



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES**  
**SCHOOL OF INFORMATION SCIENCE**

**COMPARATIVE ANALYSIS OF CRITICAL FACTORS AFFECTING ERP  
IMPLEMENTATION IN PRIVATE AND PUBLIC ORGANIZATIONS IN  
ETHIOPIA: A PARETO APPROACH**

**By**

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**JUNE, 2018**

**ADDIS ABABA, ETHIOPIA**



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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: SisayMsganaw

Advisor: Lemma Lessa (PhD)

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Addis Ababa, Ethiopia



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## **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.

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

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Lemma Lessa (PhD)

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## ***Abstract***

*This paper attempts to explore and identify factors affecting ERP implementation in private and public organizations in context to Ethiopia. Several works were done in relation to ERP implementation around the globe. But institutional and environmental factors may differ in ERP implementation and strongly needs investigation in order to adopt and use the system efficiently and effectively. ERP system adopted successfully in one culture, nation, or region, may be failure in another. Besides comparative analysis of contextual factors of ERP implementation in public and private organizations is not addressed in extant literature in context to Ethiopia.*

*This research takes cases of MS-Dynamics ERP solution in ASKU private business organization and Ale Bejimlla public business organization. The research used detail interviews, document review and mainly used survey questionnaires. Purposive sampling technique was used to collect the data in both cases because the researcher selected key respondents in order to answer the research questions properly. Quantitative data was analyzed using descriptive statistics such as frequencies and percentages were used to describe the data.*

*To identify the more critical factors that affect ERP implementation, Pareto approach is applied. Which factors are more critical in private and public organizations? What are the similarities and differences between private and public organization regarding ERP implementation? Although the same ERP software package is implement in private and public organization, the results of this study shows some key critical factors are different and some others are similar in both organizations.*

*Accordingly, availability and facilitation of IT infrastructure, teamwork composition, top management support and commitment are crucial issues that were found in both cases. However, business process reengineering and software configuration, training and support for users, end user involvement, existence of communication plan, consultant selection and relationship are identified as the crucial factors that were found in private organization than public organizations. On the other hand, budgetary constraints, financial plan, implementation strategy and time frame, customization/localization of software according to environment are identified as the crucial factors that found in public organization than private organizations.*

*In addition, recommendations are forwarded for private and public organizations in order to enhance the opportunities to implement ERP system. Therefore, managers, users, implementers and any other stakeholders should be focused on these key factors in implementing ERP system in any organizations.*

**Keywords:** *ERP implementation, private organization, public organization, Pareto approach*

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## List of Acronyms

BPR	Business process reengineering
CRM	Customer relationship management
CSFs	Critical success factors
ERP	Enterprise resource planning
HRM	Human resource management
MAS	Marketing and accounting software
NPM	New public management
POS	point of sales
SCM	Supply chain management

# **CHAPTER ONE**

## **INTRODUCTION**

This chapter introduces about the thesis. It presents background and motivation of the study, It details about the problem statement, research questions, and objectives of the study. Finally, scope of the study, significance of the study and organization of the thesis are included.

### **1.1 Background**

Now a days, organizations across the world are integrating their primary business processes in order to be flexible to meet ever changing customers product or service requirements. Many researchers argued that organizations are using technologies for the purpose of improving the effectiveness and efficiency of their business process. To that end, both private and public organizations are trying to use the technology (Vafaei et al., 2014). Competitiveness and innovations are keys for success of any business organizations. Both components are requiring a high dependence on organizations business process and IT solutions (AlQashami& Mohammad, 2015).

However, there are some challenges holding organizations back. Difficulty in attaining accurate information and lack of applications that improve existing business practices are few of such challenges. Traditional disintegrated IT based solutions cannot support such demands for real time integrations and decision making as businesses grow and become complex(Stanciu&Tinca, 2013).Due to this reason, integrated IT based solution emerged as a way out of such organization challenges. The independent legacy systems are not capable to solve some of the key organizational problems within the internal business process (Tenkorang, 2011).

Enterprise Resource Planning (ERP) systems have been considered as one of the best widely used IT based solutions for different organizational challenges. They address those challenges by integrating the business processes and resource of organizations (Kalbasi, 2007). ERP is

powerful system that applies a set of resource planning tools across the entire enterprise and connects resource plan approaches to the extended supply chain of customer and suppliers. It integrates optimal modern business processes of marketing, logistic, production, just-in-time, materials, total quality, finance, and human resource management, information, money, and logistic flow(Sintayehu, 2014 ) Adopting ERP systems has to meet the existing challenges in relation to information handling and for competitive advantages. It facilitates organizations to get the key business processes to be automated, integrated and flow of information among different parts of the organization (Jidong, 2010).

Many organizations that adopted ERP systems have attained the benefits they sought. However, the benefits of ERP systems are highly dependent on the success of its implementation among others (Wingreen, 2014). A successful ERP system also provides business intelligence for an organization. ERP provide continuous integration of processes across functional areas with improved workflow, standardization of various business practices and access to real-time up-to-date data (Upadhyay et al.,2010). Implementing ERP systems improve competitiveness among with organizations. Several potential benefits of ERP system implementation like: improved coordination across functional departments, increased efficiency, reduced operating costs, facilitation of day-to-day management, and rapid access to information for decision making and managerial control and support for strategic planning (Rabaai, 2009).

Extant literature revealed that ERP implementation also faces several challenges. It requires large financial options as well as thorough planning, process reengineering, and other organizational changes (Kalbasi, 2007). There are a number of challenges that companies may encounter when implementing ERP system. The project may stop before implementation or cause serious financial and functional damages to the organizations (Mishra, 2011). It may also disrupt organizations daily works. On the other side, when the business process changes across the organization, there can be resistance to implement ERP system (Anwar, 2011). If the organizations are not clearly understand the change in strategy and process of ERP implementation, the project is not properly implemented.

