is the end-users. This includes internal staff and external customers. End-users are important as they possess the necessary know-how of the relevant business processes, which needs to be accurately mapped to the system's configurations. ERP projects are more likely to succeed if end-user involvement and understanding is high, and they have realistic project expectations. Given the fact that the new system might impose a different set of business processes, every effort should be made to evaluate the impact this might have on system users. An ERP accounting software system that seems to be overly complex or demanding will become a self-fulfilling prophecy unless the issue is addressed and precautions taken. The process of implementing a new ERP software system must proceed from two different directions. The strategic needs of the organization and its

executive managers must be defined and usually translated into Business Intelligence requirements. On the other hand people need to do the work and that translates into Business Process Management requirements. Customer Relationship Management comes in between these two requirements. System users don't need information parse. They need to process business transactions (purchase order, sales orders, etc.) and do so efficiently. They also need to be able to easily track business processes that are not being completed on time (track and resolve overdue purchase orders, sales orders, and overdue invoices). If this critical group of people (usually a majority of the total number of people interacting with the ERP implementation software system) is not included in the process, two outcomes are possible. It may cost, a lot more to process transactions or worse still significant resistance to the new system will be generated. These people and their needs are just as important as executives and managers who utilize the output of the ERP implementation software system (Smiju Sudevan et al, 2014).

As a result increasing the involvement of end-users also minimizes their resistance to changes in job content and uncertainty in the new system. The end-users of ERP also require extensive training to learn a wider range of skills to effectively handle the system, and interact with internal IS staff and external vendors. One particularly important group of end-users is the organization's customers, as they are no longer passive recipients of products and services. Instead, they have become increasingly discerning, demanding, price conscious and impatient with regards to what they want (Sathish, 2004).

The third important stakeholder category of ERP projects is the internal IS staff. This includes both permanent and contract IS staff in the organization handling the system's technical implementation. As ERP are generally developed by external parties, their role is significantly different during ERP projects. They no longer design and build the actual system. Instead, they require skills that are oriented towards combining "package" knowledge and business knowledge. They also help the external parties to gather end-user feedback to facilitate the system's configuration and its integration with existing organizational systems.

The final important stakeholder category is the external parties. This includes third-party vendors, who develop the ERP, and external consultants. Where previously, organizations would not contemplate delegating a project as important as an ERP implementation to an outside party,

today, they have to do so as they lack the necessary skills to handle it themselves. Third-party vendors thus help to develop the systems software but are otherwise normally not involved in the ensuing implementation.

External consultants then help to fill any gaps in expertise, product knowledge, process guidance and IT skills during the implementation process. As many as a dozen or more external agencies – such as vendors of ERP, ERP extensions and supporting hardware, and consultants – may be involved in different aspects of the ERP experience and coordinating their efforts is, to put it mildly, a challenge (Sathish, 2004).

In addition to the above according to (Engidayehu, 2014) there are also important issues regarding outside third-party vendors which are described below.

Vendor - Customer Partnerships

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

Vendor's Tools

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

Vendor Support

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

For an ERP project to be successful, representatives of each of these categories should be involved, and the strengths of each group maximized. However, as it is unlikely that a homogeneous category has all the relevant knowledge and expertise to implement, the mix of

representatives should be well-balanced to ensure a good combination of knowledge, skills and experience. Both internal and external personnel should be included to enable internal staff to “grow” the necessary skills for ERP projects (Sathish, 2004).

1.8.4. Critical Success Factors (CSFs) In ERP Systems

(CSFs) for ERP projects is defined as a reference to any condition or element seen as necessary for the ERP implementation to be successful. CSFs identified from

literature which are going to be used as factors that can measure the readiness of the company.

- **Available Ressources (budget, employées, etc.)**

ERP implémentation projects require a lot of resources such as money, time and employees. These requirements need to be determined early in the project or even before it starts. It is very difficult to secure resource commitment in advance to ensure the success of the implementation project. An appropriate budget is the basis for a solid project execution. If the budget allocated is too small other success factors can be negatively affected.

- **Project Team competency**

According to (Pavlovna et.al, 2015) the function of project team is the Company own staff having necessary skills, knowledge and experience regarding implementation project. Availability and competence of project team external participants—implementation consultants, developers, software suppliers’ representatives.

- **Commitment and support of top management**

The ERP implementation was in general a top-down decision and the success of such an implementation depended on the alignment of the ERP adoption with strategic business goals. Top management support has been consistently identified as the most important and crucial success factor in ERP system implementation projects. Top management provides the necessary resources and authority or power for project success. Top management support in ERP implementation has two main aspects: (1) providing leadership; and (2) providing the necessary resources. To implement ERP system successfully, management should monitor the implementation progress and provide clear

direction of the project. They must be willing to allow for a mindset change by accepting that a lot of learning has to be done at all levels, including themselves (Mohamed et al .2015).

- **Business process reengineering and software configuration**

Business process reengineering is one of the factors that affect ERP implementation in every organization. When organizations are implementing ERP system the work flow and the business process may change. Business process reengineering is important in ERP system, because of ERP systems are essential to enhance the business process like manufacturing, purchasing or distribution to achieve the benefits provided by ERP system. It is vital that the business process reengineering aligned with the new system to enable as contributing factor in the ERP process (Zouine, 2014). On the other hand software configuration is considered as the factors while some modifications taken in implementing process.

- **Project cost planning and management planning**

The management always needs to have an exact forecast implementation costs. ERP software package is very high in cost, to adopt successfully within the organization every stakeholder should concentrate and properly planning to release the budget as well as managing the cost. According to (Fernandez et al., 2016) ERP implementation is providing more timely and enterprise wide information for decision making, documentation cost and administrative cost the organization has implemented. Cost planning and management planning may effect on the implementation of ERP system in the case of financial performance and increasing the income. Therefore any organization has proper cost planning and management planning that should be fund for the project.

- **Project Management**

An effective project management promises a successful organization through succeeded project implementation. Project management takes part in defining clear path and project scope. The project scope must be clearly defined and controlled. For instance, milestones and goals should be clearly set out, tracking of schedules should be in place, budgets and end results should be tallied to ensure a successful delivery of the project. Due to the

large number of stakeholders involved in the project, it is crucial to convey the activities to everyone in the organization. Also, it is crucial for the project management to resolve any issues arising from the project and to be prepared for the unforeseen obstacles (Gupta et.al, 2014).

- **ERP Selection**

When any organizations want to implement ERP system, they should carefully decide and planned ERP selection. It should be consider the organizations strategy, plan, organizations culture and management. Specifically ERP software package is requires careful attention of matching between the systems itself and the organization business process (Yousaf, 2015). Failures are happened in organizations when the new technology competences and demands are incompatible with the existing business practice.

- **Change Management**

Change Management can be referred to anticipating the future changes and effectively managing the changes. Research shows that change management is a critical factor for managing the transition in organization, user education and company culture. Company culture refers to the culture to accept changes, support changes and working towards improving through changes. Some authors have emphasized on change management to achieve sustainable competitive advantage. There is a connection between the organizational culture, change management, user involvement and education with the ERP implementation success. The organizational culture can impact the knowledge sharing which is vital during ERP implementation. Change management in an organization should not only be focusing on the training of individuals for ease of transition and acceptance, it should also be for future considerations of the overall culture of the organization. Change management is vital in all the implementation stages of the ERP in the organization (Gupta et.al, 2014).

- **Monitoring and evaluation of performance**

An ERP system is complex and contains lots of checks and balances. A common risk is the data visibility, integrity, and accuracy across the system. Management must understand that during the implementation system glitches may occur, and will disturb the work. Therefore all efforts must be made to eliminate major system glitches. Subsequently monitoring system performance is needed to identify any alignment problems that may have occurred and were not apparent (Fang L.2005)

- **Organizational culture**

Organizational culture is embedded within national culture, and is therefore a critical factor affecting ERP system implementation. Every company has its own unique organizational culture, which may or may not be strong and enduring, and which may be reflected in either openness for change, or the opposite. An organization that implements an ERP system has to change its business processes to achieve a better fit with ERP best-practice processes. These changes both impact the organization's culture, and are constrained by it. Some researchers argue that a successful technological innovation requires that either the technology be designed to fit the organization's current structure and culture, or that the organization's structure and culture has to be redesigned and changed to fit the new technology.

- **Building a business case**

In any organizations Business case for ERP implementation is explained as clearly justifying and understanding the needs of implementation. This concept is involved with the organization by considering the change economically and strategically when ERP system is implementing. This factor is affect ERP implementation whenever organizations are not clearly determining the result of ERP implementation on the business process.

- **Budgetary constraints**

Budget is one of the most factors that help to implement ERP system properly. But most of ERP project failed due to the lack of budget. This kind of issues should be addressed by top managements before the beginning of the project or even start the project.

- **Test and problem solution**

Testing is an important aspect of ERP implementation process. In the implementation process the project should test at the beginning, during and at the end. Only implementing the system is not sufficient, but testing at each stages of ERP system is mandatory to check whether it is properly works or not. According to (Yousaf, 2015) a pilot or test run is used to ensure that the system is successfully continued.

- **Having external professional consultants**

External factors may contribute to affect the ERP system implementation. Although the organizations have knowing regarding the internal business process problems and systems, other external multidimensional knowledge and experienced as well as professional are needed to contribute their own roles. According to (Fang, 2005) one of the most challenges in ERP implementation is to find and retain knowledgeable and experienced individuals. Therefore external professional consultants are identified as critical success factors for ERP implementation. Organizations needed assistance from external experts when they have not been able to solve the problems entirely.

- **Training and support for users**

Once ERP systems are implementing successfully training should provide the users of the organization. Users training are vitally important factors that should provide during and post implementation. Although ERP systems are successfully implemented, the system may be technically complex. Due to this reason training is required for all members who involved with the organization. Moreover the users have lack of awareness for the use and utilize of the system they may resist to adopt ERP system. Therefore sufficient training is important so as to understand about the system in detail.

- **Project champion/project sponsor/ project manager role**

According to (Yousaf, 2015) project champion is project sponsor, but they emphasize both project sponsor and project managers are equally considered as critical factors for ERP implementation. They should capable with strategic and tactical activities in the ERP project activities so as to manage ERP system integration successfully. ERP system

integration is the most important challenges for ERP project managers that requires large investment and associated with different problems. Therefore the roles of project managers are compulsory in order to follow and adopt ERP system effectively.

- **End user involvement**

End users are considered as one of the parts of ERP system in organizations who preserve and sustain for successful execution. Therefore end users should involve in the time of implementing ERP system to achieve the project successfully. According to (Almishal&Almashari, 2015) in ERP implementation end users should involve to keep the business process in the entire organization.

- **Vision statement and adequate business plan**

Organizations vision statement is an important part of the business plan to achieve their desired goals regarding the business process. It considered as the organization dreams to which they should forecast the business future. If the organization have not well structured and written document about how ERP system is used in the entire business process, they may not adopt and they make to resist as well as failed to achieve the desire objectives. Therefore the exact roadmap for the business and clear design of goals before the team clearly provide them the track to input their best practice.

- **Existence of communication plan**

Existence of communication in ERP implementation is played important roles to be successfully implemented or not. This implies that communication across deferent stakeholders in organizations should properly require verifying all are the same understanding regarding ERP implementation. Communication is takes place from the top management to the lower employees and even outside the organizations suppliers and customers. When the managers can be consent to release the resources and the projectteam members are well communicated, the project are well continued and on the best progress to be accomplished effectively.

- **Empowered decision maker**

This concept discusses the importance of empowerment of the team to make essential decisions timely, which is a must to effective timing of implementation. ERP software package is very huge and complex. Therefore the project team should have empowered decision that the project is not delayed and make rapid decision on the time of problems regarding on the project.

- **Implementation strategy and time frame**

Before implementing ERP system the organization should care and strongly take responsibility to successfully accomplish the project within the required time given. A good implementation strategy is highly required for successful ERP project. When organizations have not proper implementation strategy among in ERP system, it may get in to high cost and the organization business process get back (Sintayehu, 2014). Therefore the organizations should take care to how ERP system is to be implemented.

- **Consultant selection and relationship**

ERP system is very complex system that provides functionally to cover every aspects of the internal business process (Hurbean, 2008). In order to arrange this organizations have not deep knowledge of the software to meet the business practice. Therefore, Vendors/consultants have played an important role in the whole process of ERP implementation. But it creates dependency of the organization on the vendors and consultants. In order to avoid this smooth relationship between the organization and the vendors are creating a great arrangements for transferring knowledge and experience among the software and other important factors. Due to this reason the organization should care about selecting vendors and consultants. The relationships between the organization and the vendors or consultants are the main factors that determine the success or the failure of ERP implementation as well.

- **Training and job redesign**

In the implementation process training is the most challenging issues that affect ERP system. Lack of training is an obstacle for ERP implementation success at any levels of organizational achievements. According to (Oluwafemi, 2014) argued that due to the

complexity to integrate ERP software, training should provide for the users in order to understand how the system is working and used effectively. In order to develop IT skills for the user effective planning is highly played for critical success factors of ERP implementation. Training is very important factors to enable the users improve and enhance their levels of knowledge regarding with the ERP implementation process. Therefore organizations should pay attention to provide adequate training for individuals who have involved within the system.

- **Legacy system consideration**

Legacy systems are the old system that was used before implementing the new system. They are the main sources used to provide inputs for the new business process and system. Therefore when transferring the data from the legacy system to the new system the organization should take care in order to keep the files well. The data are may be stored in the form of tables or they are historical data and even they are stored manually. These kinds of tasks are the basic factors to migrate from olds system to the new system. This implies that any organization should consider the legacy system before transferring the data to the new system.

- **Availability and facilitation of IT infrastructure**

In ERP project insufficient support of IT infrastructure adversely affects ERP system. Before implementing the ERP system any organization should prepare IT infrastructure to facilitate the successful of the project. According to (Wanjiru, 2013) different IT infrastructures such as hardware, software and networking are the basic factors that affect the success of ERP implementation. It is clear that ERP implementation involves difficult transfer from the legacy information system and internal business process to integrate IT infrastructure throughout the organizations. Therefore IT infrastructure should available during implementation of ERP system.

- **Client consultation**

Like other critical issues; client consultation is significant to contribute the affecting of ERP implementation. Organizations should understand the users feeling and satisfaction while implementing ERP system, because of users' involvement is played vitally important role in ERP system particularly the business process. Therefore, clients are one parts of the system so as to involve within the organization

- **Data conversion and integrity**

The data is converted from the existing system to the new system is either manually or electronically. Therefore it needs proper planning, because of electronic conversion may done through customize the program and manual conversion also takes lots of time and manpower. To verify the data integration; it is very challenging task. It is possible factor of ERP system; because of when the data is converted it may not integrate with the existing business process. After accomplished the project properly, finally the organization should realize to convert the data carefully and consider the accuracy while the whole change process. When one functional module transfers from existing system to the new system, it requires fewer resources and users in order to adapt the new system (Anwar& Mohsin, 2011).

- **Financial plan**

Financial plan is one of the main causes for affecting ERP implementation that needs to start planning. According to (Almishal& Almashari, 2015) one of the most important challenges in ERP project is the delay of financial support, because of it requires lots of process, procedures and justifications to get them support for the project effectively and efficiently. This indicates that financial planning should take in to consideration to provide in earlier time. Financial plan needs great emphasize; because of it identified as a fundamental issues and factors for ERP implementation. Therefore it is important to have well-structured and proper financial plan during the implementation of ERP system in order to avoid the problems of failure.

- **Troubleshooting/crisis management**

Trouble shooting is one of the critical factors in implementing ERP system that should make smooth relationship with the consultants and vendors in order to work the system

well. When users directly contact with the ERP system, they may affect it. Therefore troubleshooting and crisis risk management skills are persistent required during the application practice. Organizations should involve developing troubleshooting tools, skills and techniques in order to work closely with the vendor and consultants whenever something is making wrong at the system (Arvidsson & Kojic, 2017).

1.8.5. Critical failure factors of ERP system

Most researchers identified different literatures for the most accepted definition of project failure. For instance “a project that has been cancelled or one that does not meet its budget, delivery, and business objectives” (Stanciu & Tinca, 2013) Hence the most challenged issues associated with the failure of ERP implementation caused by huge numbers of the project registered with less amounts of budgets and not a proper delivery of time that leads to achieving partial implementation or totally failed.

Although ERP implementation is properly completed by consultants and vendors, problems may appear if there is no individual involvement in the system. If employees are not clearly understood about how the system is used and implement as well as to know how to maintain the efficiencies and functionalities of the system, it should not work properly. According to (Barker & Frolick) a successful ERP implementation needs to involving, recognizing and retaining those who have worked with in the system. Without the team attitude and total backing everyone involved, ERP system will end less ultimate conditions.

Many organizations have installed ERP system to integrate their business process. Many studies are investigated to determine the failure factor that affect the implementation of ERP system. According to (Seok, 2015) explained that the failure factors of ERP systems are poor technology planning, users involvement and training, adequate skill and availability. Moreover ERP implementation failure appears in budget and schedule. While implementing ERP system without proper cost allocation, there can be poorly implementing ERP system and increasing the failure rate of the project. On the other hand (Barker & Frolick) identified lack of strong management support and communication challenges are consider as the failure of ERP system.

1.8.6. ERP pre-implementation readiness assessment: an empirical review

The pre-implementation phase of the project of an ERP extends from only a system installation to a wide-ranging process and attempts to incorporate all related activities systematically. Its sub-phases include sub-phases such as readiness assessment, requirement identification and solution selection. Studies suggest that, an effective readiness assessment framework is a necessary condition towards utilization of the opportunities provided by the ICT. Extensive preparations prior to implementation of ERP system is cited to enhance the possibilities of achieving project success (Mdima1B et.al 2017).

Furthermore (Jagoda k et al, 2016) suggests that many ERP projects have not produced the desired results for a variety of reasons. Thus, there is a strong need for enhancing the effectiveness of ERP projects while being fully aware of problems, shortcomings and their resolutions. There are many pre-implementation activities which have not been considered in the past and are potential candidates for further investigation for better ERP implementation outcomes. ERP implementation problems tend not to be with the technology but with the people thus managing personnel and their reactions to change rather than managing technical issues are challenging. Most of the critical success factors, issues and causes for failure identified in studies in which they are associated with phases of the implementation cycle, implementations can be improved by addressing these issues within the implementation cycle. However, the lack of readiness assessment, identified as one of the key failure factors (Samaranayake, 2005) over many implementation projects, cannot be addressed within implementation phases because it is outside the current implementation cycle. This means readiness assessment needs to be looked at as part of pre-implementation and should be linked with the implementation cycle at appropriate times for better implementation outcomes. It is important to note that many critical success factors are either part of the implementation cycle or linked directly to the implementation, whereas causes of failure are mainly outside the implementation cycle. Furthermore, careful analysis of causes of failure indicates that main failure causes are lack of organizations' readiness and weaknesses of the implementation cycle itself. This strengthens a case for organizations to be involved in the pre-implementation stage, supported by an enhanced implementation cycle if organizations were to eliminate the main causes of implementation

failures. Generally, readiness assessment can be seen as a key for eliminating the main cause of many failures: not knowing the organization's readiness before embarking on a large or small ERP system implementation project. It also directly links with a number of assessment bases, where each base has a number of characteristics linking with critical success factors. Depending on the assessment basis and the individual characteristics, readiness assessment can take a different score through different weights and ratings on various aspects of the implementation.