To identify serious issues and to make smooth ERP projects implementation; different researchers have tried to recognize the critical factors that have important effect in the projects. Most of these researches were done in developed countries context. On the other hand, many developing countries have recently shown to implement ERP systems (Seo, 2013). Most of the issues that contributed for the failure of ERP implementations are not technological related issues like: software complexity, compatibility and standardization, but human related factors like: resistance to change, organizational culture, incompatible business process, top management support and communication barriers are considering the main challenges for ERP implementation failure(Moohebat et al., 2010).

In fact, ERP system can be considered as the biggest IT investment in organizations, therefore recognizing this necessities identification of the determining issues which contribute for the failure of the system and identifying as which ones are crucial (Dantes, 2011).Although a lot of works are already done in identification of issues affecting implementation of ERP system, the identification issues are done from difference perspectives and dimensions. Various factors may influence the ERP implementation success with in internal business process, and external factors(Abbas, 2013).

A number of studies have been conducted about ERP implementation. Even if the former researchers identified several challenges and issues, institutional and environmental factors may differ in ERP implementation and strongly needs investigation in order to adopt and use the system efficiently and effectively. ERP implementation adopted successfully in one culture, nation, or region, may be failure in another. Besides comparative analysis of contextual factors of ERP implementation in public and private organizations is not addressed in extant literature.

Due to this reason, the researcher is motivated to conduct investigation on this area. Further research is needed to explore the similarities and differences in relation to the critical success factors of ERP implementation in private and public organizations.

## **1.2 Background of case one**

### **1.2.1 Overview of Ale Bejimla public organization**

AlleBejimla public organization is one of the public enterprises established on the 22<sup>nd</sup> December, 2015 by the Council of Ministers of the Ethiopia Government pursuant to article 5 of the definition of powers and duties of the executive organ of the Federal Democratic Republic of Ethiopia, proclamation number 916/2015 and article 47/1 of the public enterprise proclamation number 25/1992. It was started by 2037 number of employees and the establishment capital is Birr 3,836,000,000 in cash and in kind (Ethiopian business trading corporation's profile, 2017).

Ethiopian business trading corporation Previously known as “Ethiopian trading enterprise”(AlleBejimla), now consumer products trading business unit is a wholesaler, which purchases basic commodities from local and international markets and distributes it through the retailers for the purpose of meeting local consumers' need. The unit is capable of making real difference in the lives of ordinary consumers through developing long term, win-win relationship with business that provide day- to- day essential goods to a wide consumer base as well as by promoting overall market stability and products(Ethiopian business trading corporation's profile, 2017).

According to Ethiopian business trading corporation has four main parts; these are: grain and coffee trading business unit, fruit and vegetables trading business unit, consumer product trading business unit and procurement and consultancy service unit.

According to Ethiopian business trading corporation's profile(2017) the corporation is established for such purposes as:-

- To purchase selected agricultural and industrial products and basic commodities from both local and foreign markets competitively and as such stabilize domestic market
- To cause selective production of agricultural crops, fruits and vegetables; buy, distribute and maintain stock and sell to domestic and foreign market.
- To purchase and sale products in domestic and foreign markets on the basis of prevailing market prices.

- To provide support to and motivate farmers with view to raise their interest to produce agricultural products and ensure the agricultural products get reliable market.
- To instill and operationalize modern, efficient, effective, responsible and accountable trading systems.
- To cooperate with concerned research, educational and training institutions to have skilled man power in the required quantity, field of expertise and quality required for its operations.
- To provide consultancy, procurement, and training services on national and international procurement.

Ethiopian trading business corporation is currently fast growing pace with firm strategic plan, vision, mission and values. Since 2018, the corporation has designed to become one of the best business companies in Africa, by 2025.

### **1.2.2 ERP implementation at Ale Bejimla public organization**

As discussed in the above section 4.1 and the data obtained during the interviews, ERP system was decided to be implemented at Ethiopian trading business corporation as part of its IT transformation project to replace the existing system and to accomplish the goals of the organization.

The goals of ERP system implementation at Ethiopian trading business corporation are to accomplish the following objectives.

- Its vision, that is by 2025 the organization aimed to become one of the best business companies in Africa.
- For receiving and cooperation
- For retail business process

During this study, the researcher has identified how business process is automated and Ms Dynamics is implemented by using the document analysis, interviews and observation.

The followings are modules which fully implemented in Ale Bejimla public organization.

- Point of sales (POS)
- Warehouse

- Purchasing
- Human resource
- Finance
- IT administration
- Transfer

## **1.3 Background of case two**

### **1.3.1 Overview of ASKU private business organization**

ASKU private business organization was founded in 2013 in Addis Ababa - Ethiopia. The company was born from a belief that strategic thinking, efficient management and unique local insights in investment practices can enhance the sustainable progress of companies. The company started off its operations with the management of a group of diversified partners and sister companies engaged in Food and Beverage, Petrochemical, Health Care and other service sectors. The founders brought the groups together further extending the company's service priorities towards attaining meaningful growth by bringing forward a unique corporate culture and management style that is suited for each client. Today, this establishment has enabled to set a solid foundation for ABIG's great vision to expand its management to other globally competitive companies, services and brands (<http://www.ab-ig.com/history.html>).

ASKU PLC is the exclusive bottler of Cott product which is the world's largest supplier of private label CSD for retailers with approximately 4,000 employees. Cott operates in Soft Drink, Juice, Water and other beverage bottling facilities in the United States, Canada, the United Kingdom and Mexico and sells beverage concentrates in over 50 countries around the world. ASKU PLC is a company engaged in the manufacturing sector with the aim of becoming the largest food and Beverage Company in the country.

According to <http://www.ab-ig.com/history.html>, the aim of ASKU private business organization is to build a high performing organization which will play a key role in making Ethiopia a growing food and beverage exporting nation. Currently, the company is producing Bottled Water under the brand name - Aqua Addis; Carbonated Soft Drinks (CSD) in five different flavors

namely RC Edge, RC Cola, RC Orange, Royal Tonic and RC Lemonade and Juices under the brand name Ethiopiana.

### **1.3.2 ERP implementation at ASKU private business organization**

During this study, the researcher has obtained the basic ERP modules that are fully implemented in ASKU private business organization and how Ms-Dynamics is implementing. In this organization Ms-Dynamics contains different necessary modules that used for various organizational departments.

The followings are modules which have fully implemented in ASKU private business organization.

- Purchasing
- Human resource
- Finance
- Payroll
- Transfer
- Sales

### **1.4 Problem statement**

Enterprise Resource Planning (ERP) systems are sometimes failed to achieve the organization's target and desired outcome. There are a number of challenges that organizations may encounter in implementing ERP systems. Some literature indicate that the failure of ERP implementations was not caused by the ERP software itself, rather by a high degree of complexity from the enormous causes in organizations. Due to changes in business processes across an organization, there also can be resistance to adopt the ERP system (Seo,2013).

When implementing ERP system organizations should understand the issues that cause on serious problems. For instance: business process reengineering (BPR), change management, budget, team work and training management, worked with functionality, maintained scope, project team, management support, consultants, internal readiness, training, planning, and adequate testing are the basic factors that extremely affect the system (Jamil, 2015). Additionally, In business organizations without strong top management support, organizational structure and cultures, ERP implementation was delayed and organizations presented overall dissatisfaction with more complex ERP systems than expected (Swaminathan, 2011).

Even though, ERP systems are successfully implemented, in go live stage challenges may occur with in different business sectors. Training, top management support and communication are the most common challenges facing the ERP post implementation phase. In order to have a successful implementation of ERP system, it is important to provide training and awareness for the whole process lifecycle. Top management should involve in each single issue and committed to monitor the project. Communication between the employees and departments are vitally factor for applying management strategy in ERP implementation (Sayed et al., 2013).

Although most challenges were identified; the similarities and differences among private and public organizations are also investigated in the former researchers, the similarities and differences regarding top critical success factors of ERP implementation were not addressed. According to Wingreen et al.(2014), the basic significant differences between private and public organizations in the ERP implementations are system quality, information quality and individual impact. Hence private organizations are more flexible to change effectively in work group impact, information quality, and better response for critical success factors as well as better system quality than public organizations. They achieved more success in ERP implementation compared to public organizations to managing effectively. In addition, both private and public organizations achieved the highest score in workgroup impact and the lowest score in vendor/consultant quality(Rabaai, 2009).

In Ethiopia, some researches have tried to find out the factors that determine the success of an Enterprise Resource Planning (ERP) system implementation. Sintayehu (2014) fousnd out

twenty success factors in ERP implementation with particular reference to Ethiopian Airlines and it was recommended that more single and multiple case studies of ERP implementation should be conducted to find out more success factors and usage of future ERP implementation projects.

Most of the previous researches have explored critical success factors for public organizations and private organizations independently, but there is no research conducted in which issues are more critical factor for private as compared with public organization in context to our country.

Based on a recommendation by Sintayehu (2014), the researcher has conducted research in two case studies to address this gap and investigate factors affecting ERP implementation in private and public organizations.

Additionally, some researches were done comparative in developed countries, but institutional and environmental factors result in variations across nations and organizations. ERP software packages are not purposely developed for private organizations or public organizations. But, it makes difference for organizations across different levels. Therefore, in this study the researcher tries to address which factors are more critical in the private organization and which factors are more critical in the public organization contexts in Ethiopia.

As stated earlier, some local researches were done to identify the critical success factors, but there is no any research that has been done to compare private and public organizations in order to identify which factors are highly impacted on private organizations and public organizations. Finally, explore the differences and similarities of ERP implementation among public and private organizations.

## **1.5 Research questions**

In order to address the above research problem the following research questions are posed.

1. Which factors are tops critical for ERP implementation in private organization and public organizations?
2. What are the similarities and differences between private and public organization in ERP implementation?

## **1.6 Objectives of the study**

### ***1.6.1 General objective***

The main objective of the study is to identify the top critical factors affecting ERP implementing in private and public organizations in context to Ethiopia.

### ***1.6.2 Specific objectives***

The following measurable actions are will be taken to meet the general objective.

- To identify factors from different literatures.
- To conduct interview and questionnaires about critical factors in case organizations.
- To identify critical factors for ERP implementation in private and public organizations.
- To prioritize and rank factors based on the data collected.
- To select the top critical factors
- To find out the similarities and differences between the top prioritized factors of the two categories.

## **1.7 Scope of the study**

The study is conducted using only two case studies to compare ASKU private business organization and AlleBejimla public business organization because of the two organizations are using same software packages (i.eMs Dynamics ERP solution) and both organization software packages were implemented in similar vendors and consultants ( i.ecimak).

## **1.8 Significance of the study**

The study is important to public and private and organizations that may be able to come up with effective measures of implementing ERP system. It will help both public and private organizations take the best practices and they share information, knowledge and experiences in terms of their critical factors, challenges to each other, leads to better resource management and service delivery. Other organizations will take care of key critical factors and they can use is it as an input as well as get knowhow to adopt ERP system. In addition, it helps to understand the organization should care while implementing ERP system in order to achieve the project successfully. It can help organizations properly plan and solve the problems in early stage during

implementing ERP system. Additionally, it may also be used as source of references for other researchers to conduct research in related and other works. Therefore, this study contributes the existing body of knowledge by providing deeply insight to on factors that affect ERP implementation in private and public organizations in context to Ethiopia.