The following table is about literatures reviewed on readiness assessment and those developed Frameworks that can help to measure the readiness level of companies

Table 2.5. Empirical literatures reviewed

| No | Title | Author | Objective Of The Study and its finding | Methodology |
|-----------|---|---|--|---|
| 1 | Framework for Measuring ERP Implementation Readiness in Small and Medium Enterprise(SME): A Case Study in Software Developer Company. 2013. | Achmad Nizar Hidayanto, Muhammad Azani Hasibuan, Putu Wuri Handayani and Yudho Giri Sucahyo | The research was conducted to formulate the framework of self-assessment of open source ERP implementation readiness, which focused on the ERP pre-implementation aspects. The proposed ERP implementation readiness assessment framework was developed using the Fuzzy-based ANP (Fuzzy ANP), where the examined readiness factors are grouped into three categories, namely project management, organizational, and change management readiness. | The study adopts the framework of Razmi's Fuzzy ANP and framework defines the ERP implementation readiness in three categories, namely: <ul style="list-style-type: none"> • Project management readiness • Organizational readiness • Change management readiness |

| | | | | |
|---|---|---|---|---|
| 2 | An Assessment of Readiness Factors for Implementing ERP Based on Agility (Extension of Mckinsey 7s Model 2014). | Soheila Shiri, Alireza Anvari, Hassan Soltani. | The main goal of the study was to identify and prioritize organizational readiness factors for implementing ERP based on organizational agility. In this study, along with extension of McKinsey 7S model (strategy, structure, systems, skills, style, staff, and shared values) to 9S (7S+ self-evaluation and supportive factors). | Agility criteria were weighted and rated using group AHP with fuzzy logic approach; so that accountability, speed and flexibility have obtained the maximum score. |
| 3 | An EFQM Based Model to Assess an Enterprise Readiness for ERP Implementation. 2008 | Rasoul Shafaei, Nooraddin Dabiri | In this paper, a model based on EFQM with a focus on ERP CSFs factors was developed. The proposed model has been applied to assess the readiness of a company for successful implementation of an ERP system | ERP Critical Success Factors identified and the relation between ERP, CSFs and EFQM criteria investigated - the ERP CSFs relevant to EFQM criteria identified and a cross-index table derived then validity of the relations obtained in the cross-index table assessed by interviews and questionnaires responded by the experts in field of ERP and EFQM finally based on the result proposed model |

| | | | | |
|---|---|---|--|--|
| | | | | introduced |
| 4 | Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System | Sadra Ahmadi, Chung-Hsing Yeh and Rodeny Martin(2014) | <p>The research was conducted to investigate recently published research to find the best strategies for achieving organizational readiness to implement an ERP system.</p> <p>They Developed Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System by selecting three strategic issues and critical factors under the issues which are Organizational readiness, Social readiness and Technical readiness</p> | This research follows content analysis methodology investigate recently published research to find the best strategies for achieving organizational readiness to implement an ERP system and finally three readiness major categories were determined which are which are Organizational readiness, Social readiness and Technical readiness |
| 5 | Developing a framework for Evaluation of ERP Pre-Implementation Readiness: The Case of Dashen Bank Share Company. | Zewdu Ayenew(2016) | The main goal of the study is to investigate the technical, organizational and cultural readiness level in an attempt to implementing ERP in the context of Dashen Bank Share Company and design framework to address those issues. In this | This research follows the variance research approach in which the author adopted Nelson and Somers 22 CSFs that believed to affect the ERP project. |

| | | | | |
|--|--|--|--|--|
| | | | <p>study 21 CSFs were selected from Somers& Nelson then grouped under eleven pillars and finally framework was developed depending on organizational, Technological and cultural aspects of an organization.</p> | |
|--|--|--|--|--|

ERP pre-implementation readiness assessment framework has been developed by different researchers depending on different factors. Many of this farmworkers or studies conducted in developed countries depending on their situation. (Nizar A., et al2013) proposed ERP implementation readiness assessment framework that was developed using the Fuzzy-based ANP (Fuzzy ANP), where the examined readiness factors are grouped into three categories, namely project management, organizational, and change management readiness. In order to see the application of the framework, they conducted a case study on an SME engaged in software development. They did focus group discussion with Chief Technology Officer, Chief Strategy Officer and Project Manager. The results showed that the company is not ready to implement open source ERP. Although the company is strong in the human resources aspect, they are still weak in other aspects so that they need some strategies to improve their level of readiness before implementing open source ERP.

(Shiri, S et.al 2014) in the study to identify and prioritize organizational readiness factors for implementing ERP based on organizational agility. In this study, along with extension of McKinsey 7S model (strategy, structure, systems, skills, style, staff, shared values) to 9S (7S+ self-evaluation and supportive factors) model, agility criteria were weighted and rated using group AHP with fuzzy logic approach; so that accountability, speed and flexibility have obtained the maximum score. The nine organizational readiness factors were ranked using integrated FAHP and TOPSIS method based on five criteria of agility. The framework was proposed to a real case of Shiraz distribution cooperative firms. Results showed that among the nine organizational dimensions based on agility, the two added to McKinsey dimensions (self-evaluation and supportive factors) are ranked in the first and fourth places. The proposed

framework helps the enterprises “to implement ERP system with agility approach” concentrate on change management and develop strategies based on their own priority.

(Shafaei R. et al, 2008) proposes an EFQM based model to assess the readiness of an enterprise for effective and successful ERP implementation. First, the main factors affecting the implementation of an ERP system, called Critical Success Factors (CSF) are identified. Then relations between the factors defined in EFQM model and ERP CSFs are investigated by means of questionnaires by experts working in this field. The results identify those EFQM factors which are related to ERP CSFs. In addition, those ERP specific factors which are not considered in the EFQM model are identified. Consequently, a model based on EFQM including ERP specific CSFs is developed. The proposed model is applied to assess the readiness of a company intending to implement an ERP system.

(Ahmadi et al. 2014) developed a new approach for assessing the ERP readiness in organization by considering casual relationships between influential factors. The approach enables an organization to evaluate its ERP implementation readiness by considering two issues: (1) how the factors influence each other and (2) how they contribute on overall readiness. To address the first issue, they have used fuzzy cognitive maps (FCMs) and for the second issue they have used the fuzzy analytic hierarchy process (FAHP). Applying proposed approach for an Australian electricity holding company which intends to implement an ERP system they have got a result that shows the existing company is almost in moderately ready situation. Thus, it needs to improve some weakly ready factors like structure and culture alignment to improve the overall readiness. Generally, the developed model has two advantages compared to other decisionmaking methodologies which consider causal interrelationship between the decision criteria. These two advantages are ease of use and the ability of prediction of behavior of the system against any changes in the situation of decision criteria.

(Alaqeel A. 2017) studies the correlation between the organizational readiness in Albaha University and the respective Critical Success Factors with regards to the Enterprise Resource Planning (ERP) implementation. The study also considers some suggestions to improve the ABU’s ERP systems and roadmap towards the self –development strategy and to reduce vendor-dependency. A survey regarding ERP to the end-users, experts and developers in Albaha

University was conducted. The analysis of the results in this work confirmed with the results of an existing work. The four significance success factors: Project Management, Business Process Reengineering, System Integration, and Training and Education are recommended to be adopted to assure the smooth adoption of ERP at Albaha University.

(Mdima B., 2017) conducted a study that Tanzanian organizations faces challenges associated with ERP implementation in order to fully benefits from technology in terms of improved productivity, competitiveness and efficiency .This paper reviews the development of ERP technology in the country, challenges of ERP system implementation, position of enterprise architecture in business – IT alignment and propose ERP project conceptual framework for ERP pre-implementation assessment in Tanzania and other developing countries. Finally, the paper concludes on the position of Enterprise Architecture in pre – implementation of ERP project and offer related recommendations.

(Jagoda k. et.al, 2016) proposes an alternative integrated approach based on the stage-gate method to implement enterprise resource planning (ERP) systems which will enhance the effectiveness of ERP projects. A literature review was conducted on ERP system implementation and its effectiveness. The need for improving implementation approaches and methodologies was examined. Based on the insights gained, a conceptual framework for ERP system implementation is presented by combining the state-gate approach with the pre-implementation roadmap. Then they proposed framework aims to enhance the overall ERP implementation outcomes, ensuring critical success factors and eliminating common causes of failures. A pre-implementation roadmap is identified as a key element for eliminating many causes of failure including lack of organizations' readiness for ERP. The framework is also expected to reduce the implementation project duration, strengthen critical success factors and minimize common problems of ERP implementation projects.

(Ahmadi et.al.N.D) presents a strategic framework for companies to gain a proper level of readiness for implementing ERP systems. The Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System developed by selecting three strategic issues and critical factors under the issues which are Organizational readiness(Organization strategically readiness, Organization structural readiness and Organizational readiness for doing required

planning), Social readiness(Organization cultural readiness, Achieving right user intention for interacting with ERP system and Achieving decent level of communication inside the organization)Technical readiness(Choosing proper application for implementation, Achieving proper IT capability in organization, Providing proper IT infrastructure in organization and Managing organization information properly. As a result, SMEs can make rational decisions about the best time for buying and implementing an ERP system if they understand their current readiness situation. For developing the framework, more than 100 key papers discussing ERP implementation in organizations have been collected and analyzed. In this paper just, some key papers are represented. Based on the results of analyzing different viewpoints, 3 strategic issues and 10 strategies are proposed for gaining readiness for implementing ERP system, using the concept of strategic planning.

(zewdu A., 2016) similarly conducted a study in Ethiopia to investigate ERP Pre-implementation readiness using parameters (constructs) such as technical, organizational, and cultural in the context of Dashen Bank Share Company with the view to develop a framework for evaluation of ERP Pre-Implementation readiness and design a solution framework to address those issues. For achieving the objective, the study adopted Somers and Nelson's twenty-two CSFs (Critical Success Factors) as theoretical (conceptual) framework. The adopted and other critical factors are discussed widely in various literatures and those are believed to be the key factors for successful ERP implementations by different researchers. This study provides some key insights into the Pre-implementation readiness issues in commercial banks in Ethiopia. In addition, the study investigates the challenges faced by organizations implemented ERP systems referring literature reviews and factors influencing ERP implementation in general. This study employs survey method. Questionnaires were prepared based on the stated research model (theoretical framework). Twenty-two end users from various departments of the organization with different job positions, roles, and work experience who also represented in the IT governance structure for ERP implementation were participated in this study. Purposive sampling was used for this research. The critical success factors framework was adopted from Somers and Nelson and incorporated into eleven pillars to overall assess every dimension of organizational setup. These eleven pillars ultimately were classified under organizational, technological and cultural readiness aspects. The organizational aspect of the organization comprises five pillars namely: IT strategy and planning, IT governance, Risk Management, Capacity and Capability. The

technological aspect of the organization was erected by three pillars namely: Application management, Service management and IT resource management. In relation to cultural aspect of the organization, communication, commitment and Change culture were identified as pillars. The survey shows that the case company has limitations on the number of dimensions and has also shown areas the company must pay a visit to fill the gap. Based on the findings, this study proposes a framework for evaluation of ERP Pre-Implementation.

Depending on the empirical evidence's it's clear that there is a gap in integrating different perspectives in to a single study. In addition, there is one single study in Ethiopia regarding this issue so it needs more studies to fill the gap in knowledge.

2. CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

2.1. Introduction

This study attempts to develop ERP pre-implementation readiness assessment framework based on multi stakeholder's perspective taking EEU as a case company. This chapter presents the research design and methodology that is used to achieve the objective of the study.

2.2. Research approach

The purpose of this research is exploring the phenomena in a new light based on theoretically identified factors from different literatures. Exploratory studies are practical if we wish to clarify our understanding of a problem (Saunders et al., 2000). (Robson, 1993) describes exploratory studies as a method of finding out what is happening; to seek new insights; to ask questions and to assess phenomena in a new light.

The general approach of this research is design science case study approach in which both quantitative and qualitative methods are used to collect and analyze data. According to (yin 2003) Case study method is best fit for exploratory nature of study since the purpose of this paper is exploratory study using case study approach will be appropriate to answer the research question.

The case study approach is widely used in information system science research because it gives us opportunity to make an in depth analysis of the information system implemented in an organization (Abbas, 2013). Case study in an empirical inquiry investigates the phenomena behind some practical issues with respect to certain causing factors (Dui & Halk, 2008)

For this study EEU is selected as a case company based on two reasons. First the company is on the process of implementing ERP system so it is a good opportunity to get all the stakeholders together to gather sufficient information from multi-stakeholders 'perspective for the study. Second the company is one of the biggest companies in Ethiopia with many branch offices and a huge business process in which it can be a good representative sample/case for large organizations in Ethiopia. In addition to this after the framework is developed by relating the

selected factors base on case company it will be applicable for large organization as well as the medium and small organization by customizing based on the case of the organization.

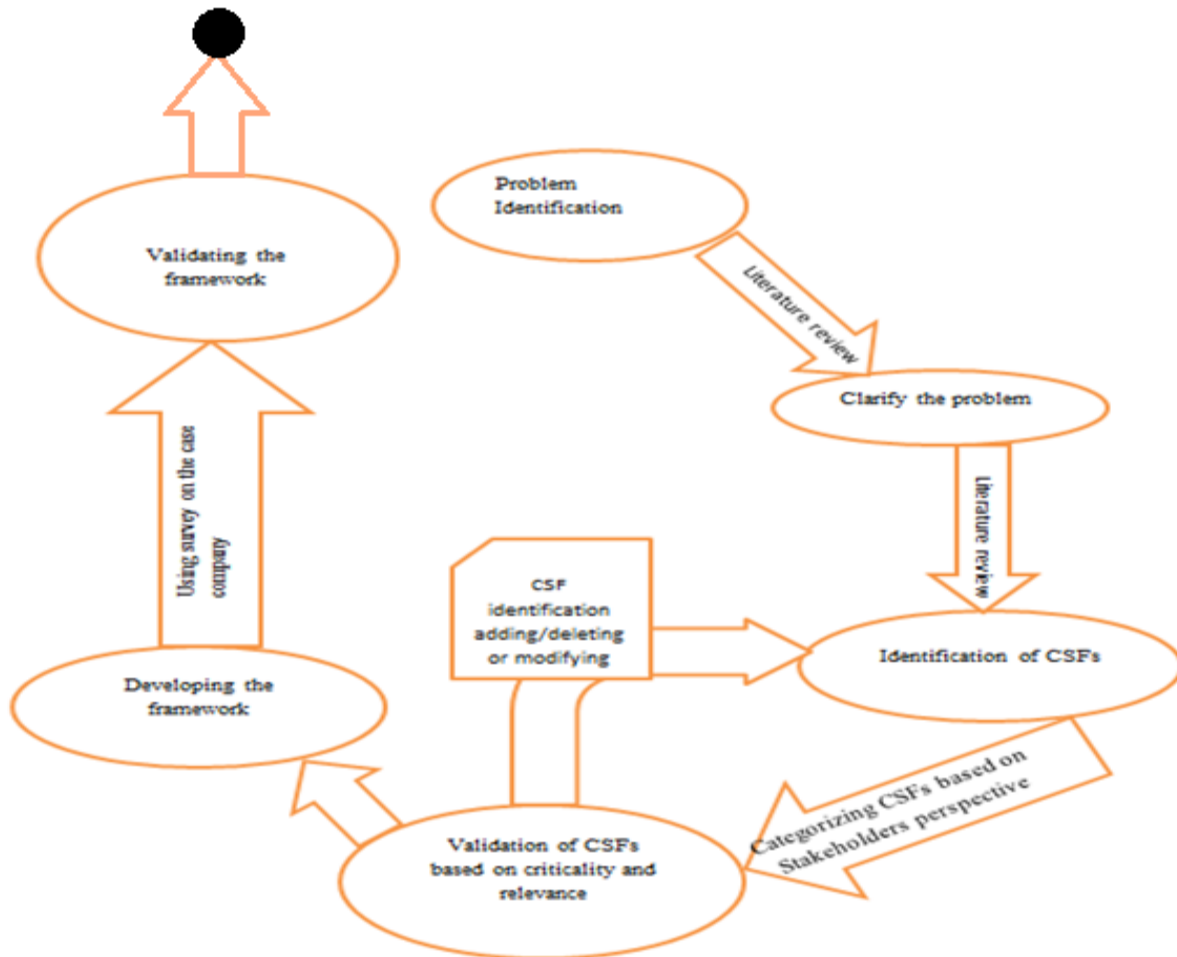
Researchers claim that a case study research can employ both quantitative and qualitative sources of data collection in order to best answer research questions (Creswell, 2003). A great value of this method comes from its strength for exploiting the ‘richness’ of the situation which permits deeper insight of the subject under the study (Creswell, 2003).

For the purpose of quantitative analysis, a survey is conducted through questionnaire and for the purpose of qualitative method interview is used to investigate multi stakeholder’s perspective regarding readiness issues that are believed to directly affect implementation of ERP system in the case study company.

2.2.1. Research process map

Research process map is defined as a serious of steeps that are going to be followed throughout the research process to develop the ERP pre-implementation readiness assessment framework as well as to validate the framework by measuring the readiness of the company. As we can see from figure 3.1 it contains the major activities in the research. It starts with problem identification and then by reviewing literatures the problem is clarified likewise it goes all the way to the validation of the framework.in this study CSFs are identified with extensive literature review and those selected factors are categorized under different stakeholders’ perspective the validation of CSFs will be conducted based on criticality and relevance to pre-implementation stage. Deleting /adding or modifying of identified CSFs will be done in the process. Finally, the framework will be developed and validating the framework will be conducted by measuring the readiness of the case company using the proposed framework.

Figure 3.1. Research Process Map



2.3. Study design

The general approach of this research is exploratory case study. EEU is selected as a case for this study based on two reasons. First the company is on the process of implementing ERP system so it will be a good opportunity to get all the stakeholders together to gather sufficient information for the study. Second the company is one of the biggest companies in Ethiopia with many branch offices and a huge business process in which it can be a good representative sample for large organizations in Ethiopia.

2.3.1. Sample Techniques and sample size

Sampling is the process of selecting units or individuals from a population which can be included in the study, for instance, to answer interview questions or respond to survey questionnaires. For

this research, purposive sampling technique is used. In this study the sample units must have the potential and richness in information to be key informants for the study. In this study the sample frame is EEU’s head office staffs and purposive sampling technique is used. In case study, the sample units must have the potential and richness in information to be key informants for the study. First ERP project key stakeholders of the company for this project have been identified. These members are composed from different departments. Target stakeholders for the survey are divided under five groups to see multi stakeholder’s perspectives. To study **organizational perspective** the survey addresses mainly top managements, for the **technical perspective** two side technical stuffs of the company have been addressed which are application and infrastructure technical stuffs, for **consultant perspective** SI ERP consultants hired by the company are the targets, for the **vendor’s perspective** tech Mahindra Indian company agents who implement SAP solution for the company is the target samples and finally for the **user perspective** purposely selected different level of system users have been addressed. Fifteen individuals were selected as respondents for the survey questionnaire to assess organizational, technical and user perspective and for consultants and vendors perspective one representative individuals for each have been addresses through interview respectively. These individuals are selected as key informants and respondents based on their involvement, exposure and role in the ERP project and functional role in the company.

Table 3. 1. Sample Taken

| Sample taken for secondary survey questionnaire and interview | | |
|--|--|---|
| Category | Number of samples | Remark |
| Organization Perspective | 5 from top management in the company | These samples are selected based on their involvement, exposure and role in the ERP project and functional role in the company. |
| Technical Perspective | 5 from application and infrastructure side technical stuff | |
| User Perspective | 5 from different level of users | |

| | | |
|------------------------|---|--|
| Consultant Perspective | 1 Representative from SI consultant which is hired by the company | |
| Vendor Perspective | 1 Representative from tech Mahindra Indian company agents who implement SAP solution for the company. | |

2.3.2. Data collection Instrument

For this research both quantitative and qualitative Approaches are used. Qualitative approach is used to get primary source for this paper. It will be the literature review from peer-reviewed sources as ERP is a new phenomenon for our country and the vendors and consultant's perspective will be addressed with interview. In addition, this paper will be supplemented by questioner surveys distributed to various stakeholders which is Quantitative approach because the client (owner of the system, users of the system at different level and the technical stuffs) are going to be addressed using Questionnaires.

Document Review: For this research, detailed and focused literature review will be done to understand more about Enterprise Resource Planning concepts and ERP implementation framework with a central issue of identifying critical factors. More research works conducted on ERP implementation experiences in developing countries will be reviewed.

Questionnaire: Questionnaire is used for this research. It is used to extract the view of multi stakeholders on ERP pre-implementation readiness assessment. For this study primary and secondary questioner will be prepared. The primary questioner is distributed for 5 purposely selected experts in the case company to identify the CSFs that are critical and relevant to pre-implementation stage. Based on the result of the first questioner which is on the basis of identified CSFs the second survey questioner prepared to validate the framework by measuring the readiness level of the case company. The close and open ended questioners are distributed to fifteen individuals who were selected as respondents for the survey questionnaire to assess

organizational, technical and user perspective and the response is collected accordingly for analysis.

Interview: For this study interview is used for selected and small number of stakeholders’ of the system. Specifically to assess consultants and vendors perspective one representative individuals for each have been selected as respondent to extract use full information. Using these instruments important data have been collected in order to answer the research question.

2.4. Techniques for CSF Identification

There are many techniques to identify CSF. The following summarizes some studies that I found in the literature and the research methods applied. Each of these methods has its respective strengths and weaknesses.

Table 3.2. Techniques for CSF Identification adopted from (Zewdu, 2016)

| Research method Reference | Research method Reference |
|---------------------------|---------------------------|
| Action-research | Kock et al. 1999 |
| Case studies | Holland et al. 1999 |
| Focus groups | Lawley et al. 2001 |
| Group interviewing | Khandewal and Miller 1992 |
| Literature review | Esteves and Pastor 2001 |
| Structured interviewing | Bullen and Rockart 1986 |

2.4.1. CSF Identification

Critical success factors can be viewed as situated exemplars that help extend the boundaries of process improvement, and whose effect is much richer if viewed within the context of their importance in the implementation process.

The aim of this section is to select the CSF’s as they are an important part before starting any ERP implementation. There are high chances of failure in the ERP implementations because of

many reasons, and the benefits associated with ERPs can only be achieved through successful implementations. To achieve a positive result or success in implementing ERP, I have done extensive literature reviews and finally 51 CSF taken from (Tarhini A. et.al , 2015) that I believed it incorporate most CSF frequently appeared in other literatures from different stakeholders perspective and it would be valuable for the case study.

The 51 CSF are grouped under five key stakeholder’s perspective which is shown on the following table. Grouping of those CSFs into five groups were made to assess multi stakeholder’s perspective. The grouping is based the on the research done by (Tarhini A. et.al, 2015), similarity of concepts, the researcher’s judgment and by observing what is done by whom in the case company.

Table 3.3. CSFs Category under Five Perspectives

| GROUP | CSFs |
|----------------------------|--|
| Organizational perspective | <ul style="list-style-type: none"> - Training for different user group - Project management - Clear vision, goal And objectives of the ERP system - Careful change management - The use of ERP implementation consultant - Dedicated resource - Organizational culture /cultural change /political issues - Steering committee - Interdepartmental cooperation - Business plan and long term vision - Team work - Organizational fit for ERP - Motivational factors to implement ERP system - Top management support and commitment - Business process re-engineering - Adequate ERP system selection - Project team competency - Management of expectation - Vendor/customer partnership - Empowered decision makers - Formalized project plan /schedule - Good project scope management - A formalized project approach and methodology - Experienced project manager leadership - Managing consultants |

| | |
|------------------------|---|
| | <ul style="list-style-type: none"> - Focus on user requirement - Implementation strategy - Project team composition/team skill |
| Technical perspective | <ul style="list-style-type: none"> - Training for different user group - Adequate ERP system selection - Dedicated resource - Organizational culture /cultural change /political issues - Steering committee - Team work - Minimal customization of packages - Data and information quality - Empowered decision makers - Communication among the implementation team members - Formalized project plan /schedule - IT department capability - Reducing trouble shooting-project risk - Focus on user requirement Implementation strategy |
| Consultant perspective | <ul style="list-style-type: none"> - The use of ERP implementation consultant - Business process re-engineering - Minimal customization of packages - Team work - Formalized project plan /schedule - Good project scope management - A formalized project approach and methodology - Managing consultants - Integration of business planning with ERP planning - Communication among the implementation team members - Focus on user requirement - Implementation strategy |
| Vendor perspective | <ul style="list-style-type: none"> - On-going ERP vendor support - Organizational fit for ERP - Minimal customization of packages |
| User perspective | <ul style="list-style-type: none"> - Training for different user group - Interdepartmental cooperation - Business process re-engineering - Focus on user requirement - Team work - communication |

Having identified a set of appropriate CSFs for ERP implementation, the next task was to select a process model into which the CSFs could be situated. The purpose of introducing the process model was to identify when in this implementation process each CSFs are most relevant. (Motwani et al., 2005) propose a three stage process model (pre-implementation, implementation and post implementation). To measure organizational readiness for ERP implementation, Motwani's model appeared to be a suitable process model in this research. This structure was used to determine the stages in which the CSFs of ERP implementation readiness are most critical and relevant.

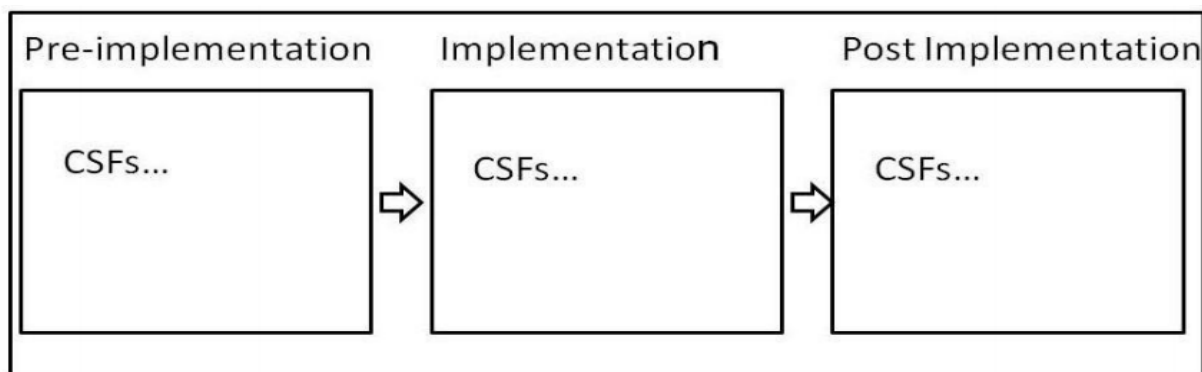


Figure 3.2. Research Process Model (Adopted from Motwani Et Al, 2005.)

2.4.1.1. Validation of the CSF framework and a process model

Having produced the CSF framework, the design science approach requires us to evaluate or validate the artifact. This was done by having a group of experts evaluate the usefulness and completeness of the set of CSFs and the appropriateness of each CSF to the stage to which it had been allocated in the process model.

2.4.1.2. Questionnaire development

The questionnaire was intended to gather two different pieces of information about each of the 51 CSFs in the CSF framework. The first piece of information was the extent to which stages of the process model in which the respondent believed the CSFs to be significant. The second piece of information was the extent to which a respondent believed the CSF to be critical to ERP Pre-Implementation stage.

To allow respondents to focus on each CSF in turn, two pieces of information were gathered in which the questionnaire having to parts. The first part in the questionnaire asked respondents to indicate in which phase of the process model each CSF was significant for ERP implementation. For each CSF, participants could indicate one or more of the three: pre-Implementation, Implementation or post- Implementation. The second part was concerned on the criticality of the CSF significant for ERP Pre-Implementation stage, used a 5-point Likert scale.

As the relevance of the CSF framework must be evaluated, in this study, expert validation are used to evaluate the process model and the CSF framework. Accordingly, survey questionnaire are prepared and distributed to five field experts.

The success factors which are:-

1. Top management support and commitment
2. Training for different user group
3. Project management
4. Clear vision, goal. And objectives of the ERP system
5. Careful change management
6. Inter departmental communication
7. Project champion
8. The use of ERP implementation consultant
9. Business process re-engineering
10. Communication among the implementation team members
11. Adequate ERP system selection
12. Project team competency
13. On-going- ERP vendor support
14. Project team composition/team skill
15. Minimal customization of packages
16. End user involvement
17. Education on new business process
18. Reducing trouble shooting-project risk
19. Steering committee
20. Management of expectation

21. Dedicated resource
22. Organizational culture /cultural change /political issues
23. Suitable IT legacy system
24. Team work
25. Implementation strategy
26. Interdepartmental cooperation
27. Data analysis and conversion
28. Use of vendor development tools
29. Vendor/customer partnership
30. Data and information quality
31. IT infrastructure
32. Empowered decision makers
33. Business plan and long term vision
34. Defining the architecture
35. Ease of system use and user's acceptance
36. Formalized project plan /schedule
37. Organizational fit for ERP
38. IT department capability
39. Good project scope management
40. Experienced project manager leadership
41. Adequate resource
42. Managing consultants
43. Company wide support
44. Monitoring and evaluation of performance
45. Integration of business planning with ERP planning
46. Technical issues
47. Motivational factors to implement ERP system
48. Trust between partners
49. Effectiveness of management in reducing the user's resistance
50. Focus on user requirement
51. A formalized project approach and methodology

Evaluation mechanism

In the evaluation, Validity and reliability are the two fundamental elements in the evaluation of a measurement instrument. Validity indicates the degree to which an instrument measures what it is supposed to measure, reliability is the way we will depend on the research or process output of the research result. The comprehensive ERP pre-implementation readiness assessment framework will be validated by measuring the readiness of the case company.

2.5. Procedure

In this research, as a first step literature review section will be available. The Detailed and focused literature review will help to understand and develop or construct theories and concepts on ERP pre-implementation readiness assessment. The success factors will also be identified from the literatures and the relationship of selected factors will be identified depending on the case company. Data will be collected with the instruments that I mentioned above. The data that is going to be collected will depend on the selected factors which can reflect multi stakeholders' perspective. Then the collected data will be analyzed and finally the comprehensive ERP pre-implementation readiness assessment framework will be developed.

2.6. Data Analysis

In most research results are interpreted from the quantitative perspective of the research process that can generate effective outputs. Each case at the qualitative and quantitative case is processing on its own phase independently. By employing SPSS20, the quantitative data analyzed using frequency and mean. The data collected by interview interpreted accordingly.

2.6.1. How primary and secondary quantitative and qualitative analyzed

For primary quantitative data analysis both mean and frequency analysis is used. To select CSFs relevant for Pre-implementation stage by using frequency analysis CSFs above the valid percent 50% are taken as relevant for the pre-implementation stage. Valid percent is taken not to consider the null values. mean analysis is used for validating the criticality of those selected CSFs and rating the mean value above 3.6 is taken as relevant CSF since 3.6 is round to 4 and as the value 4 &5 are critical and very critical respectively. Which means only critical and very

critical value is taken to identify criticality of CSFs for pre-implementation stage. For secondary quantitative data analysis mean is used and the qualitative data interpreted accordingly.

CHAPTER FOUR

FINDING AND DISCUSSION

2.7. Introduction

This section discusses the finding of the research. The first Objective which was identifying CSFs from different stakeholders' perspective achieved through an in-depth review of literature.

Objective two of this research is to have the identified CSFs validated by expert practitioners. This validation was undertaken by an Expert group from the case company (EEU). The validation process gathered two sets of data:-

1. Identifying CSFs relevant for Pre-implementation stage
2. Validating the criticality of those selected CSFs

These sets of data are presented and discussed in the following sub-sections.

2.8. Data collection context

In this study the sample frame is EEU's head office staffs and purposive sampling technique is used. The sample units must have the potential and richness in information to be key informants for this study. First ERP project key stake holders of the company for this project have been identified. Target stakeholders for the survey are divided under five groups to see multi stakeholder's perspectives. To study **organizational perspective** the survey addresses mainly top managements, for the **technical perspective** two side technical stuffs of the company have been addressed which are application and infrastructure technical stuffs, for **consultant perspective** SI ERP consultants hired by the company are the targets, for the **vendor's perspective** tech Mahindra Indian company agents who implement SAP solution for the company is the target samples and finally for the **user perspective** purposely selected different level of system users have been addressed. Totally Fifteen individuals were selected as respondents for the survey five for each questionnaire to assess organizational, technical and user perspective and for consultants and vendors perspective one representative individuals for each have been addresses through interview respectively. These individuals are selected as key informants and

respondents based on their involvement, exposure and role in the ERP project and functional role in the company.

2.9. Result of identifying CSFs relevant for pre-implementation stage

The CSFs identified from different stakeholder's perspective are fifty-one. This section presents the results of the identification of relevant CSFs for ERP pre-implementation stage by the expert group. Participants were asked to group CSFs into three ERP implementation stages which are the pre-implementation, implementation and post-implementation since the focus of this research is the pre-implementation stage CSFs grouped under this stage are taken from the analysis result. The following table in this section presents the CSF relevant for the pre-implementation stage.

Table 4.1. Identified CSFs Relevant for Pre-Implementation

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent ≥ 50 | |
|----|--|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|--|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 1 | Clear vision, goal. And objectives of the ERP system | 2 | 40.0 | | | | | | | 2 | 40.0 | | | 1 | 20.0 | 5 | 100.0 |
| 2 | Project champion | 4 | 100.0 | | | | | | | | | | | | | 4 | 100.0 |
| 3 | Adequate ERP system selection | 4 | 80.0 | | | | | 1 | 20.0 | | | | | | | 5 | 100.0 |
| 4 | Project team competency | 2 | 40.0 | | | | | 3 | 60.0 | | | | | | | 5 | 100.0 |
| 5 | Reducing trouble shooting-project risk | 4 | 80.0 | | | | | 1 | 20.0 | | | | | | | 5 | 100.0 |
| 6 | Implementation strategy | 5 | 100.0 | | | | | | | | | | | | | 5 | 100.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|--|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 7 | Empowered decision makers | 1 | 50.0 | | | | | | | | | | | 1 | 50.0 | 2 | 100.0 |
| 8 | Formalized project plan /schedule | 5 | 100.0 | | | | | | | | | | | | | 5 | 100.0 |
| 9 | Integration of business planning with ERP planning | 1 | 20.0 | | | | | | | 2 | 40.0 | | | 2 | 40.0 | 5 | 100.0 |
| 10 | Motivational factors to implement ERP system | 3 | 60.0 | | | | | | | 1 | 20.0 | | | 1 | 20.0 | 5 | 100.0 |
| 11 | Top management support and commitment | | | 1 | 20.0 | | | | | 1 | 20.0 | | | 3 | 60.0 | 4 | 80.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|--|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 12 | The use of ERP implementation consultant | | | 1 | 20.0 | | | 4 | 80.0 | | | | | | | 4 | 80.0 |
| 13 | Management of expectation | 4 | 80.0 | 1 | 20.0 | | | | | | | | | | | 4 | 80.0 |
| 14 | Team work | | | 1 | 20.0 | | | 1 | 20.0 | | | | | 3 | 60.0 | 4 | 80.0 |
| 15 | Business plan and long term vision | 3 | 60.0 | | | | | | | 1 | 20.0 | 1 | 20.0 | | | 4 | 80.0 |
| 16 | IT department capability | 2 | 40.0 | 2 | 40.0 | | | | | | | 2 | 40.0 | 2 | 40.0 | 4 | 80.0 |
| 17 | Experienced project manager leadership | 4 | 80.0 | 1 | 20.0 | | | | | | | | | | | 4 | 80.0 |
| 18 | Managing consultants | 1 | 20.0 | | | | | 2 | 40.0 | | | 1 | 20.0 | 1 | 20.0 | 4 | 80.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|---|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 19 | Effectiveness of management in reducing the user's resistance | | | | | 1 | 20.0 | | | 4 | 80.0 | | | | | 4 | 80.0 |
| 20 | Good project scope management | | | 1 | 20.0 | | | 4 | 80.0 | | | | | | | 4 | 80.0 |
| 21 | Interdepartmental cooperation | | | 1 | 20.0 | | | 1 | 20.0 | | | | | 3 | 60.0 | 4 | 80.0 |
| 22 | Minimal customization of packages | 1 | 20.0 | 1 | 20.0 | | | 3 | 60.0 | | | | | | | 4 | 80.0 |
| 23 | Dedicated resource | | | 1 | 25.0 | | | | | | | | | 1 | 75.0 | 1 | 75.0 |
| 24 | Project team composition/team skill | 3 | 60.0 | | | 1 | 20.0 | | | | | | | 1 | 20.0 | 4 | 60.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|---|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 25 | Training for different user group | | | 1 | 20.0 | 1 | 20.0 | | | 2 | 40.0 | | | 1 | 20.0 | 3 | 60.0 |
| 26 | Project management | | | 2 | 40.0 | | | | | 1 | 20.0 | | | 2 | 40.0 | 3 | 60.0 |
| 27 | Use of vendor development tools | 2 | 40.0 | 2 | 40.0 | | | 1 | 20.0 | | | | | | | 3 | 60.0 |
| 28 | Data and information quality | 3 | 60.0 | | | | | | | | | 2 | 40.0 | | | 3 | 60.0 |
| 29 | Organizational fit for ERP | 3 | 60.0 | 2 | 40.0 | | | | | | | | | | | 3 | 60.0 |
| 30 | A formalized project approach and methodology | | | 1 | 20.0 | | | | | | | 1 | 20.0 | 3 | 60.0 | 3 | 60.0 |
| 31 | Business process re- | 1 | 20.0 | | | | | 2 | 40.0 | | | 2 | 40.0 | | | 3 | 60.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|---|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent |
| | engineering | | | | | | | | | | | | | | | | |
| 32 | Steering committee | | | 1 | 20.0 | | | | | | | 1 | 20.0 | 3 | 60.0 | 3 | 60.0 |
| 33 | Careful change management | | | | | 2 | 40.0 | 1 | 20.0 | | | | | 2 | 40.0 | 3 | 60 |
| 38 | Vendor/customer partnership | | | 1 | 20.0 | 1 | 20.0 | 2 | 40.0 | 1 | 20.0 | | | | | 3 | 60 |
| 34 | Communication among the implementation team members | | | 1 | 50.0 | | | | | | | | | 1 | 50.0 | 1 | 50.0 |
| 35 | Organizational culture /cultural change /political issues | | | | | 1 | 50.0 | 1 | 50.0 | | | | | | | 1 | 50.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|----------------------------------|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 36 | Focus on user requirement | 1 | 25.0 | 2 | 50.0 | | | | | 1 | 25.0 | | | | | 2 | 50.0 |
| 37 | Data analysis and conversion | 2 | 40.0 | 3 | 60.0 | | | | | | | | | | | 2 | 40.0 |
| 39 | IT infrastructure | 1 | 20.0 | 3 | 60.0 | | | | | 1 | 20.0 | | | | | 1 | 40.0 |
| 40 | Defining the architecture | 2 | 40.0 | 2 | 40.0 | | | | | | | | | | | 2 | 40.0 |
| 41 | Adequate resource | 1 | 20.0 | 3 | 60.0 | | | 1 | 20.0 | | | | | | | 2 | 40.0 |
| 42 | Company wide support | | | 1 | 25.0 | 2 | 50.0 | 1 | 25.0 | | | | | | | 1 | 25.0 |
| 43 | Inter departmental communication | | | 1 | 20.0 | | | 1 | 20.0 | | | 2 | 40.0 | 1 | 20.0 | 1 | 20.0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|--|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | Frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent | Frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 44 | Education on new business process | | | | | 1 | 20.0 | 1 | 20.0 | | | 3 | 60.0 | | | 1 | 20.0 |
| 45 | Technical issues | 1 | 20.0 | | | | | | | | | 4 | 80.0 | | | 1 | 20.0 |
| 46 | Trust between partners | | | 1 | 20.0 | | | | | | | 3 | 60.0 | 1 | 20.0 | 1 | 20.0 |
| 47 | On-going- ERP vendor support | | | 1 | 20.0 | | | | | | | 4 | 80.0 | | | 0 | 0 |
| 48 | End user involvement | | | 1 | 20.0 | 4 | 80.0 | | | | | | | | | 0 | 0 |
| 49 | Suitable IT legacy system | 1 | 20.0 | | | 1 | 20.0 | 2 | 40.0 | | | 1 | 20.0 | | | 0 | 0 |
| 50 | Ease of system use and user's acceptance | | | | | 1 | 20.0 | | | | | 4 | 80.0 | | | 0 | 0 |

| no | CSFs | pre-implementation | | Implementation | | Post-Implementation | | Pre-Implementation & Implementation | | Pre-Implementation & Post-Implementation | | Implementation & Post-Implementation | | Pre-Implementation, Implementation & Post-Implementation | | CSFs selected for pre-Implementation valid percent >=50 | |
|----|--|--------------------|---------------|----------------|---------------|---------------------|---------------|-------------------------------------|---------------|--|---------------|--------------------------------------|---------------|--|---------------|---|---------------|
| | | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent | frequency | valid percent |
| 51 | Monitoring and evaluation of performance | | | | | 1 | 20.0 | | | | | 4 | 80.0 | | | 0 | 0 |

Based on the analysis the CSFs above the valid percent 50% are taken as relevant for the pre-implementation stage. So, 37 CSFs are identified as relevant and the remaining 14 are under the margin in which the factors are believed to be relevant on the stages other than the pre-implementation stage. In the above table based on the sum of the valid percent CSFs above valid percent 50 are the selected factors and the other CSFs below valid percent of 50 are not selected for the pre-implementation stage. The identification process is not yet done on this stage their criticality is also measured and the factors are also filtered again which is going to be discussed on the coming section.