## **1.9 Organization of the thesis**

The thesis is structured as follows. First, chapter one introduces about ERP system benefits, factors and challenges. It explains the problem statement, research questions, scope of the study, and objectives of the research and significance of the research. Chapter two is literature review that explains in detail about the critical factors about ERP implementations and related works. Chapter three is discusses the techniques and tools to collect and analysis of the data in order to answer the research questions. Chapter four is discuss the finding and discussion. In this chapter the data is presented and interpreted. Finally, chapter five is about conclusion of the study and recommendation for future works.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents about different research works and literatures that are conducted in relation to ERP implementation factors and challenges in different organizations across the world. Many works were tried to identify the issues affecting ERP implementation in private and public organizations. These issues are discussed in detail on this chapter. It includes the meaning of ERP and provides the conceptual understanding of the benefits of ERP implementation. On the other hand it describe about different challenges, success factors, failure factors that encountered when implementing ERP system. Finally, presents review of literature on different issues in private and public organization which are attempted locally and globally.

#### **2.2 Overview of ERP system**

Different researchers define ERP system in variety of perspectives. According to (Ayazi ,2013)ERP system is an integrated software package to govern the resources of an organization. ERP systems combine all departments and tasks of an organization into an individual computer system that fulfills various departmental demands. ERP is considered as new technology that includes almost the whole business process and business activities. ERP system is not only used for automation of organizations business process, but also used for the organizations business process to be redesign in which organizations achieve their desired goals as well as for the success of the organization in the long period of time.

ERP systems are application packages including several modules supporting all operation areas: planning, production, sale, marketing, distribution, accounting, financial, human resources, project management, stocks, service and maintenance, logistics and e-business. System architecture facilitates transparent module integration, guaranteeing, at the same time, the information flow between all enterprise functions in an extremely transparent manner. The

choice of an adequate ERP system enables the beneficiary to implement a single integrated system, by the replacement or redesign of the existing operation systems. In addition, ERP systems are very huge software programs that comprise marketing and accounting software (MAS), supply chain management (SCM), human resource management (HRM), and customer relationship management (CRM). As shown figure 2.1 below it coordinates and integrates every aspects of organizational business process to accounting supply to human resource (Soliman&Karia, 2016; Almishal, 2015; Hurbean, 2008).

According to Wanjiru (2013), ERP system links customers and suppliers in to a computer supply chain that employee supported for decision making, coordinate sales, marketing, product development and human resource. ERP system manages all business process and provides timely and reliable information in order to make the decision. It is used to integrate the internal business process to support organizational procedures and tasks, removed unnecessary systems as well as support wide range of industries.



Figure 2.1: Overview of ERP systems (adopted from <http://www.koolgrpsite.com/tag/erp-systems>)

## **2.3 Benefits of ERP implementation**

Organizations across the world use ERP system to obtain competitive advantage from the ways of implementing the system and producing more market products than their competitors. According to Ayazi (2013), when effectively and efficiently use ERP system, organizations gain many advantages including: faster accessing of information, reduction of inventory cost, effective financial management, efficient supply management, better customer management and higher level of flexibility and productivity as well as providing easily sharing knowledge and experiences among the organizations.

In addition, ERP system has numerous benefits including better data analysis, improved organizational performances and efficiencies that allow enhancing the levels of customer services. It played vitally important roles to emerge and improve the levels of productivity and organizational efficiencies across different levels. ERP systems are used to integrate business functions and facilitating information sharing as well as communication among in organizations. Furthermore, it is used as a best practice to reduce the manual process and to integrate work flow to make decision and develop and maintain consistent data.

The main goal of ERP is improving business process by increasing operational efficiency and decreasing costs. Moreover, ERP incorporate different business extensions such as supply chain managements, human capital resource, customer relationship and business process warehousing to become more competitive and effective (see figure 2.2 below).



Figure 2.2: ERP extension(adopted from Seo, 2013)

The main advantages of ERP system in organizations are viewed as different dimensions such as technical, operational, managerial, IT infrastructure, strategic, organizational and business benefits as shown in table 2.1 below.

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

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

**Table 2.1 Benefits of ERP system in different dimensions (Adopted from Seo, 2013;Sintayehu, 2014)**

## **2.4 Challenges of ERP implementation**

Many literatures reported that the failure of ERP implementations was faced from the massive changes ERP causes in organizations. ERP implementation affects whole organizations such as process, people, and culture, challenges that companies may encounter in implementing ERP systems. The application of an ERP system has sometimes failed to achieve an organization's desired objectives and outcomes (Ranjan et al., 2016).

According to Seo (2013), the failure of ERP implementation is not the result of ERP software itself, rather many of the reasons may cause and encountered for the failure that faced with in the organization. This leads to the high complexity and challenges when adopting ERP system with in organizations. Although these ERP failures can be faced in most successful organizations, the implementation process may require that they should follow the principles of best practice and appropriate reference models. However, in doing this organization still faces different challenges and problems.

For the lack of awareness, numerous and varied challenging issues are faced in the whole process of ERP implementation. The main issues that faced as challenges in implementing ERP system is the absence of commitment from the senior level management. When the senior management is not properly coped the whole process with in the organizations, the implementation of an ERP system is may be failed. In fact, in the absence of effective project management, ERP implementation projects mainly take place over longer periods of time, may leads ultimate end in failure (Soliman&Karia, 2016).

Ranjan et al. (2016) presented ERP implementation challenges with respect to the perspectives of technology selection, change management, knowledge management and emerging technologies. In technology selection they argued that it is crucial consideration for any enterprise level decision makers across different organization. The most important parts of adopting ERP system is selection of technology and selection process takes in to account in any organization.

Before implementing the ERP system making the organization and ERP system become compatible may requires change of people and business process. If change management is not properly handled, ERP system is getting to fail, since most ERP system failure is blamed to people factors rather than technological factors. Therefore people, process and technologies are the three basic involved issues in ERP implementation for change management (Seo, 2013). The most challenges encountered with respect to ERP implementations within the organizations are people. People are challenges to incorporate whenever ERP system implementation requires the interaction, commitment and direction from the executive management, such as interdepartmental coordination, organizational support, individual support, and setting timeframes and meeting deadlines mostly organization and human related issues like resistance to change, organizational culture, incompatible business processes, project mismanagement, top management commitment (Oluwafemi,2014).