2.9.1. 4.2.2. Result of identifying CSFs critical for pre-implementation stage

This section presents the results of the validation by the expert group. Participants were asked to rate the criticality of each CSFs within a dimension on 5-point Likert scale. The table in this section presents the average rating for each CSF in descending order.

Table 4.2. Identified CSFs Critical for Pre-Implementation Stage

| NO | CSFs | Number of respondents | Mean |
|----|---|-----------------------|------|
| 1 | Top management support and commitment | 5 | 5.00 |
| 2 | Adequate ERP system selection | 5 | 5.00 |
| 3 | Minimal customization of packages | 5 | 5.00 |
| 4 | Data and information quality | 5 | 5.00 |
| 5 | Formalized project plan /schedule | 5 | 5.00 |
| 6 | A formalized project approach and methodology | 5 | 5.00 |
| 7 | Project management | 5 | 4.80 |
| 8 | Careful change management | 5 | 4.80 |
| 9 | The use of ERP implementation consultant | 5 | 4.80 |
| | | | |

| NO | CSFs | Number of respondents | Mean |
|----|---|-----------------------|------|
| 10 | Management of expectation | 5 | 4.80 |
| 11 | Empowered decision makers | 5 | 4.80 |
| 12 | Team work | 5 | 4.60 |
| 13 | Interdepartmental cooperation | 5 | 4.60 |
| 14 | Organizational fit for ERP | 5 | 4.60 |
| 15 | Integration of business planning with ERP planning | 5 | 4.60 |
| 16 | Good project scope management | 5 | 4.40 |
| 17 | Experienced project manager leadership | 5 | 4.40 |
| 18 | Business process re-engineering | 5 | 4.20 |
| 19 | Dedicated resource | 5 | 4.20 |
| 20 | IT department capability | 5 | 4.20 |
| 21 | Training for different user group | 5 | 4.00 |
| 22 | Communication among the implementation team members | 5 | 4.00 |
| 23 | Project team competency | 5 | 4.00 |
| 24 | Project team composition/team skill | 5 | 4.00 |
| 25 | Reducing trouble shooting-project risk | 5 | 4.00 |
| 26 | Implementation strategy | 5 | 4.00 |
| 27 | Vendor/customer partnership | 4 | 4.00 |
| 28 | Business plan and long-term vision | 5 | 4.00 |
| 29 | Managing consultants | 5 | 4.00 |

| NO | CSFs | Number of respondents | Mean |
|----|---|-----------------------|------|
| 30 | Clear vision, goal. And objectives of the ERP system | 5 | 3.80 |
| 31 | Focus on user requirement | 4 | 3.75 |
| 32 | Steering committee | 5 | 3.60 |
| 33 | Organizational culture /cultural change /political issues | 5 | 3.60 |
| 34 | Use of vendor development tools | 5 | 3.60 |
| 35 | Motivational factors to implement ERP system | 5 | 3.60 |
| 36 | Project champion | 5 | 3.40 |
| 37 | Effectiveness of management in reducing the user's resistance | 5 | 3.40 |
| | Valid N (listwise) | 3 | |

According to the respondents rating the mean value above 3.6 is taken as relevant CSF since 3.6 is round to 4 and as the value 4 & 5 are critical and very critical respectively. Based on the result CSF ≥ 3.6 are 35 which are taken as critical factors for pre-implementation stage and the left 2 are not critical. In general the above validation procedure has indicated that the majority of the CSFs are critical at the pre-implementation stage.

2.9.2. 4.2.3. Conceptual framework based on the identified CSFs

On the previous section based on the analysis result of primary questioner the CSFs are identified on the basis of criticality and appropriateness for pre-implementation stages a result this section shows those identified CSFs categorized under five main stakeholder's perspective which are going to be elements for the conceptual framework.

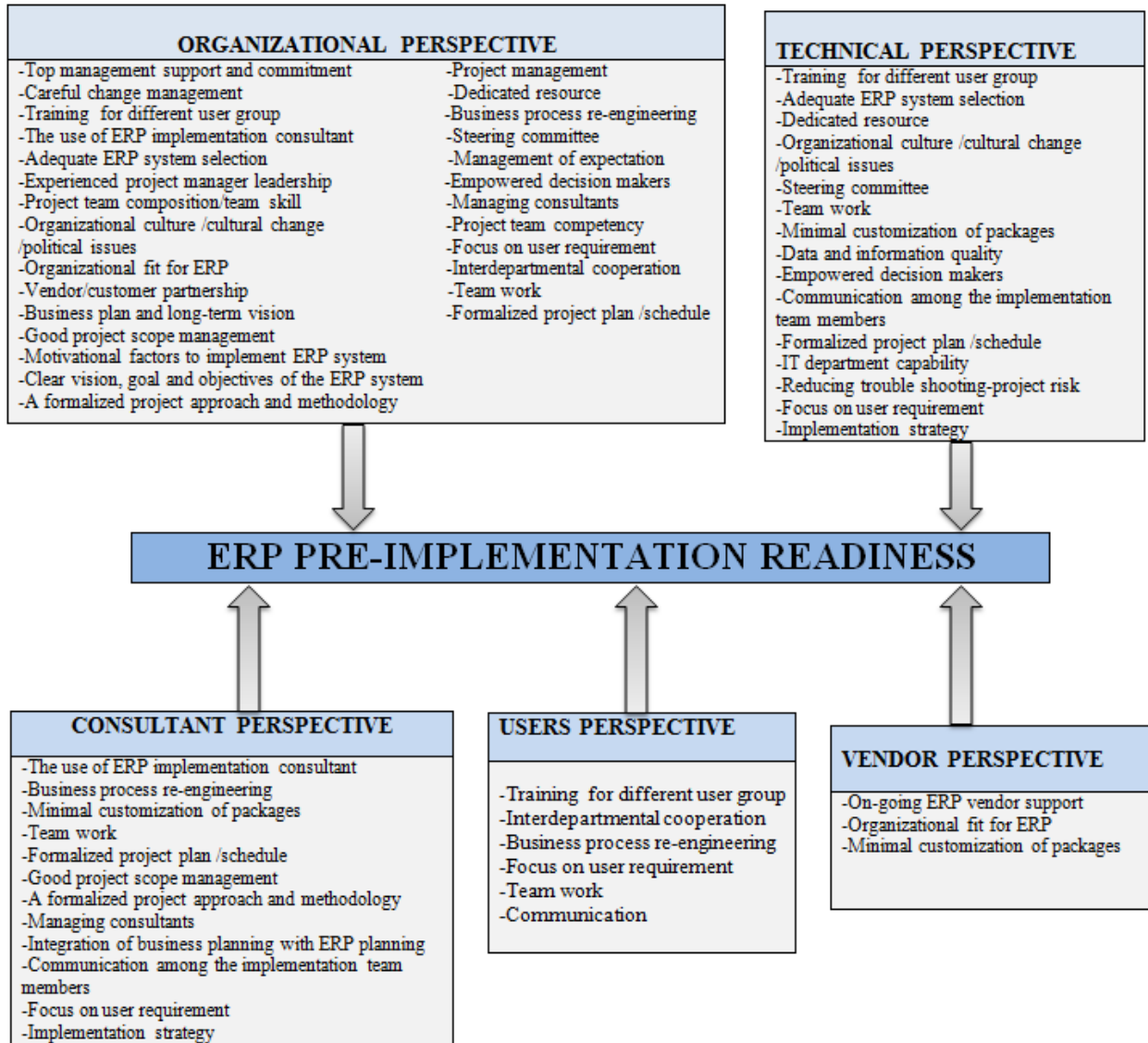
Table 4.3. Category of Selected CSFs

| GROUP | CSFs |
|----------------------------|--|
| Organizational perspective | <ul style="list-style-type: none"> - Top management support and commitment - Project management - Careful change management - Dedicated resource - Business process re-engineering - Training for different user group - The use of ERP implementation consultant - Steering committee - Adequate ERP system selection - Management of expectation - Empowered decision makers - Experienced project manager leadership - Managing consultants - Project team composition/team skill - Project team competency - Organizational culture /cultural change /political issues - Focus on user requirement - Organizational fit for ERP - Interdepartmental cooperation - Team work - Vendor/customer partnership - Business plan and long-term vision - Motivational factors to implement ERP system - Clear vision, goal and objectives of the ERP system - A formalized project approach and methodology - Formalized project plan /schedule - Good project scope management |
| Technical perspective | <ul style="list-style-type: none"> - Training for different user group - Adequate ERP system selection - Dedicated resource - Organizational culture /cultural change /political issues - Steering committee - Team work - Minimal customization of packages - Data and information quality - Empowered decision makers - Communication among the implementation team members - Formalized project plan /schedule - IT department capability |

| | |
|------------------------|---|
| | <ul style="list-style-type: none"> - Reducing trouble shooting-project risk - Focus on user requirement Implementation strategy |
| Consultant perspective | <ul style="list-style-type: none"> - The use of ERP implementation consultant - Business process re-engineering - Minimal customization of packages - Team work - Formalized project plan /schedule - Good project scope management - A formalized project approach and methodology - Managing consultants - Integration of business planning with ERP planning - Communication among the implementation team members - Focus on user requirement - Implementation strategy |
| Vendor perspective | <ul style="list-style-type: none"> - On-going ERP vendor support - Organizational fit for ERP - Minimal customization of packages |
| User perspective | <ul style="list-style-type: none"> - Training for different user group - Interdepartmental cooperation - Business process re-engineering - Focus on user requirement - Team work - Communication |

To conclude the above validation procedure has indicated that the majority of the CSFs are appropriate at the pre-implementation stage.

Figure 4.1. Proposed Conceptual framework



In figure 4.1 the proposed conceptual framework contains multiple stakeholders’ perspective that can contribute to measure the readiness level of the company to implement ERP system. As shown in the figure the arrow from each perspective pointed to ERP pre-implementation readiness which is to mean that if companies can measure their readiness from all this multiple perspective they can be ready to successfully implement ERP system. Under the five main perspectives there are list of CSFs in which companies can check their level of readiness by using them as a measuring point (I.e. By checking if the company fulfilled them or not before implementing the ERP system).For vendors perspective according to Ethiopian context its illegal

for companies to contact the vendors before signing a contract therefore to check the readiness from vendors perspective they can check those details based on the listed CSFs under vendors perspective from companies bids document.

ERP pre-implementation readiness assessment framework has been developed by different researchers depending on different factors. (Nizar A., et al 2013) proposed ERP implementation readiness assessment framework that was developed using the Fuzzy-based ANP (Fuzzy ANP), where the examined readiness factors are grouped into three categories, namely project management, organizational, and change management readiness. (Ahmadi et al. 2014) developed a new approach for assessing the ERP readiness in organization by considering casual relationships between influential factors. The approach enables an organization to evaluate its ERP implementation readiness by considering two issues: (1) how the factors influence each other and (2) how they contribute on overall readiness. (Ahmadi et.al.N.D) presents a Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System developed by selecting three strategic issues and critical factors under the issues which are Organizational readiness, Social readiness and Technical readiness. Similarly (zewdu A., 2016) conducted a study in Ethiopia to investigate ERP Pre-implementation readiness using parameters (constructs) such as technical, organizational, and cultural in the context of Dashen Bank Share Company with the view to develop a framework for evaluation of ERP Pre-Implementation readiness and design a solution framework to address those issues.

The previous farmworkers or studies conducted are in the context of developed countries and does not contain multi-stakeholders' perspective. It's clear that there is a gap in integrating different perspectives in to a single study. In addition, there is one single study in Ethiopia regarding this issue but not yet comprehensive. Therefore, the newly proposed conceptual framework in this study believed to fill the gap identified in a various ways. First it is done on the contest of developing country in Ethiopia and nowadays companies in this country are largely implementing ERP system therefore they can use this framework to measure their readiness for implementing the system. Secondly it contains five main perspectives that make it different and more comprehensive comparing to the previous studies done regarding the issue. It is also different from previously done local study by (zewdu A., 2016) through adding three perspectives that has not been addressed before which are users, consultants and vendors

perspective. This additional perspective will help companies to measure their readiness from multiple ways and lead to a successful ERP system implementation. The last thing that makes this conceptual framework different is it is validated in the case company. This indicates that any company can customize the framework to its context and measure its readiness level before implementation of ERP system.

2.10. Result and discussion on measurement of readiness level of the case company

In this section based on the analysis result the readiness level of the company from the five main perspectives will be discussed. According to the respondents rating the mean value above 3.6 is taken as agree since 3.6 is round to 4 and as the value 4 &5 are agree and strongly agree respectively. Since the researcher is trying to measure the readiness level of the company the discussion will be on each CSF under five main perspectives.

4.3.1. Result of readiness level of the company from organization perspective

This section presents the data analysis and discussion part of readiness level of the company from organizational perspective. Since the readiness is measured using each of the CSFs under the organization perspective the discussion is also on each of the CSFs and group of CSFs which can be seen together. The SPSS result is showed in the table and the dissection comes later for each.

Table 4.4. Top Management Support and Commitment

| | N | Mean |
|--|---|------|
| I am committed to the implementation of a new integrated business system [ERP]. | 5 | 4.40 |
| I will have ample time and attention available to devote to implementing this project | 5 | 4.20 |
| I will have enough time to attend and facilitate regular status meetings? | 5 | 4.40 |
| Do you agree with the need to procure and implement a new integrated business system, ERP? | 5 | 4.40 |

| | | |
|---|---|------|
| The implementation of a new integrated business system will be successfully completed. | 5 | 4.40 |
| The project will result in an improvement in the performance of business processes within the company | 5 | 4.40 |
| Valid N (listwise) | 5 | |

- Top management support and commitment

Top management support has been consistently identified as the most important and crucial success factor in ERP system implementation projects. Top management provides the necessary resources and authority or power for project success (Mohamed et al .2015).As can be seen from the above table the result about top management support and commitment is a positive result. Majority of the respondents replayed as the top managements are committed to the implementation of new integrated system and they support by giving ample time attention to devote to implementing the project also by attending and facilitating regular meeting and displaying proper behavior to make this change successful. In the contrary some of the respondents are not completely agreed on this point. Therefore even if the company is successful about top management support and commitment there is still a gap which should be filled.

Table 4.5. Experienced Project manager Leadership, Empowered Decision Makers, Good Project Scope Management and Project Management

| | N | Mean |
|--|---|------|
| Rate your level of experience leading other system implementation projects. | 5 | 4.00 |
| Are you comfortable being a role model in displaying the proper behaviors required to make this change successful? | 5 | 4.80 |
| Has the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system? | 5 | 4.40 |
| Do you agree your company have a good enterprise-wide project management for planning stage involves the allocation of responsibilities, the definition of milestones and critical paths, training and human resource planning, and the determination of measures of success | 5 | 4.20 |

| | | |
|--|---|------|
| Can your company complete a systems related project within the intended time | 5 | 4.20 |
| Valid N (listwise) | 5 | |

- Experienced project manager leadership / Empowered decision makers

The project leader should be a strong and charismatic individual with experience in both project management and directing employees. This person has to manage the project according to the project plan, and react to problems that can arise during ERP implementation. Therefore, the project leader can take the role as project champion as well. In general, project team leaders have to be empowered to make quick decisions in order to reduce delays during implementation. This is important, since even small delays can heavily impact a long-term project like ERP implementation (Esteves & Pastor 2000). The above table shows that on average the project managers are experienced and comfortable being role model in displaying the proper behavior require for the success of the implementation. They have also considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system which expected from an experienced project manager leadership.

- Good project scope management

Project scope management is planning and controlling what is and is not included in the project therefore we can understand from the above result the respondents believe that there is a good enterprise-wide project management for planning stage involves the allocation of responsibilities, the definition of milestones and critical paths, training and human resource planning, and the determination of measures of success in the company. The company is successful on this measurement.

- Project management

The sum results of the above listed points which are experienced project manager leadership, Empowered decision makers and Good project scope management indicates there is a good project management in the company plus the respondent answer about if they believe the project

will be completed on time shows a positive result in which the company have successful project management on the implementation process.

Table 4.6. Dedicated Resource

| | N | Mean |
|---|---|------|
| The Organization's technical team preparedness for this ERP implementation is considered as enough? | 5 | 4.00 |
| The enterprise-wide technical staff is prepared to address the technical specifications/requirements that will be required for the new ERP system | 5 | 4.20 |
| Can your company complete a systems related project within the intended time | 5 | 3.40 |
| Departments have got the proper staffing resources available to ensure a successful ERP implementation | 5 | 3.40 |
| Do you agree that the current systems and business processes are sufficient to handle the company's current and future business needs? | 5 | 4.00 |
| Your company has the staffing resources to provide adequate training on a new business system | 5 | 4.40 |
| Valid N (listwise) | 5 | |

- Dedicated resource

ERP implementation projects require a lot of resources such as money, time and employees. These requirements need to be determined early in the project or even before it starts (Remus 2007). To measure the readiness level of the company according to dedicated resource the question tries to asses from money, time and employees dimension and the average mean shows that the Organization's technical team preparedness considered as enough to address the technical specifications/requirements that will be required for the new ERP system. The respondents are also agreed the current systems and business processes are sufficient to handle the company's

current and future business needs. Negative result also their on the points about completion of the project within the schedule and proper staffing resources available for each department so the company should solve this problem to be fully prepared for successful implementation of the system.

Table 4.7. Steering Committee

| | Yes | | | | No | | | |
|---|-----------|---------|---------------|--------------------|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent | Frequency | Percent | Valid Percent | Cumulative Percent |
| Can the enterprise identify a project leader for the ERP project? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Does the enterprise have a process for assigning internal resources based on the priority or value of projects? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Will the leader have the influence within individual business units to secure requirements? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Will the leader have a sufficient relationship with IT to secure cooperation? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Can the enterprise institute a method for monitoring the ongoing value of ERP investments based on business unit metrics? | 3 | 60 | 60 | 100 | 2 | 40 | 40 | 40 |

- Steering committee

To make ERP projects succeed, it is necessary to form a steering committee. A steering committee allows senior management to directly monitor the project team’s decision making, thereby ensuring adequate control mechanisms. Therefore, this committee should consist of members of senior management (from different departments or corporate functions), representatives from project management, and end users (also from different departments). Such a composition will guarantee appropriate involvement across the whole company (Somers & Nelson 2001; Sumner 1999). As we can see from the above table the respondents 100% agreed on point like the enterprise identify a project leader for the ERP project and the leaders have the influence within individual business units to secure requirements as well as they have a sufficient relationship with IT to secure cooperation and the enterprise have a process for assigning internal resources based on the priority or value of projects. While 60% of the respondents say yes on if the enterprise institutes a method for monitoring the ongoing value of ERP investments based on business unit metrics the left 40% respondents says no. This shows there is gap on the performance of the steering committee in the company.

Table 4.8. Adequate ERP System Selection, Organizational fit for ERP and The use of ERP Implementation Consultant

| Organizational fit for ERP | | |
|--|---|------|
| | N | Mean |
| Your company carefully selected a package which can fit its business process | 5 | 4.40 |
| consultants are often involved in all stage of the implementation process | 5 | 4.60 |
| Valid N (listwise) | 5 | |

Table 4.9. Adequate ERP System Selection

| Adequate ERP system selection | | | | |
|---|-----------|---------|---------------|--------------------|
| | | | yes | Yes |
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Has the enterprise determined the potential business impact of the ERP system? | 5 | 100 | 100 | 100 |
| Has the potential business impact of the ERP system been quantified? | 5 | 100 | 100 | 100 |
| Does the enterprise have a method for identifying potential risks introduced by the ERP system? | 5 | 100 | 100 | 100 |
| Can the enterprise create a continuity plan that covers the period of ERP introduction? | 5 | 100 | 100 | 100 |
| Can the enterprise assess requirements for network and perimeter security that may be introduced by the ERP system? | 5 | 100 | 100 | 100 |
| Can the enterprise assess requirements for identity and access control introduced by the ERP system? | 5 | 100 | 100 | 100 |

- Adequate ERP system selection, Organizational fit for ERP and The use of ERP implementation consultant

These three measuring CSFs are mutually inclusive so it is going to be described together. Adequate ERP system selection is when any organizations want to implement ERP system; they should carefully decide and planned ERP selection. It should be consider the organizations strategy, plan, organizations culture and management. Specifically ERP software package is requires careful attention of matching between the systems itself and the organization business process (Yousaf, 2015). Failures are happened in organizations when the new technology competences and demands are incompatible with the existing business practice. Therefore the organization on this point has a positive result since all the respondents agreed 100% on the measurements of adequate ERP system selection in which the result is shown on table 4.3.5.1.

Additionally organizational fit for ERP and the use of ERP implementation consultant are critical point which goes with adequate ERP system selection and the result shows positive value with a mean value above 4 that the company carefully selected a package which can fit its business process and the implementation consultants are often involved in all stage of the implementation process which can keep the company in line since company do not have deep knowledge of the software to meet the business practice. Therefore, consultants play an important role in the whole process of ERP implementation.

Table 4.10. Business Process Re-Engineering

| | N | Mean |
|--|---|------|
| My department has written policies and procedures that clearly explain the processes for completing all business functions within the department | 5 | 4.80 |
| The project will result in an improvement in the performance of business processes within the company | 5 | 4.40 |
| Do you agree that the current systems and business processes are sufficient to handle the company's current and future business needs? | 5 | 4.00 |
| Your company carefully selected a package which can fit its business process | 5 | 4.40 |
| Valid N (listwise) | 5 | |

Table 4.11. Business Process Re-Engineering

| | yes | | | Cumulative Percent |
|---|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | |
| Does the enterprise have a means of making changes to existing IT processes related to ERP systems? | 5 | 100 | 100 | 100 |
| Can the enterprise enforce changes to IT policies related to enterprise applications? | 5 | 100 | 100 | 100 |
| Does the enterprise have fully documented business process | 5 | 100 | 100 | 100 |

- **Business process re-engineering**

Business process reengineering (BPR) is a crucial project phase in ERP projects, although it often leads to delays in ERP implementation. During ERP projects companies have to review their business processes, and explore new ways of doing things relative to best practices embedded in the ERP system. The deeper and more detailed this review, the better the outcome of the BPR will be. Changing activities and workflows in business processes before, during, or after the ERP implementation may lead to a different and minimized level of ERP system configuration. It is advisable minimize the extent of ERP system modification. This reduces errors, and the company can more easily take advantage of newer versions and releases. Therefore, the project team or top management should decide to what extent the company has to change their business processes to fit the ERP system. As we can see from the above table the result is positive having a mean value above 4 for questions with a 5-point Likert scale and for yes/no questions the respondents 100% agreed on each measuring questions which shows the company has done its BPR good enough in a way that it can be benefited from the new integrated system.

Table 4.12. Training for Different User Group

| | N | Mean |
|--|---|------|
| Rate your company's ability to take on training responsibilities to include trainers and training space, during this project. | 5 | 4.80 |
| If you have been to enterprise- wide (not departmental) training within the last two years, the training was provided in an informative, well-organized and useful manner? | 5 | 4.00 |
| Your company has training documentation available and accessible for users and trainers to use for business processing. | 5 | 3.40 |
| Your company has the staffing resources to provide adequate training on a new business system | 5 | 4.40 |
| Valid N (listwise) | 5 | |

- Training for different user group

Often, missing or lacking end user training is a reason for failure during the implementation of new software. The main goal of end user training is to provide an effective understanding of the new business processes, applications, and workflows that result from ERP implementation. Therefore, it is important to set up a suitable plan for the training and education of employees (Al-Mashari et al. 2003). According to the result this company takes on training responsibilities to include trainers and training space, during this project. Training have been provided in well organized and useful manner also it have enough resource to provide adequate on a new business but they don't have training documentation available and accessible for users and trainers to use for business processing. All in all, taking the average mean above 3.6 the result is positive but there is still a gap which needs further improvement.

Table 4.13. Careful Change Management, Organizational Culture /Cultural Change /Political Issues and Focus on User Requirement

| | N | Mean |
|--|---|------|
| Rate the level of tolerance for change within your business community. | 5 | 3.40 |
| Your company involve employees on early planning and implementation process of the new integrated system | 5 | 3.40 |
| Do you reward or recognize people for helping lead or facilitate changes within your agency? | 5 | 4.20 |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | 5 | 3.20 |
| Valid N (listwise) | 5 | |

- Careful change management, Organizational culture /cultural change /political issues and Focus on user requirement

These three CSFs are connected because under careful change management we can address the other two CSFs. Change management involves early participation of all persons affected by a change process in order to reduce resistance against these changes. Important components

include adequate training, especially of the IT-department, as well as early communication of the changes in order to provide employees with an opportunity to react. Change management strategies are responsible for handling enterprise-wide cultural and structural changes. Therefore, it is necessary to train and educate employees in various ways. Thereby, change management not only aims to prevent rejection and support acceptance, but also to make employees understand and want the changes. Integrating employees in the planning and implementation process early on is important to achieve this understanding. As can be seen from the above table the result shows that tolerance for change within the business community, involving employees on early planning and implementation process of the new integrated system and create a professional development plan to give existing employees ERP competencies is under the average mean values of 3.6 which is a negative value. The positive value is only on rewarding or recognizing people for helping lead or facilitates changes. But this positive result cannot bring change while there is a gap on the above-mentioned point with a negative result.

Table 4.14. Management of Expectation

| | Yes | | | |
|--|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Have the enterprise established ERP service expectations for the business units (e.g., uptime, data refresh rates, quality reporting, etc.)? | 5 | 100 | 100 | 100 |
| Does the enterprise have a means of making changes to existing service expectations? | 5 | 100 | 100 | 100 |

- Management of expectation

Regarding this CSF for the questions asked as organization perspective the respondent 100% agreed on the points that the enterprise established ERP service expectations for the business units (e.g., uptime, data refresh rates, quality reporting, etc.) and having a means of making changes to existing service expectations.

Table 4.15. Project Team Composition/Team Skill and Competency

| | N | Mean |
|--|---|------|
| The company has got the right IT community to participate in this project. | 5 | 4.20 |
| The functional experts in my department fully understand how departmental financial processes relate to enterprise-wide departmental processes? | 5 | 4.40 |
| In relationship to the implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes | 5 | 4.60 |
| There has been adequate coordination between technical and functional staff to prepare for the new system. | 5 | 4.80 |
| Valid N (listwise) | 5 | |

- Project team composition/team skill and competency

According to (Pavlovna et.al, 2015) the function of project team is the Company own staff having necessary skills, knowledge and experience regarding implementation project. The mean value for each question is above 4 that indicates positive result. The respondents agreed that in the company the team composition and their skill are in a good position to implement the new integrated system.

Table 4.16. Interdepartmental Cooperation and Team Work

| | N | Mean |
|---|---|------|
| There has been adequate coordination between technical and functional staff to prepare for the new system. | 5 | 4.80 |
| Please rate your awareness of your company's interest in purchasing a new integrated Financial and Human Resources system. | 5 | 4.00 |
| Your company does a good job of communicating and informing employees about key projects/activities taking place within the company | 5 | 4.60 |
| Departments within your company work well together? | 5 | 4.20 |

| | | |
|--------------------|---|--|
| Valid N (listwise) | 5 | |
|--------------------|---|--|

Table 4.17. Interdepartmental Cooperation and Team Work

| Please indicate the type of company-wide communications (not limited to your department) that you have received. (Check all that apply). | | | | | |
|---|---|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Website information (portal) ,Enterprise-wide memo Enterprise-wide voicemail | 1 | 20.0 | 20.0 | 20.0 |
| | Email message&Enterprise-wide voicemail | 2 | 40.0 | 40.0 | 60.0 |
| | Website information (portal) Email message Enterprise-wide memo | 2 | 40.0 | 40.0 | 100.0 |
| | Total | 5 | 100.0 | 100.0 | |
| If you are aware of your company's interest in purchasing a new integrated business system, how did you hear about it? | | | | | |
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | County-wide presentation & interoffice memo/ written notification | 1 | 20.0 | 20.0 | 20.0 |
| | Involvement in selection process & County-wide presentation | 1 | 20.0 | 20.0 | 40.0 |
| | County-wide presentation Department/staff meetings Interoffice memo/ written notification | 2 | 40.0 | 40.0 | 80.0 |
| | Involvement in selection process & Department/staff meetings | 1 | 20.0 | 20.0 | 100.0 |
| | Total | 5 | 100.0 | 100.0 | |

- Interdepartmental cooperation and Team work

To successfully implement an ERP system it is necessary that all departments cooperate at the same level of intensity and engagement, since an ERP system affects all business units and business processes across functional and departmental boundaries. This requires the sharing of common goals instead of emphasizing individual pursuits. Also, to share information within a company and between different companies requires cooperation between partners, employees, managers, and corporations based on trust and the willingness to cooperate. Issues such as prestige, job security, feelings of control, and departmental politics are also involved and have to be considered and managed. To measure the readiness of the company on this point 5-point Likert scale and yes/no question have been used and the result is positive as shown on Table 4.18 and when we see the result from communication perspective the respondents are addressed through different communication media but still there is consistency a gap which should be improved.

Table 4.19. Vendor/Customer Partnership and Managing Consultants

| | yes | | | |
|---|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Does the enterprise have a process in place for soliciting requirements from business units and for analyzing those requirements? | 3 | 60.0 | 60.0 | 100.0 |
| Does the enterprise have a system in place for procuring enterprise-scale applications? | 4 | 80.0 | 80.0 | 100.0 |
| Does the enterprise have competencies in managing both enterprise software vendors and implementation consultants? | 5 | 100.0 | 100.0 | 100.0 |
| Total | 5 | 100.0 | 100.0 | |

- Vendor/customer partnership and managing consultants

ERP systems may be a lifelong commitment for many companies. There will always be new modules and versions to install, bug fixes to be rolled out, and changes to be made in order to achieve a better fit between business and system. Therefore, good vendor support (technical assistance, emergency maintenance and updates) is an important factor. Accordingly, the relationship/partnership with the vendor is vitally important to successful ERP projects. This relationship should be strategic in nature, with the ERP provider enhancing an organization's competitiveness and efficiency (Somers & Nelson 2001 ; Willcocks & Sykes 2000) Meanwhile Consultants are often involved in all stages of the implementation performing requirements analysis, recommending a suitable solution, and managing the implementation .Therefore, it is necessary to determine the number of consultants, how and when to use them, as well as their responsibilities within the implementation project. As can be seen from table 4.3.14 on the questions regarding on vendor/customer partnership and managing consultants as organization perspective the respondent 100% agreed that the enterprise have competencies in managing both enterprise software vendors and implementation consultants but as an organization there is a gap on enterprise have a process in place for soliciting requirements from business units and for analyzing those requirement since only 60% of respondents are agreed up on this point . 80% of the respondents are agreed on the point that the enterprise has a system in place for procuring enterprise-scale applications.

Question regarding Motivational factors to implement ERP system, Clear vision, goal and objectives of the ERP system, Business plan and long-term vision, A formalized project approach and methodology and Formalized project plan /schedule are covered through open end question and it is analyzed as follows. According to respondents the motivational factors to implement ERP system are

- To Integrate financial information:
- To Integrate customer Service/ Customer Relationship Management:
- To Standardize HR information and Management:
- To Maximize operation efficiency and customer's needs satisfaction,
- ERP eliminates problems like material management, cash management, quality problems

- ERP provides intelligent business tools like decision support system

The following listed problems in the company are also a driving factor to implement ERP system

- Lots Of Different Software For Different Processes:
- Don't Have Easy Access To Information About The Business:
- Accounting Takes Longer And Is More Difficult:
- Sales And The Customer Experience Are Suffering
- The It Is Too Complex And Time-Consuming:
- Business Operation Not Smoothly Facilitated:
- Organizational Resources not managed efficiently and effectively

Questions regarding Clear vision, goal and objectives of the ERP system and Business plan and long term vision answered and analyzed as follows. The ERP system in EEU context

- ERP (Finance & Controlling, HR & Payroll, Procurement & Inventory, Quality Management, Project Management, Enterprise Asset Management),
- CCA (Billing, Customer Care / CRM, Meter and Device Management)
- DSS (Energy Data Management, forecasting and Business Intelligence Data warehouse)
- IT Security and Management software solution (Single Sign On, Identity Access Management, Privilege Identity Management and SOC)
- Meter Data Acquisition for sub-station metering
- Non-IT infrastructure for Data Center, Disaster Recovery and contact center
- DC / DR setup including Servers, Storage, Networking & Security
- Centralized Call center equipment / software at Addis Ababa with 80 Seats
- Supply of PCs and networking equipment for 400+ locations
- Training

According to the respondents Questions regarding a formalized project approach /methodology /schedule answered and the result shows that they have a formalized plan to accomplish the

project. To accomplish a major phase of the project they are following a formalized approach and for each of major project phases they have a schedule when to accomplish it.

4.3.2. Result of readiness level of the company from Technical perspective

This section presents the data analysis and discussion part of readiness level of the company from technical perspective. Since the readiness is measured using each of the CSFs under the technical perspective the discussion is also on each of the CSFs and group of CSFs which can be seen together.

Table 4.20. Empowered Decision Makers

| | N | Mean |
|--|---|------|
| I am committed to the implementation of a new integrated business system [ERP]. | 5 | 4.60 |
| The implementation of a new integrated business system will be successfully completed. | 5 | 4.40 |
| The project will result in an improvement in the performance of business processes within the company | 5 | 4.40 |
| I will have ample time and attention available to devote to implementing this project | 5 | 4.60 |
| I will have enough time to attend and facilitate regular status meetings? | 5 | 4.40 |
| Are you comfortable being a role model in displaying the proper behaviors required to make this change successful? | 5 | 4.80 |
| Valid N (listwise) | 5 | |

Project team leaders have to be empowered to make quick decisions in order to reduce delays during implementation. This is important, since even small delays can heavily impact a long-term project like ERP implementation (Esteves & Pastor 2000). With empowered decision makers and strong project leadership, effective timing with respect to the implementation is enhanced. We can see from the above table that the result is positive. Therefore the decision makers are comfortable being role model in displaying the proper behavior required for the success of the implementation. They are committed to the implementation of a new integrated

business system and believe that it will be successfully completed. Then the project will result in an improvement in the performance of business processes within the company.

Table 4.21. Training for Different User Group

| | N | Mean |
|--|---|------|
| The functional experts in my department fully understand key financial processes within the department? | 5 | 4.00 |
| The functional experts in my department fully understand how departmental financial processes relate to enterprise-wide departmental processes? | 5 | 4.40 |
| The functional experts in your company understand departmental financial processes? | 5 | 4.20 |
| In relationship to the implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes | 5 | 4.60 |
| In relationship to the implementation of a new ERP system, subject matter experts within your department understand how their business process relates to other business functions within the company. | 5 | 4.40 |
| Implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes | 5 | 4.00 |
| Your company has the staffing resources to provide adequate training on a new business system | 5 | 4.20 |
| Can your company complete a systems related project within the expected time that requires your participation? | 5 | 4.60 |
| Valid N (listwise) | 5 | |

Often, missing or lacking end user training is a reason for failure during the implementation of new software. The main goal of end user training is to provide an effective understanding of the new business processes, applications, and workflows that result from ERP implementation. Therefore, it is important to set up a suitable plan for the training and education of employees (Al-Mashari et al. 2003). According the above table the result is positive in which the functional experts within department fully understand key financial processes within the department, they fully understand how departmental financial processes relate to enterprise-wide departmental

processes, They understand departmental financial processes and Implementation of a new ERP system, subject matter experts within the department understand how to complete their business processes they also confirmed that the company has the staffing resources to provide adequate training on a new business system and the company can complete a systems related project within the expected time that requires their participation. From the result it can be concluded that training for different user group is given while implementing the new integrated system.

Table 4.22. Dedicated Resource

| | N | Mean |
|--|---|------|
| The Organization's technical team preparedness for this ERP implementation is considered as enough? | 5 | 4.20 |
| The company has standard and followed security policies for safeguarding enterprise-wide data and information sharing. | 5 | 4.00 |
| Departments have got the proper staffing resources available to ensure a successful ERP implementation | 5 | 4.00 |
| My department has the proper staffing resource available to ensure a successful implementation | 5 | 4.00 |
| Do you agree that the current systems and business processes are sufficient to handle the company's current and future business needs? | 5 | 4.20 |
| Your company has the staffing resources to provide adequate training on a new business system | 5 | 4.20 |
| Valid N (listwise) | 5 | |

ERP implementation projects require a lot of resources such as money, time and employees. These requirements need to be determined early in the project or even before it starts (Remus 2007). Since dedicated resource can be time, money or people resource to measure the technical readiness level of the company on dedicated resource different questions were asked and the respondent's response is positive as can be seen from the above table with a mean value of 4 and above. According to the result the Organization's technical team preparedness for this ERP implementation is considered as enough, the company has standard and followed security policies for safeguarding enterprise-wide data and information sharing, Departments have got the proper staffing resources available to ensure a successful ERP implementation, the current

systems and business processes are sufficient to handle the company's current and future business needs and company has the staffing resources to provide adequate training on a new business system

Table 4.23. Steering Committee

| | Yes | | | | No | | | |
|---|-----------|---------|---------------|--------------------|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent | Frequency | Percent | Valid Percent | Cumulative Percent |
| Can the enterprise identify a project leader for the ERP project? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Does the enterprise have a process for assigning internal resources based on the priority or value of projects? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Will the leader have the influence within individual business units to secure requirements? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Will the leader have a sufficient relationship with IT to secure cooperation? | 5 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| Can the enterprise institute a method for monitoring the ongoing value of ERP investments based on business unit metrics? | 3 | 60 | 60 | 100 | 2 | 40 | 40 | 40 |

To make ERP projects succeed, it is necessary to form a steering committee. A steering committee allows senior management to directly monitor the project team's decision making, thereby ensuring adequate control mechanisms. Therefore, this committee should consist of

members of senior management (from different departments or corporate functions), representatives from project management, and end users (also from different departments). Such a composition will guarantee appropriate involvement across the whole company (Somers & Nelson 2001; Sumner 1999). As we can see from the above table the respondents 100% agreed on point that the enterprise identify a project leader for the ERP project and the leaders have the influence within individual business units to secure requirements as well as they have a sufficient relationship with IT to secure cooperation and the enterprise have a process for assigning internal resources based on the priority or value of projects. While 60% of the respondents say yes on if the enterprise institutes a method for monitoring the ongoing value of ERP investments based on business unit metrics the left 40% respondents says no. This shows there is gap on the performance of the steering committee in the company.

Table 4.24. Adequate ERP system selection

| | N | Mean |
|---|---|------|
| Your company have carefully selected a package which can fit its business process | 5 | 4.60 |
| Valid N (listwise) | 5 | |

| | yes | | | |
|---|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Has the enterprise determined the potential business impact of the ERP system? | 3 | 60.0 | 60.0 | 100.0 |
| Has the potential business impact of the ERP system been quantified? | 3 | 60.0 | 60.0 | 100.0 |
| Does the enterprise have a method for identifying potential risks introduced by the ERP system? | 3 | 60.0 | 60.0 | 100.0 |

| | | | | |
|---|---|-------|-------|-------|
| Can the enterprise create a continuity plan that covers the period of ERP introduction? | 3 | 60.0 | 60.0 | 100.0 |
| Can the enterprise assess requirements for network and perimeter security that may be introduced by the ERP system? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise assess requirements for identity and access control introduced by the ERP system? | 5 | 100.0 | 100.0 | 100.0 |
| Total | | | | |

Adequate ERP system selection is when any organizations want to implement ERP system; they should carefully decide and planned ERP selection. It should be consider the organizations strategy, plan, organizations culture and management. Specifically ERP software package is requires careful attention of matching between the systems itself and the organization business process (Yousaf, 2015). From technical perspective the company readiness level is measured if there is Adequate ERP system selection and the result is shown on the above two tables Table 4. 25 contains the 5-point Likert scale question which is if the company has carefully selected a package which can fit its business process and the result is positive having a mean value of 3.6 this Table also contains detailed yes/no questions and the respondents 100% agreed on the points that the enterprise assess requirements for network and perimeter security that may be introduced by the ERP system and the enterprise assess requirements for identity and access control introduced by the ERP system which is a positive result on the other hand the respondents 60% agreed on the points that the enterprise determined the potential business impact of the ERP system, potential business impact of the ERP system been quantified, the enterprise have a method for identifying potential risks introduced by the ERP system and Can the enterprise create a continuity plan that covers the period of ERP introduction. This indicates that there is still a gap that needs improvement.