The third discussions of Ranjan et al. (2016), knowledge management challenges. In this regard, they presented the competitive advantages of any organization arises from the management of knowledge while the ERP system increase to enhance organizational efficiency. So, it needs to share knowledge for overall improving and increasing flexibility. To have a clear understanding, the internal system and the problems are needs professionals who have multilevel knowledge and experience.

Finally, emerging technologies are also considered as one challenge in ERP system implementation. Disaster failures occurred in any organization when the new technologies proficiencies and demands are incompatible with the existing business practice and techniques. The selection of specific ERP software package may require careful consideration for the perfect matching between the software and the business process (Yousaf, 2015). When the emerging technologies become introduced, the vendors are interested to improve the future ERP system, this leads to make challenges in cost, flexibility and other related issues. ERP system vendors are experiencing in global expansion. Therefore, most organizations are costly and timely serious difficulties with implementation and maintenance of ERP system (Kumar&Rawani, 2016).

## 2.5 Critical success factors of ERP system

Many local and global literatures were conducted to identify critical success factors of ERP implementation in different context. According to Zouine (2014 and Vafaei (2014) reviewed different literatures and identified different critical success factors namely: top management involvement, vendor and consultant competencies, training and education, business process reengineering, project management, work group impact, individual impact, ERP information quality, organizational impact, ERP system quality and ERP system integration.

Additionally, (Zeimba&Oblak,2013)explored critical success factors for ERP implementation in public organizations based on the nature of business process management. They classified critical success factors into:

- **People related factors:** effective management support, user involvement, effective leadership, committed and motivated team, skilled and sufficient staff and good performance by vendors/ contractors/ consultants.
- **Process related factors:** in this factors clear requirement specification, clear objectives/ goals, realistic time/schedule, effective communication and feedback, realistic budget, frozen requirement, proper planning, up-to-date progress reporting, adequate resource, risk management, effective change and configuration management, end user training provision and good quality managements are the main factors that determine the ERP implementation.
- **Technical related factors:** familiar with technology/ development methodology, complexity, project size, duration, number of organizations involved and supporting tools as well as good infrastructures are consider as technical factors of ERP implementation.

The following table shows different issues which are considered as ERP critical success factors that were identified from different literatures around the globe (Yousaf, 2015).

✓ Teamwork composition for the ERP project	✓ Test and problem solution	✓ Team moral and motivation
✓ Business process reengineering and software configuration	✓ Vision statement and adequate business plan	✓ Customization/localization of software according to environment
✓ ERP system selection	✓ Project cost planning and management planning	✓ Consultant selection and relationship
✓ Top management commitment and support	✓ Balanced team for ERP implementation	✓ Training and job redesign
✓ Having external professional consultants	✓ Building a business case	✓ Legacy system consideration
✓ Training and support for users	✓ Existence of communication plan	✓ Managing cultural change
✓ Project champion/project sponsor/ project manager role	✓ Empowered decision maker	✓ Availability and facilitation of IT infrastructure
✓ End user involvement	✓ Implementation strategy and time frame	✓ Client consultation
✓ Change	Change management	✓ Troubleshooting/crisis

management plan		management
✓ Budgetary constraints	✓ Post implementation evaluation	✓ Data conversion and integrity
✓ Government regulation	✓ Financial plan	

**Table 2.2: Critical success factors (Adopted from Yousaf, 2015)**

As we can see from the above table, there are around 32 critical factors listed for an implementation of ERP system in any organizations. These factors are deeply analyzed by different researchers and discussed in different context. Therefore, the researcher used them as factors of the case studies (ASKU and Ale Bejimla). Hence these factors and issues have been described below.

### **1. Teamwork work composition for the ERP project**

ERP implementation needs a knowledgeable people who are responsible for adopting entire project. The team composition should be competent for taking responsibility on the decision making and ensuring the availability of all resource on the time (Yousaf, 2015). An ERP project typically requires a combination of some groups who are identified from the vendors, consultants, users and the internal business process so as to implement the project successfully. Hence the team members should be knowledgeable for implementing ERP system. If they are not capable to know the property of the software, the project may not properly implement.

### **2. 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 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&Fenies, 2014). On the other hand software configuration is considered as the factors while some modifications taken in implementing process.

### **3. ERP system selection**

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

According to (Ranjan et al., 2016) the main criteria for selecting ERP software packages defined as important to consider; the total cost of ERP implementation project, vendor reputation, technology advance, scalability, upgrading ability, customization, ease of use, flexibility and modularity. Additionally, ERP vendor selection should take in to account the ability of their support to transform the business process to achieve the customers' satisfaction. Therefore, all these things should emphasize for the successful implementation of ERP system in organizations.

### **4. Top management commitment and support**

It is one of the most critical success factors for ERP implementation. Strong and dedicated top management support plays vitally important roles for the successful implementation of ERP system. When top management positively support and involved in the implementation of ERP system, the success is expected (Mohamed et al., 2016). This factor is very crucial because management provides fast and effective decision, resolve conflicts, everyone to the same thinking for the project and cooperation among diverse groups in the organizations. In order to implement ERP system, the decisions are taken from the high levels of organizational hierarchy.

Hence the senior management team directions are crucial for the purpose of selecting convenience software vendors.

### **5. Having experienced 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, experienced 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.

### **6. Training and support for users**

Once ERP systems are implemented successfully, training should be provided to the users of the organization. Users training are vitally important factors that should be 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.

### **7. 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 challenge 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.

### **8. 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.

### **9. Change management plan**

Change management is the key aspect in order to achieve ERP implementation successfully. According to (Oluwafemi, 2014) lack of change management may prevent the successful of ERP implementation. Therefore well managed ERP implementation is efficient for change management plan to make organizations improve their business process.

### **10. 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.

### **11. 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.

## **12. 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.

## **13. Project cost planning and management planning**

The management always needs to have an exact forecast of 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.

## **14. Balanced team for ERP implementation**

Team composition matters at all process of ERP implementation. It is very important factors to accomplish the project well and proper manner. A team covers the whole organizations and holds equilibrium business, management and IT skills are the most critical success factors.

### **15. Building a business case**

In any organization, 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.

### **16. Existence of communication plan**

Existence of communication in ERP implementation plays 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 have consent to release the resources and the project team members are well communicated, the project is well continued and on the best progress to be accomplished effectively.

### **17. 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.

## **18. 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.

## **19. Change management**

Change management is one of the most critical success factors for ERP implementation. ERP implementation requires beyond changing the software and hardware systems, but by reengineering the business process ERP implementation can support to improve the organizational business process and to benefits the highest level of improving efficiency and performance (Seo, 2013). Therefore ERP implementation may causes to change the resistance of employees' interest regarding the system. Employee should prepare themselves and understand the significance of ERP system. Proper change management technique can make the organizations more effective and flexible to which integrate with the new ERP system. Change management is considered as very important factors to incorporate to which organizations should communicate and create awareness to all stakeholders. Additionally, it shares knowledge and experience to participate with the project ( Sintayehu, 2014). Lack of change management among organizations, the failure of ERP system become increase and not properly manage the system. Therefore ERP system is always requiring organizational change to manage the entire business process and system.

## **20. Post implementation evaluation**

After the project is completed, it should be assessed by the consultants in order to maintain while the failure will happen. The support of consultant is needed in this stage to give technical solutions of the problems. Therefore, post implementation assessment is very complex, without providing the strong attention of performance measures. Based on the experience of previous project problems, the consultant should avoid similar problems in this stage (Stanciu&Tinca, 2013). The likelihood of success rate and failure rate of ERP software package is also depend on this factor.

## **21. Government regulation**

Government policies are one of the factors that affect ERP implementation. Any problem or change in relation to government may affect the different business process. Furthermore, lack of the government motives and regulations may affect the implementation of ERP system (Almishal&almashari, 2015). This implies that the government policies and regulations may impact on the implementation of ERP system. When the government laws and procedures that has not restricted, not fixed and infrequently changed. Therefore this affects ERP implementation from different dimensions at different levels of organizations.

## **22. Team moral and motivation**

This factor is explained as the interest of project managers or project champions and other stakeholders for improving and preserving employees' determination and interest as well as greater commitments during the project. The project team competency is described from different investigation to concentrate members of knowledge, building the team morale and motivation, good relationship between the project managers and users ERP system is successfully implemented(Arvidsson&Kojic, 2017). In ERP implementation team moral and

composition is crucially important factor in order to achieve the project successfully. If there is no well-structured team work and motivation regarding with ERP implementation the project may fail or stop.

### **23. Customization/localization of software according to environment**

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. Customization does not mean that changing the entire business process rather the software package to fit the business process.

### **24. Consultant selection and relationship**

ERP is very complex system that provides functionally to cover every aspects of the internal business process (Hurbean, 2008). In order to arrange this, organizations do not have 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 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 relationship between the organization and the vendors or consultants is the main factors that determine the success or the failure of ERP implementation as well.

### **25. 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.

## **26. Legacy system consideration**

Legacy systems are the old systems that are 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 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.

## **27. Managing cultural change**

Organizational culture is the main issues for affecting ERP implementation. Although ERP systems are adopted from different organizations, different cultures across organizations and nations may affect ERP implementation. Therefore cultural differences are the main causes that can change the business process in the environment. ERP system is commonly affected by cultures with in different organizations based on the behaviors of the societies. In addition, adopting of ERP system is the major reason for cultural changes. Different researchers argued that it is important to develop important conducive cultures in order to change the business environment to fit with ERP system. In addition, several stakeholders should involve the system

from the vendors, consultants, managers, users and experts. In this case they are holding different cultural assumptions that lead to affect ERP system. (Sintayehu, 2014;Yousaf, 2015).

### **28. 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.

### **29. Client consultation**

Like other critical issues, client consultation is a significant factor that affects 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 part of the system so as to involve within the organization

### **30. 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).

### **31. 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).

### **32. 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 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 is 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.

## **2.6 Critical failure factors of ERP system**

Most researchers identified different literature 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 endless 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.

The most significant failure factors for ERP systems that are identified by different literatures are:

- ✓ Lack of skills and technologies, inadequate quality of data, insufficient financial resource, user resistance and cultural issues
- ✓ Fit between stakeholders group assumption and expectation
- ✓ Fit between organizational setting and system design
- ✓ Fit between different information system factors like; people, process, structure and technology
- ✓ End users not ready
- ✓ User knowledge and involvement

- ✓ ERP project team and services
- ✓ Lack of management commitment
- ✓ Lack of proper planning and change management
- ✓ Lack of clear objectives and directions
- ✓ Technology barriers and shortages of resources
- ✓ Lack of communication and support documentation
- ✓ Lack of managers involvement
- ✓ Speed and difficulty of implementation
- ✓ Selection of wrong software
- ✓ Lack of attention to infrastructure planning
- ✓ Insufficient ERP experience
- ✓ Mismatch of the new software with organizations existing business process and procedures
- ✓ Lacks of proper understand of the project and inability to provide effective leadership and guidance within the organizations.
- ✓ Lack of business management and poor planning
- ✓ Business process is not properly reengineered and aligned with the software requirements
- ✓ Lack of pre-implementation preparation activities
- ✓ The implementation takes much longer than expected
- ✓ Speed and difficulties of implementation

(Lorraine, 2004; Stanciu&Tinca, 2013; Mohamed et al, 2016)

When organizations do not take care for the above issues in the time of implementing ERP system, the implementation becomes at high likelihood of failure. In addition, most of the researchers agreed that the absence of considering the critical factors of ERP implementation can contribute for the failure of ERP software. Hence, they are identified as the root causes of failure for ERP implementation.