Table 4.26. Focus on User Requirement, Organizational Culture /Cultural Change /Political Issues

| | N | Mean |
|--|---|------|
| Rate the level of tolerance for change within your business community. | 5 | 3.40 |
| Your company involve employees on early planning and implementation process of the new integrated system | 5 | 3.40 |
| Do you reward or recognize people for helping lead or facilitate changes within your agency? | 5 | 4.20 |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | 5 | 3.20 |
| Valid N (listwise) | 5 | |

This factor is one of the most frequently cited CSFs. Users and stakeholders must perceive the system as being important and necessary to their work .Therefore, involvement and participation in the ERP project is mandatory for all end-users and stakeholders affected by the ERP implementation, and will result in meeting more user requirements, better system quality, and an increase in use and acceptance. It is important to get users and stakeholders involved during system implementation, and to makeuse of their knowledge in areas where the project team lacks expertise and knowledge. This involvement in the project, from start to finish, is just as crucial as the involvement of top management. Involving users in the project will also affect organizational culture /cultural change /political issues. To see if the company is ready on this two CSFs different question were asked and the result is as can be seen on the Table 4. 27. Positive result is gain on rewarding or recognizing people for helping lead or facilitating changes within the company. But there is a negative result on points that company involve employees on early planning and implementation process of the new integrated system, create a professional development plan to give existing employees ERP competencies and level of tolerance for change within the business community.

Table 4.28. IT Department Capability

| | N | Mean |
|--|---|------|
| The Organization's technical team preparedness for this ERP implementation is considered as enough? | 5 | 4.20 |
| The enterprise-wide technical staff is prepared to address the technical specifications/requirements that will be required for the new ERP system | 5 | 4.20 |
| Can your company complete a systems related project within the expected time that requires your participation? | 5 | 4.60 |
| The company has got the right IT community to participate in this project. | 5 | 4.20 |
| In relationship to the implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes | 5 | 4.60 |
| Has the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system? | 5 | 4.40 |
| Valid N (listwise) | 5 | |

IT department capability is one of the CSF that the company can be measured and in this paper the researcher tries to assess from it from technical perspective. As can be seen from the above table the result is positive with a mean value above 4. The respondents confirmed that Organization's technical team preparedness for this ERP implementation is considered as enough and the enterprise-wide technical staff is prepared to address the technical specifications/requirements that will be required for the new ERP system. In relating with their technical skill their company can complete a systems related project within the expected time that requires their participation. In relationship to the implementation of a new ERP system, subject matter experts within their department understand how to complete their business processes and the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system. Generally based on the respondents answer the company has got the right IT community to participate in this project.

Table 4.29. Communication among the Implementation Team Members, Team Work

| | N | Mean |
|--|---|------|
| Please rate your awareness of your company's interest in purchasing a new integrated Financial and Human Resources system. | 5 | 4.60 |
| Your department does a good job of communicating and informing employees about key projects/activities taking place within the department. | 5 | 4.40 |
| Departments within your company work well together? | 5 | 4.60 |
| Valid N (listwise) | 5 | |

To successfully implement an ERP system it is necessary that all departments cooperate at the same level of intensity and engagement, since an ERP system affects all business units and business processes across functional and departmental boundaries. This requires the sharing of common goals instead of emphasizing individual pursuits. Also, to share information within a company and between different companies requires cooperation between partners, employees, managers, and corporations based on trust and the willingness to cooperate. Issues such as prestige, job security, feelings of control, and departmental politics are also involved and have to be considered and managed. As can be seen from the above table the result is positive having a mean value above 4. The respondents confirmed that they are aware of the, company's interest in purchasing a new integrated Financial and Human Resources system, their department does a good job of communicating and informing employees about key projects/activities taking place within the department and departments within their company

Table 4.30. Minimal Customization of Packages

| | yes | | | |
|---|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Does the enterprise have fully documented business processes? | 4 | 80.0 | 80.0 | 100.0 |
| Does the enterprise have a process in place for soliciting requirements from business units | | | | |

| | | | | |
|---|---|-------|-------|-------|
| and for analyzing those requirements? | 5 | 100.0 | 100.0 | 100.0 |
| Does the enterprise have a system in place for procuring enterprise-scale applications? | 4 | 80.0 | 80.0 | 100.0 |
| Has the enterprise converted data from the existing system to the new system properly? | 5 | 100.0 | 100.0 | 100.0 |
| Total | 5 | 100.0 | 100.0 | |

When ERP system does not fit the organizations culture, business process and interest, the vendors should be required to customize the ERP software. In post implementation customization is required based on the local environment. According to (Barker & Frolick, n.d) described that each individual ERP software package has its own failure and customization problems either in the implementation process or properly unhandled. Hence customization is always taken in to consideration when the organization and the vendors are decided to upgrade it. As can be seen from the above table 80% of the respondents agreed on the question that asks if the enterprise have fully documented business processes and 20% said no according to (Hasibuan & Dantes 2012) companies can obtain competitive advantage if the BPR is effectively done in ERP system implementation stage therefore the case company have a Gap in fully documenting the BP which needs to be corrected. The other point in which respondents 80% agreed and 20% of the disagreed on if the enterprise have a system in place for procuring enterprise-scale applications .The respondents 100% agreed on the points that the enterprise has a process in place for soliciting requirements from business units and for analyzing those requirements and the enterprise converted data from the existing system to the new system properly which leads to minimal customization of packages that the company can be benefited from the new integrated system.

Table 4.31. Data and Information Quality and Reducing Trouble Shooting-Project Risk

| | yes | | | |
|--|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Can the enterprise determine if the existing server environment will support the desired ERP functionality and service characteristics? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise determine if the existing network connections will support the desired ERP functionality and service characteristics? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise determine if the existing storage and recovery infrastructure will support the desired ERP functionality and service characteristics? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise determine if the existing database infrastructure will support the desired ERP functionality and service characteristics? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise determine if the enterprise will have help desk capacity to support the rollout and maintenance of an ERP system? | 5 | 100.0 | 100.0 | 100.0 |
| Can the enterprise determine if it will have the incident management capacity to support the rollout and maintenance of an ERP system? | 3 | 60.0 | 60.0 | 100.0 |
| Has the enterprise converted data from the existing system to the new system properly? | 5 | 100.0 | 100.0 | 100.0 |
| Total | 5 | 100.0 | 100.0 | |

A fundamental requirement for the effectiveness and the success of ERP systems is the availability of accurate data. Problems concerning data can cause heavy implementation delays. Therefore, data migration management represents a critical factor throughout implementation (Somers & Nelson 2001; Umble, Haft & Umble 2003). Identifying which data has to be loaded into the system and which is extraneous, as well as converting all disparate data structures into a

single consistent format is an important challenge. The conversion process is often underestimated. In addition, interfaces with other internal and external systems (between departments such as accounting, production, data warehouses, etc.) have to be considered, too (Somers & Nelson 2001). As we can see from the above table regarding the two CSFs Data and information quality & reducing trouble shooting-project risk different questions were asked. Based on the result the respondents 100% agreed on the points that the enterprise converted data from the existing system to the new system properly, it determine if the existing server environment will support the desired ERP functionality and service characteristics, it determine if the existing network connections will support the desired ERP functionality and service characteristics, it determine if the existing storage and recovery infrastructure will support the desired ERP functionality and service characteristics, it determine if the existing database infrastructure will support the desired ERP functionality and service characteristics and it determine if the enterprise will have help desk capacity to support the rollout and maintenance of an ERP system. But 60% agreed&40% disagreed on the point that the enterprise determines if it will have the incident management capacity to support the rollout and maintenance of an ERP system which shows A gap which should be improved.

Implementation strategy, Formalized project plan /schedule

For question regarding Implementation strategy the respondent response was since the company is implementing SAP solution therefore they are going to follow SAP implementation strategy. As they said the success of SAP solution is to a large degree determined by the effectiveness of the software implementation to add value to the organization. They are also following formalized schedule to implement the system.as they said they have planned when to accomplish what phase of the project under a measurable time frame.

4.3.3. Result of readiness level of the company from user perspective

This section presents the data analysis and discussion part of readiness level of the company from user perspective. Since the readiness is measured using each of the CSFs under the user perspective the discussion is also on each of the CSFs and group of CSFs which can be seen together.

The following are list of CSFs under the user perspective

- Training for different user group
- Interdepartmental cooperation
- Team work
- Communication
- Business process re-engineering
- Focus on user requirement

Table 4.32. Result of Readiness level of the Company from User Perspective

| | N | Mean |
|--|---|------|
| I am committed to the implementation of a new integrated business system [ERP]. | 5 | 4.40 |
| The implementation of a new integrated business system will be successfully completed. | 5 | 4.40 |
| The project will result in an improvement in the performance of business processes within the company. | 5 | 4.00 |
| Your company has training documentation available and accessible for users and trainers to use for business processing | 5 | 4.00 |
| Your company has the staffing resources to provide adequate training on a new business system | 5 | 4.40 |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | 5 | 4.80 |
| Please rate your awareness of your company's interest in purchasing a new integrated system. | 5 | 4.20 |
| Your department does a good job of communicating and informing employees about key projects/activities taking place within the company | 5 | 4.20 |
| Departments within your company work well together? | 5 | 4.60 |
| The company focus on user requirement to select ERP solution | 5 | 4.60 |
| Valid N (listwise) | 5 | |

| If you are aware of your company's interest in purchasing a new integrated business system, how did you hear about it? | | | | | |
|---|--|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | County-wide presentation & interoffice memo/ written notification | 1 | 20.0 | 20.0 | 20.0 |
| | Involvement in selection process & County-wide presentation | 1 | 20.0 | 20.0 | 40.0 |
| | County-wide presentation Department/staff meetings Interoffice memo/ written notification | 2 | 40.0 | 40.0 | 80.0 |
| | Involvement in selection process & Department/staff meetings | 1 | 20.0 | 20.0 | 100.0 |
| | Total | 5 | 100.0 | 100.0 | |

| Please indicate the type of company-wide communications (not limited to your department) that you have received last year. (Check all that apply). | | | | | |
|---|--|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Website information (portal) ,Enterprise-wide memo Enterprise-wide voicemail | 1 | 20.0 | 20.0 | 20.0 |
| | Email message & Enterprise-wide voicemail | 2 | 40.0 | 40.0 | 60.0 |
| | Website information (portal) Email message Enterprise-wide memo | 2 | 40.0 | 40.0 | 100.0 |
| | Total | 5 | 100.0 | 100.0 | |

The readiness aspect of the organization from the user perspective significantly impacts the output of the project. As can be seen from the above table, the mean result found to be above 4 for 5-point Likert scale questions that measures different factors and there is also yes/no question to measure the communication CSF in the case company. Among Training for different user group CSF related questions addressed in the questionnaire the respondents confirmed that company has the staffing resources to provide adequate training on a new business system, the company has training documentation available and accessible for users and trainers to use for business processing and the enterprise create a professional development plan to give existing employees ERP competencies. For interdependent CSFs Interdepartmental cooperation, Team work and communication related questions addressed in the questionnaire the respondents confirmed that they are aware of company's interest in purchasing a new integrated system, their department does a good job of communicating and informing employees about key projects/activities taking place within the company and departments within their company work well together. Meanwhile for questions asked in what way the users communicate each other where asked and they confirmed that they are addressed through different communication media as can be seen from the above table. Among Focus on user requirement CSF related question the respondent confirmed that the company focus on user requirement to select ERP solution. Looking at the above positive result BPR from user perspective will be success full because theother CSFs under user perspective positive result will make the change easier and the user will accept the BPR with less resistance.

4.3.1. Result of readiness level of the company from consultant perspective

In this study as discussed in the methodology section key informants are selected as a respondent for the survey question as well as for the interview. Therefore the consultant perspective of this study addressed through interview and the response is analyzed as follows.

SI consultant is now in charge of consulting at the case company through the implementation process of the new integrated system (ERP). Based on the CSFs categorized under consultants perspective different questions were asked and the representative of the consultant gave response and itis analyzed as follows. For the question asked regarding managing and the use of ERP implementation consultant the respondent replayed that they are involving in the all stage of the implementation process and they are also give training for technical team as well as for user in

need. According to (Sathish, 2004) consultants help to fill any gaps in expertise, product knowledge, process guidance and IT skills during the implementation process. Therefore participating in the implementation process and transferring knowledge through training is important for the company to make the implementation process successful.

For Business process re-engineering, Minimal customization of packages, Integration of business planning with ERP planning, Formalized project plan /schedule, Good project scope management and a formalized project approach and methodology CSFs related questions asked the respondent response shows a positive result on Business process re-engineering, the respondent confirmed that the company made a business process re-engineering and they have documented it. On the rest of the parameters gap have been identified which leads the project to dalliance. This EEU project Awarded on 15th October 2015 G.C and the duration to finalize this project was 2 years but still the project work is around 91% finalized it has taken more time than the planned/scheduled time. The reason for the dalliance is described as follow. EEU builds new standard primary datacenter (DC) in AddisAbeba and data recovery center (DR) at BahirDar. While constructing this DC and DR sites the civil work delayed for more than six months in which this part of the project happened during the building process of new data that make the project out of formalized plan/schedule. The other reason is in order to build suitable business application which means to integrate business planning with ERP planning the company must provide clear and organized customer information. The company doesn't have such organized and suitable customer information for the new ERP system to customize the package and make fit to companies business process. Delay to finalize customization of the ERP solution from vendor side is also another reason for the dalliance of the implementation process.

For question regarding Implementation strategy the respondent response was since the company is implementing SAP solution therefore they are going to follow SAP implementation strategy. As they said the success of SAP solution is to a large degree determined by the effectiveness of the software implementation to add value to the organization. That is why SAP has introduced the Simplified Rapid-deployment roadmap and it is discussed below.



- **Project Preparation:** During this phase the team goes through initial planning and preparation for SAP project.
- **Blue Print:** The purpose of this phase is to achieve a common understanding of how the company intends to run SAP to support their business.
- **Realization:** The purpose of this phase is to implement and configure in the system all the business process requirements based on the Business Blueprint.
- **Final Preparation:** The purpose of this phase is to complete the final preparation (including testing, end user training, system management and cutover activities) to finalize your readiness to go live.
- **Go Live & Support:** The purpose of this phase is to move from a project-oriented environment to live production operation.
- **Operate:** The primary goal of this phase is to ensure the operability of the solution

For the questions regarding Focus on user requirement, Communication among the implementation team members and Team work the respondents confirmed that the company first gathered user requirement before selecting the ERP solution. The respondent is also confirmed that there is good communication among the implementation team members and they are working well together. In line with this It is essential for project groups implementing IS to have strong cohesion because the implementation of IS is a social construction procedure during which participants negotiate, accomplish, and develop a common understanding through interaction, sense making, and collective learning (Boland & Tenkasi,1995; Newell et al., 2004; Sahay & Robay,1996).

4.3.2. Result of readiness level of the company from vendor perspective

Vendor perspective of this study addressed through interview and the response is analyzed as follows. The vendors of this project is called Tech–Mahindra one of the agents of SAP and the representative of the vendor give response for the questions asked regarding CSFs categorized under vendor perspective. For the question asked regarding On-going ERP vendor support the respondent confirmed that since implementing ERP system is a life-long commitment and requires continuous investments in adding new modules and upgrading the system they are giving any support that is needed through the implementation process for instance, technical assistance, emergency maintenance, updates, user training and the similar support will be given through post-implementation stages. In line with this for an ERP project to be successful, representatives of each of these categories should be involved, and the strengths of each group maximized. However, as it is unlikely that a homogeneous category has all the relevant knowledge and expertise to implement, the mix of representatives should be well-balanced to ensure a good combination of knowledge, skills and experience. Both internal and external personnel should be included to enable internal staff to “grow” the necessary skills for ERP projects (Sathish, 2004). For the questions regarding Minimal customization of packages and Organizational fit for ERP the respondent confirmed that the company first selected a package that can fit its business process. The company has documented business process in which important BPR made on it. But there is a problem on data conversion which made developing the business application (customization) difficult that results in dalliance of implementation of the system at the intended time. The dalliance from the vendor side to develop the business application is occurred due to lack of organized customer information suitable for the new system. Time constraint is also another reason for the dalliance from the vendor side meaning the time given for them to customize the package and develop the business application is not enough. The other reason that the respondent mentioned is the dalliance of top management decision. Because of the above reasons the respondent mentioned that implementation process cannot be finalized within the schedule.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

ERP systems integrate business processes in manufacturing and production, finance and accounting, sales and marketing, and human resources into a single software system (Laudon et.al 2012).It is a key businesses that helps the organizations to gain a competitive advantage by integrating all business processes, managing and optimizing the resources available.

In this study, Ethiopian Electric Utility (EEU) was considered as a case organization to evaluate the readiness from organizational, technical, user, consultant and vendor perspective to implement ERP. In order to answer the research questions and achieve the objective of the study, a critical success factors were identified from peer-reviewed literatures.

Interview and survey questionnaires were used for collecting data. Using document review CSFs were identified. Interview and (primary& secondary) survey questioner were prepared based on the identified CSFs. Primary questioner used to identify appropriate CSFs for pre-implementation stage and their criticality. Secondary questioner and interview were used to validate (assess feasibility of) the framework by applying to the case company. Some of the questionnaire items were partially adapted from reviewed literatures and the rest were newly designed to meet the objective of the research.

Using primary survey questioner respondents were asked to categorize CSFs into three ERP implementation stages which are the pre-implementation, implementation and post-implementation since the focus of this research is the pre-implementation stage CSFs grouped under this stage are taken from the analysis result and from 51 CSFs 37 CSFs found to be relevant the remaining 14 are not selected. Concerning to criticality of CSFs, from the selected 37 CSFs relevant for pre-implementation all of the respondents agreed on the criticality of 35 CSFs the rest 2 are not in the list. Based on this multi-stakeholders' ERP pre-implementation readiness assessment framework is developed. The newly proposed conceptual framework in this study believed to fill the gap identified in a various ways. First it is done on the contest of developing country in Ethiopia and nowadays companies in this country are largely implementing ERP system

therefore they can use this framework to measure their readiness for implementing the system. Second it contains five main perspectives that make it different and more comprehensive comparing to the previous studies done regarding the issue. It is also different from previously done local study by (zewdu A., 2016) through adding three perspectives that has not been addressed before which are users, consultants and vendors perspective. This additional perspective will help companies to measure their readiness from multiple ways and lead to a successful ERP system implementation. The last thing that makes this conceptual framework different is it is validated in the case company. This indicates that any company can customize the framework to its context and measure its readiness level before implementation of ERP system.

Using secondary survey questioner and interview the researcher assessed the readiness level of the case company from five perspectives. Organizational perspective was one of the perspectives which contains 27 measuring CSFs. According to the result the researcher concluded that the organization were successful on CSFs like Top management support and commitment, experienced project manager leadership, empowered decision makers, Good project scope management, Project management , Adequate ERP system selection, Organizational fit for ERP , The use of ERP implementation consultant, Business process re-engineering, Management of expectation, Project team composition/team skill and competency, Interdepartmental cooperation , team work, motivational factors to implement ERP system, Clear vision, goal and objectives of the ERP system, Business plan and long term vision, a formalized project approach and methodology and formalized project plan /schedule. In the contrary the organization revealed Gap on CSFs like training for different user group, dedicated resource, Steering committee Careful change management, organizational culture /cultural change /political issues, focus on user requirement, vendor/customer partnership and managing consultants.

When we see the organization readiness from technical perspective organization were successful on CSFs like Empowered decision makers, training for different user group, dedicated resource, Steering committee, IT department capability, Communication among the implementation team members, Team work, Minimal customization of packages, Data and information quality, reducing trouble shooting-project risk, Implementation strategy and Formalized project plan /schedule. In the contrary the organization revealed gaps on points like Adequate ERP system selection, Focus on user requirement, Organizational culture /cultural change /political issues.

When we see the organization readiness from the user perspective on all of the measuring CSFs which are Training for different user group, Interdepartmental cooperation, Team work, Communication, Business process re-engineering and Focus on user requirement they are successful since the result gain from the survey indicate a positive result

The consultant perspective of this study addressed through interview. The representative of the consultants' response shows that the organizations' is successful on measuring CSFs like The use of ERP implementation consultant, business process re-engineering, managing consultants, Focus on user requirement, Implementation strategy, communication among the implementation team members and Team work. On the other side negative result is gain from the response on measuring CSFs like Minimal customization of packages, Integration of business planning with ERP planning, Formalized project plan /schedule, Good project scope management and formalized project approach and methodology.

Vendor perspective of this study is also addressed through interview. Three measuring CSFs are categorized under this category namely On-going ERP vendor support, Organizational fit for ERP and Minimal customization of packages. The respondent confirmed that implementing ERP system is a life-long commitment and requires continuous investments in adding new modules and upgrading the system they are giving any support that is needed through the implementation process. The organization is successful on organizational fit for ERP since they selected package which can feet the other business process. From the response gap has been identified on minimal customization of package.

5.2. Recommendation

Based on the findings the following are recommendations for practice:

- The findings can support the case company to consider and fill the gap that has been identified through measuring its readiness level. Except the user perspective on the remaining four perspectives which are organizational, technical, consultant and vendors perspective gaps have been identified on many of the measuring CSFs therefore the company should take this seriously and have to make correction so as to successfully implement the integrated system.

- The implementation of the ERP system in the company resulted in dalliance because before going to the implementation process the concerned bodies didn't check the readiness level of the company from different dimensions. Even if it has fulfilled some of the requirements there is still a gap. Therefore depending on the findings the researcher recommends that each stakeholder to check and make correction on the gaps. Depending on the findings concerned stakeholders who are the top managements from organizational perspective, the application side and infrastructure side technical stuffs from technical perspective, consultants and vendors must pay a visit to fill the gap identified for successful implementation of the integrated system.
- Although most organizations in our country are still in the early stage of ERP implementation, there is also a growing tendency for companies to adopt ERP to improve their business operations. Before potential benefits can be realized, an organization needs to transform itself into an ERP-ready organization. However, there are no adequate models or frameworks to assist organizations on how to be an ERP-ready. Therefore it is recommended that any organization interested in implementing ERP can use the proposed ERP pre-implementation readiness assessment framework to addresses all aspects of an organization to attain implementation success.

4.4. Limitations of the study

While doing this study the researcher faces the following difficulties:

- Small number of sample taken because the respondents were not easily available. Most of them were out of country for training and different reasons. This also affects the study way to gather information about one thing from different concerned bodies.
- The ERP system implementation process in the company were also challenged, it runs out of schedule therefore the respondents were not fully volunteer for the response.

4.5. Suggestions for future works

This paper proposed a multi stakeholders ERP pre-implementation readiness assessment framework that can measure the readiness level of a company to implement ERP system. For future research I believe if indicators can be developed for each of the CSFs categorized under the five perspectives to increase usability of the framework for any company that needs to check if the company is ready for ERP implantation.

5. REFERENCES

1. Abdel, R. I. (2014). Success Factors in Enterprise Resource Planning (ERP) Systems Implementation.
2. Abeer, I., ALdayel, M.S., Aldayel A.S and Al-Mudimigh, S. (2011). The critical success factors of ERP implementation in higher education in Saudi Arabia: a case study.
3. Ahmadi, S., Yeh, C.H., and Martin, R.(n.d). An FCM-Fuzzy AHP Approach to Estimating ERP readiness.
4. Ahmadi, S., Yeh, C.H., and Martin, R.(2014). Strategic Framework for Achieving Readiness in Organizations to Implement an ERP System.
5. Aiman, A.J.(2015). Enterprise Resource Planning Execution/ Implementation Methodology Classification. *International Journal of Applied Information Systems (IJAIS) – ISSN , 8(5): 2249-0868 Foundation of Computer Science FCS, New York, USA*
6. Anwar, S.& Mohsin, R.(2011).ERP Project Management in Public Sector – Key Issues and Strategies. *Proceedings of the 44th Hawaii International Conference on System Sciences, 2011.*
7. Arvidsson, J. & Kojic, D.(2017). Critical Success Factors in ERP Implementation.
8. Ayazi, E. (2013). Critical Success Factors In Enterprise Resource Planning.
9. Barsukova D.(2013). Implementation of Enterprise Resource Planning Systems: Point of View of Consultants.
10. Boland, R. J., & Tenkasi, R. V.(1995). Perspective making and perspective taking in communities of knowing. *Organization science, 6(4): 350-372*
11. Bullen C., Rockart J. (1986). *A Primer on Critical Success Factors, in Rockart and Van Bullen, the Rise of Management Computing, Dow Jones Irwin, Illinois (USA), current and competitive ERP: Evaluate Current ERP system capabilities and determine how to meet future growth plans.* Retrieved January 3, 2018, from <http://www.mpi-group.com>
12. Creswell, J. (2003). *Research Design: qualitative, Quantitative, and mixed methods approaches*, second edition, Sage publications
13. Davenport, T. (2006). *Mission critical: Realizing the promise of Enterprise systems.* Harvard Business School Press: Boston, MA.
14. Deloitte C. (1998). *Vision in Manufacturing: Global Report.* New York: publisher

15. Dul J. & Halk T. (2008). *Case Study Methodology in Business Research*. Elsevier Ltd, Oxford.
16. Engidayehu G. (2014). Assessment of Enterprise Resources Planning (ERP) Implementation: The case of ethio telecom.
17. Esteves, J. & Pastor, J. (Aug 2001). Analysis of Critical Success Factors Relevance along SAP Implementation Phases. *Proceedings of the 7th Americas Conference on Information Systems*, pp. 1019 – 1025
18. Esteves J., Pastor J. (2001). Enterprise Resource Planning Systems Research: An Annotated Bibliography, Communications of the Association for Information Systems (CAIS), vol. 7, article 8, August 2001.
19. Fang L.(2005). Critical Success Factors In ERP Implementation.
20. Hasibuan Z.A. – Dantes, G.R. (2012). Priority of Key Success Factors (KSFS) on Enterprise Resource Planning (ERP) System Implementation Life Cycle. *Journal of Enterprise Resource Planning Studies*, 1. 2012, 1-15.
21. Hidayanto, A. N., Azani, M. H., Handayani, P. W., & Suahy, Y.G. (2013). Framework for Measuring ERP Implementation Readiness in Small and Medium Enterprise (SME): A Case Study in Software Developer Company.
22. Huang, Z., & Palvia, P. (2001). ERP implementation issues in advanced and developing countries. *Business Process Management Journal*, 7(3), 276-284.
23. Hurbean, L.(2008). *Issues with implementing ERP in the public administration*. Retrieved February 16, 2018, from <http://mpa.ub.uni-muenchen.de/14160/>
24. Holland, C., Light B. (1999).Critical Success Factors Model for ERP Implementation. *IEEE Software*, May/June, pp. 1630-1636.
25. Jagoda, K. (2016), an integrated framework for ERP system implementation.
26. Khalifa, N. & Azab, N. (2015).ERP In Egypt: Real or Hollow Systems?
27. Khandewal, V., & Miller, J. (1992). “*Information System Study*”, *Opportunity Management Program*, IBM Corporation, New York.
28. Kock, N., Jenkins A., & Wellington R. (1999). A Field Study of Success and Failure Factors in Asynchronous Groupware Supported Process Improvement Groups. *Business Process Management Journal*, 5(3), pp. 238-253

29. Laudon, K., & Laudon, J. (2012). *Management information systems: managing the digital firm*, 12th ed. Prentice Hall.
30. Lawley, M., Summers, J., Koronios, A., & Gardiner, M. (2001). Critical Success Factors for Regional community Portals: A Preliminary Model, *Australian and New Zealand Marketing Academy Conference*.
31. Lorraine, J.H. (2004). Motivations for Enterprise Resource Planning (ERP) System Implementation In Public Versus Private Sector Organizations.
32. Mdimali, B., Mutagahywa, B., Mohamed, J., & Mahabi, V. (2017). Development of a Practical ERP Pre Implementation Assessment Model for Organizations in Tanzania.
33. Mdimali, B., Mutagahywa, B., Mohamed, J., & Mahabi, V. (2017). Positioning of the ERP system Pre - Implementation Assessment in the Enterprise Architecture in Tanzanian Organizations.
34. Mohamed Y. & Mohamed A. (2015), Critical Success Factors for Enterprise Resource Planning Implementation Success, *International Journal of Advances in Engineering & Technology*.
35. Moon Y., (2007), Enterprise Resource Planning (ERP) a review of the literature, *Int. J. Management and Enterprise Development, Vol. 4, No. 3*
36. Motwani, J., Subramanian, R. & Gopala Krishna, p. (2005). Critical factors for successful ERP implementation: Exploratory findings from four case studies, *Computers in industry*, 56(6): 529-544.
37. Newell, S., Tansley, C., & Huang, J. (2004). Social capital and knowledge integration in an ERP project team: The importance of bridging and bonding. *British Journal of Management, 15(1), 43-57*.
38. Nizar A., Azani M., Wuri P., and Giri Y. (2013). Framework for Measuring ERP Implementation Readiness in Small and Medium Enterprise (SME): A Case Study in Software Developer Company. *Journal of Computers, VOL. 8, and NO. 7*
39. Parr, A., Shanks, G. (2000). A model of ERP project implementation. *Proceedings of the 33rd Hawaii International conference in system sciences, USA*.
40. Parr. A. N. & Shanks .G (2000), A Taxonomy of ERP Implementation Approaches.
41. Pramod K. & M.P.Thapliyal (2010). Successful Implementation of ERP in A Large Organization.

42. Pavlovna E., Aleksandrovich Y., Petrovich A. Zhabin & Yuryevna P. (2015). Key Success Factors Analysis in the Context of Enterprise. *Modern Applied Science; 9(5)*
43. Razmi,J., Ghodsi,R. & Sangari, M. S.(2008).A fuzzy ANP model to assess the state of organizational readiness for ERP.
44. Ross, J., Vitale M. (2000). The ERP Revolution: Surviving vs. Thriving. *Information systems frontiers,2,233-241.*
45. Sahay, S., & Robey, D. (1996). Organizational context, social interpretation, and the implementation and consequences of geographic information systems. *Accounting, Management and Information Technologies, 6(4), 255-282*
46. Sathish S. (2004), A Stakeholder Perspective Of Enterprise Systems Implementation: A Case Study Of A University's Enterprise Resource Planning Project.
47. Seo, G. (2013). Challenges in Implementing Enterprise Resource Planning (ERP) system in Large Organizations: Similarities and Differences between Corporate and University Environment. Working Paper CISL# 2013-07.
48. Shafaei, R.,& Dabiri, N. (2008). An EFQM Based Model to Assess an Enterprise Readiness for ERP Implementation.
49. Shiri, S., Anvari, A., & Soltani, H.(2014). Assessment of Readiness Factors for Implementing ERP Based on Agility (Extension of Mckinsey 7s Model).
50. Smiju Sudevan, M.Bhasi, and K.V.Pramod (2014). Interpreting Stakeholder Roles in ERP Implementation Projects: a Case Study, *International Journal of Computer Science and Information Technologies, 5 (3) , 3011-3018*
51. Sintayehu, D. (2014). Success Factors for Implementation of Enterprise Resource Planning System at Ethiopian Airlines.
52. Somers, T.M., and Nelson, K.(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, Hawaii, January 3-6.*
53. Stanciu,V. & Tinca, A.(2013). ERP Solutions between Success and Failure. *Accounting and Management Information Systems,12(4), 626–649, 2013*
54. Sue Abdinnour-Helm, A., Mark L.Lengnick-Hall, B., Cynthia A.Lengnick-Hall (2003). Pre-implementation attitudes and organizational readiness for implementing an Enterprise Resource Planning system.

55. Umble, E. J., Haft, R. R., & Umble, M. M. (2003). Enterprise Resource Planning: Implementation Procedures and Critical Success Factors. *European Journal of Operational Research* (146:2), 241-257.
56. Wanjiru, J.K. (2013). Factors Affecting the Implementation of Enterprise Resource Planning In State Corporations: A Case Study of Nairobi City Water And Sewerage Company. *Institute of Interdisciplinary Business Research December 2013* 5(8)
57. Wongnum, P.M., Krabbend, AM J., J., Buhl, H., Ma, X., Kenett, R. (2004). Improving enterprise system support—a case-based approach. *Advanced Engineering Informatics* 18, 241–253.
58. Yin, R. K. (2003). *Case study research - design and methods* (Third edition), Thousand Oaks, California: Sage Publication).
59. Yousaf, M.J. (2015). Enterprise Resource Planning (ERP) Implementation In Pakistani Enterprises: Critical Success Factors And Challenges. *Journal of Management and Research*, 2 (2), 2015
60. Zewdu, A. (2016). Developing a framework for Evaluation of ERP Pre-Implementation Readiness: The Case of Dashen Bank Share Company.
61. Zouine, A., & Fenies, P. (2014). The critical success factors of the ERP system project: A Meta-Analysis Methodology. *The Journal of Applied Business Research*, 2 September/October 2014.

Appendix: Questionnaire Survey: CSFs validation to be filled senior expert

Addis Ababa University

School of Graduate Studies College of Natural Science

Department of Information Science

Dear Sir or Madam:

In partial fulfillment of the requirements for the Degree of Master of Science in Information Science, I am undertaking a research on “Developing a framework for ERP Pre-Implementation Readiness assessment on A Multi Stakeholders’ Perspective” at Addis Ababa University. I have accordingly prepared this survey questionnaire. The objective of the survey is to know the level of criticality of the CSFs and in which phase are those CSFs relevant in ERP implementation?

This research is believed to produce results that can improve the adoption or development of CSFs for ERP implementation.

Your honest responses are extremely valuable to the outcome of this research. The results of the survey will be used for the purpose of academic research only. Hence, all responses will be kept in strict confidentiality and hence would not affect any one in any case.

Your dedication is most valued and appreciated and I would like to take this opportunity to thank you in advance for your kind participation, genuine and

Thank you again!

Rahel T/Selassie

Part one

Please rate each CSFs as to which phase of ERP implementation are each of these CSFs relevant in ERP implementation.

Put sign “X” in the box

| | Critical success factors | In which phase are these CSFs important in ERP Implementation? | | |
|----|--|--|----------------|---------------------|
| | | Pre-Implementation | Implementation | Post-Implementation |
| No | | | | |
| 1 | Top management support and commitment | | | |
| 2 | Training for different user group | | | |
| 3 | Project management | | | |
| 4 | Clear vision, goal. And objectives of the ERP system | | | |
| 5 | Careful change management | | | |
| 6 | Inter departmental communication | | | |
| 7 | Project champion | | | |
| 8 | The use of ERP implementation consultant | | | |

| | | | | |
|----|---|--|--|--|
| 9 | Business process re-engineering | | | |
| 10 | Communication among the implementation team members | | | |
| 11 | Adequate ERP system selection | | | |
| 12 | Project team competency | | | |
| 13 | On-going- ERP vendor support | | | |
| 14 | Project team composition/team skill | | | |
| 15 | Minimal customization of packages | | | |
| 16 | End user involvement | | | |
| 17 | Education on new business process | | | |
| 18 | Reducing trouble shooting-project risk | | | |
| 19 | Steering committee | | | |
| 20 | Management of expectation | | | |
| 21 | Dedicated resource | | | |
| 22 | Organizational culture /cultural change /political issues | | | |
| 23 | Suitable IT legacy system | | | |
| 24 | Team work | | | |
| 25 | Implementation strategy | | | |
| 26 | Interdepartmental cooperation | | | |

| | | | | |
|----|---|--|--|--|
| 27 | Data analysis and conversion | | | |
| 28 | Use of vendor development tools | | | |
| 29 | Vendor/customer partnership | | | |
| 30 | Data and information quality | | | |
| 31 | IT infrastructure | | | |
| 32 | Empowered decision makers | | | |
| 33 | Business plan and long term vision | | | |
| 34 | Defining the architecture | | | |
| 35 | Ease of system use and user's acceptance | | | |
| 36 | Formalized project plan /schedule | | | |
| 37 | Organizational fit for ERP | | | |
| 38 | IT department capability | | | |
| 39 | Good project scope management | | | |
| 40 | Experienced project manager leadership | | | |
| 41 | Adequate resource | | | |
| 42 | Managing consultants | | | |
| 43 | Company wide support | | | |
| 44 | Monitoring and evaluation of performance | | | |
| 45 | Integration of business planning with ERP | | | |

| | | | | |
|----|---|--|--|--|
| | planning | | | |
| 46 | Technical issues | | | |
| 47 | Motivational factors to implement ERP system | | | |
| 48 | Trust between partners | | | |
| 49 | Effectiveness of management in reducing the user's resistance | | | |
| 50 | Focus on user requirement | | | |
| 51 | A formalized project approach and methodology | | | |

Other comments

Part two

Please rate CSFs which you have rated only relevant for ERP pre-implementation stage on the above questioner based on how much you agree with the level of criticality.

Put sign “X” in the box

| | Critical success factors | Please rate the level of criticality of the CSFs only relevant for ERP pre-implementation stage? | | | | |
|----|--|---|-----------------|----------------|---------------------|--------------------------|
| no | | Very Critical | Critical | Neutral | Not Critical | Not Very Critical |
| 1 | Top management support and commitment | | | | | |
| 2 | Training for different user group | | | | | |
| 3 | Project management | | | | | |
| 4 | Clear vision, goal. And objectives of the ERP system | | | | | |
| 5 | Careful change management | | | | | |
| 6 | Inter departmental communication | | | | | |
| 7 | Project champion | | | | | |

| | | | | | | |
|----|---|--|--|--|--|--|
| 8 | The use of ERP implementation consultant | | | | | |
| 9 | Business process re-engineering | | | | | |
| 10 | Communication among the implementation team members | | | | | |
| 11 | Adequate ERP system selection | | | | | |
| 12 | Project team competency | | | | | |
| 13 | On-going- ERP vendor support | | | | | |
| 14 | Project team composition/team skill | | | | | |
| 15 | Minimal customization of packages | | | | | |
| 16 | End user involvement | | | | | |
| 17 | Education on new business process | | | | | |
| 18 | Reducing trouble shooting-project risk | | | | | |
| 19 | Steering committee | | | | | |
| 20 | Management of expectation | | | | | |
| 21 | Dedicated resource | | | | | |
| 22 | Organizational culture /cultural change /political issues | | | | | |
| 23 | Suitable IT legacy system | | | | | |
| 24 | Team work | | | | | |
| 25 | Implementation strategy | | | | | |

| | | | | | | |
|----|--|--|--|--|--|--|
| 26 | Interdepartmental cooperation | | | | | |
| 27 | Data analysis and conversion | | | | | |
| 28 | Use of vendor development tools | | | | | |
| 29 | Vendor/customer partnership | | | | | |
| 30 | Data and information quality | | | | | |
| 31 | IT infrastructure | | | | | |
| 32 | Empowered decision makers | | | | | |
| 33 | Business plan and long term vision | | | | | |
| 34 | Defining the architecture | | | | | |
| 35 | Ease of system use and user's acceptance | | | | | |
| 36 | Formalized project plan /schedule | | | | | |
| 37 | Organizational fit for ERP | | | | | |
| 38 | IT department capability | | | | | |
| 39 | Good project scope management | | | | | |
| 40 | Experienced project manager leadership | | | | | |
| 41 | Adequate resource | | | | | |
| 42 | Managing consultants | | | | | |
| 43 | Company wide support | | | | | |
| 44 | Monitoring and evaluation of performance | | | | | |

| | | | | | | |
|----|---|--|--|--|--|--|
| 45 | Integration of business planning with ERP planning | | | | | |
| 46 | Technical issues | | | | | |
| 47 | Motivational factors to implement ERP system | | | | | |
| 48 | Trust between partners | | | | | |
| 49 | Effectiveness of management in reducing the user's resistance | | | | | |
| 50 | Focus on user requirement | | | | | |
| 51 | A formalized project approach and methodology | | | | | |

Other comments

Addis Ababa University

School of Graduate Studies College of Natural Science

Department of Information Science

Dear Sir or Madam:

In partial fulfillment of the requirements for the Degree of Master of Science in Information System, I am undertaking a research on “Developing ERP Pre-Implementation Readiness Assessment Framework: A Multi Stakeholders’ Perspective” at Addis Ababa University. I have accordingly prepared this survey questionnaire. The objective of the survey is to explore technical, organizational, user, consultant and vendor perspective about ERP pre-implementation readiness that will affect the implementation of ERP at Ethiopian Electric Utility.