## **2.7 Public organizations versus Private organizations**

Public organizations are defined as publicly financed or controlled institutions which practice market or non-market activities as they are financed and under the control of a public authority (Mohamed et al., 2016). They have unique culture and encountering on a numerous of challenges due to their social responsibilities, complex legislative and higher public expectations because of additional government regulation and public accountability (Fernandez et al., 2016).

Private organizations are also defined as organizations in which they are not part of a local, state, or federal government (Lorraine, 2004).

Government all over the world began to experiment with various forms of governmental reform. A number of these efforts have tried to apply the basic management concepts in private sectors into the public sectors. This type of reform can be coined using the phrase “new public management”. New public management (NPM) is a reformation of public sector to emulate the practices of the private sector to a significant degree.

The public organizations are the major contributor to the economic development of a country. Various measures have been taken by the government to improve the quality and accountability of government agencies and its members so as to provide better services while ensuring greater transparency in financial management. The challenges of globalization have significantly improved the force for a better public sector services in order to achieve competitive advantages and public sector need to have a world-class performance and understand the international benchmarks (Mohamed et al., 2016).

## **2.8 Related literature in public organizations**

Various studies have been conducted on the ERP implementation impacts in different organizations. Public organization is one of the area in which ERP system is adopted.

ERP is considered as new technology that includes almost the whole business process and business activities. When Implementing an ERP system in public organizations a lot of challenges are occurred. Implementing this system in public sector requires more effort from different aspects such as change management, business process re-engineering, data migration, user training and some other related issues. Furthermore, the need of having new technology increases rapidly and the interest of government organizations for moving to technology and providing services online becoming a driver for more investment on the information technology field (Almishal&Almashari, 2015).

According to (Ehrenhard, n.d),the main reasons for not adopting ERP system in public organizations are high cost, no competitive advantage and resistance to change and also mentioned that software package in markets are not fit with the specific needs of organizations as well as ERP system has tendency to hinder flexibility, growth and decentralized decision making. They have also mentioned the issues that needs to focus in ERP implementations are; top management commitment, identifying the end users and their needs, skilled and knowledgeable project manager, adequate training and contingency plans.

Besides, ERP implementation in public organizations is customer perspectives and financial perspective. Customer perspectives provide a comprehensive understanding of ERP implementation to significant changes of organization in different business process and applications and financial problems of the organization may also affect the system (Fernandez, 2016).

According to Zeimba&Oblak(2013) different organizations, focused on their profitability and stakeholders' value, public organizations are highly interest to implementing ERP system. Their success goes along with their reaching of social goals. Simultaneously, these organizations are achieving social and political demands. To compound the problem, public organizations create

policies. This is due to the fact that public organization is a closely set organizational structure, where processes are formalized and decision making is slow.

Mohamed et al. (2016) explained that the main challenges faced in most public organizations for ERP implementation are lack of considering reengineering and redesigning for procedures, policies, scarce of resources and technological transformation. Today's business environment ERP system is powerful and unpredictable causing thereby firms to face several challenges of expanding markets and customers satisfaction. The main challenge is to identify the factors that determine the success of the implementation of ERP systems. Critical success factors (CSFs) are areas and operations which should be focused on primarily in order to achieve the most satisfying results of the ERP systems implementation. They have also identified the critical success factors namely: top management commitment and support, project management, ERP system matching in organization, user training and education, business process reengineering (BPR), communication, change management, cultural factor, vendor support, implementation team and end users involvement.

In Ethiopia some researches were conducted on the critical factors of public organizations. For example Sintayehu(2014) identified the critical success factors of ERP implementation at Ethiopian airlines. Finally he identified twenty critical success factors that are important for ERP implementation. These are project planning and strategy, top management support and commitment, project management and leadership, training, documentation and knowledge transfer, clear user requirement and need assessment, change management and communication, team composition and retention, organizational culture and readiness, capability of consultants and implementers.

The other researcher conducted on public organization in Ethiopia was Fozia(2017). The study was conducted to identify factor affecting ERP implementation at CBE on oracle ERP. She identified three critical success factors at pre planning stages, planning stages data design stages, delivery stages and go live stages. These factors are technological factors, organizational factors and people factors. On the other hand, Derese(2013) identified the critical success factors of ERP implementation at Ethio-Telecom along with pre-implementation phases, implementation phases and post implementation phases of oracle software package.

## **2.9 Related literature in private organizations**

Some literature identified issues affecting ERP implementation in private organizations. Maria et al. (2012) suggest the main motivators of ERP system in private organizations. Hence search for the new system integration, increasing demands for real time information, demands for integration with information systems, needs to generate decision making and increase competitiveness for marketing are the main issues needs to focus when ERP implementation in private organization. On the other hand they argued that integration and correlation of modules and the time spent in implementation of the ERP system should focus attention for managing and coordinating the system.

Several private organizations have adopted ERP implementation by requiring the experience of public organizations (Maria et al., 2013). This implies that understanding the differences of private and public organizations that affect ERP implementation is important. They argued that deploying large scale ERP software is increasing the complexity when integrating large numbers of users and multiple ERP modules in private organizations. Therefore, it is difficult to implement ERP system for commercial purpose. Additionally, competition and cost are the highest argument to affect ERP implementation as well as taxation system is the major impacts for private organizations. ERP system is currently common in private organizations. However, the failure rate is high due to the complex nature of the software and high numbers of people enrollment with the project at different levels of management (Almishal&Almashari, 2015).