This research is believed to produce results that can improve the implementation of any ERP system in Ethiopian Electric Utility, other sectors and organizations.

Your honest responses to each question and statement are extremely valuable to the outcome of this research. The questionnaire *survey* will take approximately 45 minutes to complete and the results of the survey will be used for the purpose of academic research only. Hence, all responses will be kept in strict confidentiality and hence would not affect any one in any case.

Your dedication is most valued and appreciated and I would like to take this opportunity to thank you in advance for your kind participation, genuine and on time response to the questionnaire.

Thank you again!

Rahel T/selassie

This questioner is going to be filled by key informants of technical staff from EEU to see the technical perspective of the implementation process.

Part 1: Personal Profile

Please indicate your response to each question by putting “X” or “√” in the appropriate column

| | | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|
| 1. Position or Role on your company | | | | |
| <input type="checkbox"/> CEO <input type="checkbox"/> CIO <input type="checkbox"/> Dep’t Mgr <input type="checkbox"/> Project Mgr <input type="checkbox"/> Operational Mgr <input type="checkbox"/> Technical staff Other If other, please specify _____ | | | | |
| 2. Your gender? | | | | |
| Male <input type="checkbox"/> | | | Female <input type="checkbox"/> | |
| 3. Your age group | | | | |
| <input type="checkbox"/> Less than 23 years | <input type="checkbox"/> 23-30 years | <input type="checkbox"/> 31-40 years | <input type="checkbox"/> 41-50 years | <input type="checkbox"/> Above 50 |

Part 2: Readiness measurement

| | |
|--|--|
| Please indicate your response to each question by putting “X” or “√” in the appropriate column. | |
| Please rank each factor (Strongly agree, Agree, Neutral, Disagree, and Strongly disagree) or (Very aware, Fairly aware, Aware, Somewhat aware, Not aware) based on how much you agree with the following statements. | |
| Strongly agree, Agree, Neutral, Disagree, and Strongly disagree | |
| Do you agree with the following statement: I am committed to the implementation of a new integrated business system [ERP]. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The implementation of a new integrated business system will be successfully completed. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The project will result in an improvement in the performance of business processes within the | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|---|--|
| company. | |
| Do you agree with the following statement: Your company have carefully selected a package which can fit its business process | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| I will have ample time and attention available to devote to implementing this project. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| I will have enough time to attend and facilitate regular status meetings? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are you comfortable being a role model in displaying the proper behaviors required to make this change successful? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| The Organization's technical team preparedness for this ERP implementation is considered as enough? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The enterprise-wide technical staff is prepared to address the technical specifications/requirements that will be required for the new ERP system? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement? My department has written policies and procedures that clearly explain the processes for completing all business functions within the department. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the need to procure and implement a new integrated business system, ERP? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The company has standard and followed security policies for safeguarding enterprise-wide data and information sharing. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Can your company complete a systems related project within the expected time that requires your participation? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|--|--|
| <p>Do you agree with the following statement:</p> <p>The functional experts in my department fully understand key financial processes within the department?</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>The functional experts in my department fully understand how departmental financial processes relate to enterprise-wide departmental processes?</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement:</p> <p>The functional experts in your company understand departmental financial processes?</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement consultants are often involved in all stage of the implementation process</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>The company has got the right IT community to participate in this project.</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement:</p> <p>Departments have got the proper staffing resources available to ensure a successful ERP implementation.</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement: In relationship to the implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes.</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement: In relationship to the implementation of a new ERP system, subject matter experts within your department understand how their business process relates to other business functions within the company?</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree with the following statement:</p> <p>My department has the proper staffing resource available to ensure a successful implementation</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <p>Do you agree that the current systems and</p> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|---|--|
| business processes are sufficient to handle the company's current and future business needs? | |
| Implementation of a new ERP system, subject matter experts within your department, understand how to complete their business processes. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: There has been adequate coordination between technical and functional staff to prepare for the new system? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Your company has training documentation available and accessible for users and trainers to use for business processing? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Your company has the staffing resources to provide adequate training on a new business system. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Rate your company's ability to take on communication responsibilities to include drafting and delivery, during this project. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Has the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Rate the level of tolerance for change within your business community. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Please rate your awareness of your company's interest in purchasing a new integrated Financial and Human Resources system. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Your department does a good job of communicating and informing employees about key projects/activities taking place within the department. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Departments within your company work well together? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Part 3: Yes or No questions.

Please select your choice as Yes or No that you believe represent the current working environment in your company that has got a direct connection to the ERP implementation. You can also indicate improvements needed in each area if you feel there is one. Additionally, you can include notes and remarks on points listed underneath.

| | Answer (Yes = 1, No = 0) | Improvement Needed | Notes |
|---|--------------------------|--------------------|-------|
| Has the enterprise determined the potential business impact of the ERP system? | | | |
| Has the potential business impact of the ERP system been quantified? | | | |
| Does the enterprise have a method for identifying potential risks introduced by the ERP system? | | | |
| Can the enterprise create a continuity plan that covers the period of ERP introduction? | | | |
| Can the enterprise assess requirements for network and perimeter security that may be introduced by the ERP system? | | | |
| Can the enterprise assess requirements for identity and access control introduced by the ERP system? | | | |
| Can the enterprise ascertain if the ERP system will support its need to create the necessary workflows, internal controls, and reports? | | | |
| Does the enterprise have a process for budgeting initial ERP investments? | | | |
| Does the enterprise have a process for budgeting investment in additional modules, upgrades, or additions? | | | |
| Does the enterprise have fully documented business processes? | | | |

| | | | |
|--|--|--|--|
| Does the enterprise have a process for prioritizing ERP investment decisions concerning additional modules, upgrades, or additions? | | | |
| Does the enterprise have a process in place for soliciting requirements from business units and for analyzing those requirements? | | | |
| Does the enterprise have a system in place for procuring enterprise-scale applications? | | | |
| Does the enterprise have competencies in managing both enterprise software vendors and implementation consultants? | | | |
| Have the enterprise established ERP service expectations for the business units (e.g., uptime, data refresh rates, quality reporting, etc.)? | | | |
| Does the enterprise have a means of making changes to existing service expectations? | | | |
| Can the enterprise determine if the existing server environment will support the desired ERP functionality and service characteristics? | | | |
| Can the enterprise determine if the existing network connections will support the desired ERP functionality and service characteristics? | | | |
| Can the enterprise determine if the existing storage and recovery infrastructure will support the desired ERP functionality and service characteristics? | | | |
| Can the enterprise determine if the existing database infrastructure will support the desired ERP functionality and service characteristics? | | | |
| Can the enterprise determine if the | | | |

| | | | |
|--|--|--|--|
| enterprise will have help desk capacity to support the rollout and maintenance of an ERP system? | | | |
| Can the enterprise determine if it will have the incident management capacity to support the rollout and maintenance of an ERP system? | | | |
| Can the enterprise determine business user training concerns imposed by the ERP system? | | | |
| Has the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system? | | | |
| Has the enterprise converted data from the existing system to the new system properly? | | | |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | | | |
| Does the enterprise have a process in place for selecting and evaluating ERP vendors? | | | |
| Has the enterprise considered what elements of the ERP project could be outsourced or implemented in-house (e.g. hosting, implementation, etc.)? | | | |
| Can the enterprise capture IT knowledge gained during the ERP implementation cycle? | | | |
| Does the enterprise have fully documented business processes? | | | |

Other comments

This questioner is going to be filled by key informants of top management from EEU to see the organizational perspective of the implementation process.

Part 1: Personal Profile

Please indicate your response to each question by putting “X” or “√” in the appropriate column

| | | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|
| 1. Position or Role on your company | | | | |
| <input type="checkbox"/> CEO <input type="checkbox"/> CIO <input type="checkbox"/> Dep’t Mgr <input type="checkbox"/> Project Mgr <input type="checkbox"/> Operational Mgr <input type="checkbox"/> Technical staff Other If other, please specify_____ | | | | |
| 2. Your gender? | | | | |
| Male <input type="checkbox"/> | | | Female <input type="checkbox"/> | |
| 3. Your age group? | | | | |
| <input type="checkbox"/> Less than 23 years | <input type="checkbox"/> 23-30 years | <input type="checkbox"/> 31-40 years | <input type="checkbox"/> 41-50 years | <input type="checkbox"/> Above 50 |

Part 2: Readiness measurement

Please indicate your response to each question by putting “X” or “√” in the appropriate column.

| | |
|--|--|
| Please rank each factor (Strongly agree, Agree, Neutral, Disagree, and Strongly disagree) or (Very aware, Fairly aware, Aware, Somewhat aware, Not aware) based on how much you agree with the following statements. | |
| Strongly agree, Agree, Neutral, Disagree, and Strongly disagree | |
| Do you agree with the following statement? I am committed to the implementation of a new integrated business system [ERP]. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The implementation of a new integrated business system will be successfully completed. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The project will result in an improvement in the | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|--|--|
| performance of business processes within the company. | |
| Do you agree with the following statement: Your company carefully selected a package which can fit its business process | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| I will have ample time and attention available to devote to implementing this project. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| I will have enough time to attend and facilitate regular status meetings? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are you comfortable being a role model in displaying the proper behaviors required to make this change successful? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| The Organization's technical team preparedness for this ERP implementation is considered as enough? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The enterprise-wide technical staff is prepared to address the technical specifications/requirements that will be required for the new ERP system. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: My department has written policies and procedures that clearly explain the processes for completing all business functions within the department. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the need to procure and implement a new integrated business system, ERP? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: The company has standard and followed security policies for safeguarding enterprise-wide data and information sharing. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Have the enterprise established ERP service expectations for the business units (e.g., uptime, data refresh rates, etc.)? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Can your company complete a systems related project within the intended time? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|--|---|
| <p>The functional experts in my department fully understand how departmental financial processes relate to enterprise-wide departmental processes?</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement consultants are often involved in all stage of the implementation process</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>The company has got the right IT community to participate in this project.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement: Departments have got the proper staffing resources available to ensure a successful ERP implementation.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement: In relationship to the implementation of a new ERP system, subject matter experts within your department understand how to complete their business processes.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement: My department has the proper staffing resource available to ensure a successful implementation</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree that the current systems and business processes are sufficient to handle the company's current and future business needs?</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement: There has been adequate coordination between technical and functional staff to prepare for the new system.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Rate your level of experience leading other system implementation projects.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Rate your company's ability to take on training responsibilities to include trainers and training space, during this project.</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>If you have been to enterprise- wide (not departmental) training within the last two years, the training was provided in an informative, well-</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |

| | |
|---|--|
| organized and useful manner? | |
| Do you agree with the following statement: Your company has training documentation available and accessible for users and trainers to use for business processing. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Your company has the staffing resources to provide adequate training on a new business system. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Rate your company's ability to take on communication responsibilities to include drafting and delivery, during this project. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Has the enterprise considered what new IT or business roles will be required to support the rollout and maintenance of an ERP system? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Rate the level of tolerance for change within your business community. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you reward or recognize people for helping lead or facilitate changes within your agency? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Does your company tend to stick with standard procedures throughout the project? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Can the enterprise capture IT knowledge gained during the ERP implementation cycle? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Please rate your awareness of your company's interest in purchasing a new integrated Financial and Human Resources system. | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do you agree with the following statement: Your company does a good job of communicating and informing employees about key projects/activities taking place within the company? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

| | |
|--|--|
| <p>If you are aware of your company's interest in purchasing a new integrated business system, How did you hear about it?</p> | <p>Involvement in selection process <input type="checkbox"/></p> <p>County-wide presentation <input type="checkbox"/></p> <p>Department/staff meetings <input type="checkbox"/></p> <p>Interoffice memo/ written notification <input type="checkbox"/></p> <p>Word of mouth <input type="checkbox"/></p> <p>Other (please specify)_____</p> |
| <p>Please indicate the type of company-wide communications (not limited to your department) that you have received last year. (Check all that apply).</p> | <p>Website information (portal) <input type="checkbox"/></p> <p>Email message <input type="checkbox"/></p> <p>Enterprise-wide memo <input type="checkbox"/></p> <p>Enterprise-wide voicemail <input type="checkbox"/></p> <p>Message on postal envelope <input type="checkbox"/></p> <p>Messenger <input type="checkbox"/></p> <p>Other_____</p> |
| <p>Do you agree with the following statement: Departments within your company work well together?</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree your company have a good enterprise-wide project management for planning stage involves the allocation of responsibilities, the definition of milestones and critical paths, training and human resource planning, and the determination of measures of success?</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |

Part 3: Yes or No questions.

Please select your choice as Yes or No that you believe represent the current working environment in your company that has got a direct connection to the ERP implementation. You can also indicate improvements needed in each area if you feel there is one. Additionally, you can include notes and remarks on points listed underneath.

| | Answer (Yes = 1, No = 0) | Improvement Needed | Notes |
|--|--------------------------|--------------------|-------|
| Has the enterprise determined the potential business impact of the ERP system? | | | |
| Has the potential business impact of the | | | |

| | | | |
|---|--|--|--|
| ERP system been quantified? | | | |
| Does the enterprise have a method for identifying potential risks introduced by the ERP system? | | | |
| Can the enterprise create a continuity plan that covers the period of ERP introduction? | | | |
| Can the enterprise assess requirements for network and perimeter security that may be introduced by the ERP system? | | | |
| Can the enterprise assess requirements for identity and access control introduced by the ERP system? | | | |
| Can the enterprise ascertain if the ERP system will support its need to create the necessary workflows, internal controls, and reports? | | | |
| Does the enterprise have a process for budgeting initial ERP investments? | | | |
| Does the enterprise have a process for budgeting investment in additional modules, upgrades, or additions? | | | |
| Does the enterprise have fully documented business processes? | | | |
| Does the enterprise have a process for prioritizing ERP investment decisions concerning additional modules, upgrades, or additions? | | | |
| Does the enterprise have a process in place for soliciting requirements from business units and for analyzing those requirements? | | | |
| Does the enterprise have a system in place for procuring enterprise-scale applications? | | | |
| Does the enterprise have competencies in managing both enterprise software vendors and implementation consultants? | | | |

| | | | |
|--|--|--|--|
| Have the enterprise established ERP service expectations for the business units (e.g., uptime, data refresh rates, quality reporting, etc.)? | | | |
| Does the enterprise have a means of making changes to existing service expectations? | | | |
| Can the enterprise determine if the existing server environment will support the desired ERP functionality and service characteristics? | | | |
| Can the enterprise determine if the enterprise will have help desk capacity to support the rollout and maintenance of an ERP system? | | | |
| +Can the enterprise determine if it will have the incident management capacity to support the rollout and maintenance of an ERP system? | | | |
| Can the enterprise determine business user training concerns imposed by the ERP system? | | | |
| Can the enterprise create a professional development plan to give existing employees ERP competencies? | | | |
| Does the enterprise have a process in place for selecting and evaluating ERP vendors? | | | |
| Does the enterprise have fully documented business processes? | | | |

Other comments

This questioner is going to be filled by different level of system user from EEU to see the users' perspective of the implementation process.

Part 1: Personal Profile

Please indicate your response to each question by putting “X” or “√” in the appropriate column

| | | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|-----------------------------------|
| 1. Position or Role on your company | | | | |
| <input type="checkbox"/> CEO <input type="checkbox"/> CIO <input type="checkbox"/> Dep’t Mgr <input type="checkbox"/> Project Mgr <input type="checkbox"/> Operational Mgr <input type="checkbox"/> Technical staff Other If other, please specify_____ | | | | |
| 2. Your gender? | | | | |
| Male <input type="checkbox"/> | | | Female <input type="checkbox"/> | |
| 3. Your age group? | | | | |
| <input type="checkbox"/> Less than 23 years | <input type="checkbox"/> 23-30 years | <input type="checkbox"/> 31-40 years | <input type="checkbox"/> 41-50 years | <input type="checkbox"/> Above 50 |

Part 2: Readiness measurement

Please indicate your response to each question by putting “X” or “√” in the appropriate column.

| | |
|--|-------|
| Please rank each factor (Strongly agree, Agree, Neutral, Disagree, and Strongly disagree) or (Very aware, Fairly aware, Aware, Somewhat aware, Not aware) based on how much you agree with the following statements. | |
| Strongly agree, Agree, Neutral, Disagree, and Strongly disagree | |
| Do you agree with the following statement: I am committed to the implementation of a new integrated business system [ERP]. | □□□□□ |
| Do you agree with the following statement: | □□□□□ |

| | |
|--|---|
| <p>The implementation of a new integrated business system will be successfully completed.</p> | |
| <p>Do you agree with the following statement: The project will result in an improvement in the performance of business processes within the company.</p> | <p>□□□□□</p> |
| <p>Do you agree with the following statement: Your company has training documentation available and accessible for users and trainers to use for business processing.</p> | <p>□□□□□</p> |
| <p>Do you agree with the following statement: Your company has the staffing resources to provide adequate training on a new business system.</p> | <p>□□□□□</p> |
| <p>Can the enterprise create a professional development plan to give existing employees ERP competencies?</p> | <p>□□□□□</p> |
| <p>Please rate your awareness of your company's interest in purchasing a new integrated system.</p> | <p>□□□□□</p> |
| <p>Do you agree with the following statement: Your company does a good job of communicating and informing employees about key projects/activities taking place within the company.</p> | <p>□□□□□</p> |
| <p>If you are aware of your company's interest in purchasing a new integrated business system, how did you hear about it?</p> | <p>Involvement in selection process <input type="checkbox"/></p> <p>County-wide presentation <input type="checkbox"/></p> <p>Department/staff meetings <input type="checkbox"/></p> <p>Interoffice memo/ written notification <input type="checkbox"/></p> <p>Word of mouth <input type="checkbox"/></p> <p>Other (please specify)_____</p> |
| | <p>Website information (portal) <input type="checkbox"/></p> |

| | |
|---|--|
| <p>Please indicate the type of company-wide communications (not limited to your department) that you have received last year. (Check all that apply).</p> | <p>Email message <input type="checkbox"/></p> <p>Enterprise-wide memo <input type="checkbox"/></p> <p>Enterprise-wide voicemail <input type="checkbox"/></p> <p>Message on postal envelope <input type="checkbox"/></p> <p>Messenger <input type="checkbox"/></p> <p>Other - _____</p> |
| <p>Do you agree with the following statement: Departments within your company work well together?</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |
| <p>Do you agree with the following statement: The company focus on user requirement User requirement</p> | <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/></p> |

Interview Question

This questioner is prepared for Consultant of ERP system in EEU to see the consultant's perspective

1. How do you explain your commitment to the implementation of a new integrated business system?
2. Do you think the implementation of new integrated business system will be successfully completed? What are your indicators to say so?
3. Do you think the project will result in an improvement in the performance of the business processes within the company?
4. Do you think proper data conversion is done which is suitable for the new system?
5. Are you involving in the all stage of the implementation process?
6. How do you explain the Communication among stakeholders involved in the implementation process?
7. Is the implementation process going within the defined project scope?
8. Do you think the stakeholders involved in the project work well together? Explain
9. Is the company business process fit to the selected ERP system?
10. The project is not completed within the defined schedule; what is the reason for the dalliance?
11. What kind of implementation strategy is the company going to follow and why?

This questioner is prepared for vendor of ERP system in EEU to see the vendors perspective

1. How do you explain your commitment to the implementation of a new integrated business system?
2. Do think the implementation of new integrated business system will be successfully completed?
3. Do you think the project will result in an improvement in the performance of the business processes within the company?
4. Do you think minimal and company requirement-based customization of package occurred? Why?
5. Is the company business process fit to the selected ERP system?
6. Is the implementation process going within the defined project scope?
7. The project is not completed within the defined schedule; what do you think are the possible reasons for the dalliance?