In Ethiopia, Abiot and Gomez (2012) discussed the successful implementation of ERP system in Mesfine engineering private limited company. They tried to mention the challenges of ERP implementation as cultural, business and technical problems. But they were not identified in detail the critical factors that encountered ERP implementation as challenges. They have recommended to study in other cases in Ethiopian context for better understanding and experience sharing. On the other hand, Kibebework (2015) was conducted research on the

private organizations and identified challenges and current status of ERP implementation for the case of Mughar and Derba cement industries. But there is no studies conducted to identify the difference between private and public organizations among ERP implementation. This study provided to detail understands and knowhow to get the more critical factors that affect ERP implementation. Finally, it creates awareness for the organizations to pay attention on these factors and by considering this other organizations properly adopted ERP system.

## **2.10 Analytical framework**

In this study Pareto approach (80-20 Rule) was applied to understand the concept of this research problem. Because Pareto analysis is simple technique for prioritizing possible factors for identifying the problems is needed to be resolved.

According to Brooks (2014) Pareto analysis uses the following basic steps to determine the factors:

- **Identifying and listing the problems:** write the list of all problems what you need to address.
- **Identify the root cause:** for each problem identify the fundamental problem.
- **Score the problems:** sort the problem depending on the scoring problem.
- **Group the problems:** group the problem by using the root cause.
- **Add the scores:** group with the top score with highest priority and group the lowest score to be the least priority.
- **Action:** start tackling the cause of the problem.

Finally, to figure out what percentage of total problems will be addressed. Once the problems are listed, they are ranked in order from the biggest to the least serve. So, Pareto analysis is used to compare and measure the impacts of the problems that take place in organizations. Since the study is about identifying the key factors that determine more influential for private and public organizations. Therefore Pareto principle is used as a frame work for this study because of it provides convenient principle for this study. The principle of Pareto approach is by selecting limited number of tasks that produce significant overall effects. It uses the concept based on identifying the top 20% of causes that need to be addressed in order to solve 80% of the

problems. This can be applied when large majority of problems (80%) are produced by a few key causes (20%), if we solve those factors we will safe 80% of the system. Therefore, the researcher found critical factors for ERP implementation from the literatures, and would be taken respondents from interview and survey questionnaires in both cases. Finally, identifying key critical factors that affect to implement ERP system in private and public organizations.

## 2.11 Summary of related works

The following table (table 2.3) summarizes few studies that are related to my study.

No	Authors	Topics	Objectives	Findings
1	Stephen C.et al.(2014)	An Investigation Into Enterprise Resource Planning Implementation Success: Evidence From Private And Public Sector	To Evaluate and track an ERP system's success and a comparison between private and public organizations is made	private organizations have achieved more overall success in ERP implementation compared to public organizations and private organizations being more flexible to change, managing Change and effectively, better Systems Quality
2	Mohammad R.(2010)	A Comparative Study of Critical Success Factors (CSFs) in Implementation of ERP in Developed and Developing Countries	To understand is there any difference between ERP implementation's CSF in developed and developing countries?	Change Management was most important factor and in developed countries and national culture of developing countries has an impressive effect on ERP implementation as well as developing countries companies more depend on ERP vendors in compare to developed countries companies Business processing reengineering(BPR) is underestimate in developing countries

3	<b>Ahmad A.(2009)</b>	The Impact Of Organizational Culture On ERP Systems Implementation: Lessons From Jordan	To looks at the perceptions of both public and private sector ERP Implementations in Jordan and assesses these on various measures of success.	During post implementation private sectors are slightly lower realization of improved, Business processing reengineering (BPR), customer services are high in public organization as compared with private organizations, but low user satisfaction and customer satisfaction in public organizations, public organizations are highly rigid, hierarchy and structure and bureaucracy that affect timely implementation, private organizations are organizational suited rapid decision making.
4	<b>Upadhyay P et al (2010)</b>	A Comparative Study Of Issues Affecting ERP Implementation In Large Scale And Small Medium Scale Enterprises In India: A Pareto Approach	To explore and identify issues affecting Enterprise Resource Planning (ERP) implementation in context to Indian Small and Medium Enterprises (SMEs) and large enterprise and to find	Identified issues that are only critical to the Small and Medium Enterprises (SMEs) but not large scale enterprises are: <ul style="list-style-type: none"> <li>➤ Clearly defined the goal and scope of implementation</li> <li>➤ Proper project planning</li> <li>➤ Proper implementation strategy</li> <li>➤ Minimal customization</li> </ul>

5	Boltanaa (2012)	A Successful ERP Implementation in an Ethiopian Company: A case Study of ERP Implementation in Mesfine Industrial Engineering Pvt. Ltd.	To Examines key dimensions of implementation of ERP system within MIE and takes an in-depth look at the issues behind the process of ERP implementation by focusing on business and technical as well as cultural issues at the heart of the MIE implementation.	Business, cultural and technical difficulties of such a large project, and has developed a solid core implementation, and the specialist skills of consultants and the partnership with the consultant has produced a sound architectural framework for the project. MIE considered an ERP project risk analysis method and characteristics analysis method as good tools for risk management.
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**Table 2.3 summary of related works**

## **2.12Chapter summary**

In this chapter, different issues were reviewed which are considered as factors and challenges regarding ERP implementation in different organizations. It resulted in around 34 issues to be considered as critical factors in the ERP implementation. In addition, different related works are presented to be able to get the findings and methodology of others researchers in that the way how to conduct and identified the factors of ERP implementation. Furthermore, it covers different relevant literatures that are related to this study and frame works. In this study Pareto approach is used as a framework to get the more critical factors in both case studies. Therefore, this framework help the researcher identify the commonalities and difference between private and public organizations in ERP implementation. Next chapter, chapter three will present the research design and methodology.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter presents in detail the research approaches, sample selection and data collection method that used to answer the research questions for this study.

The study aimed at identifying the more critical factors that affect the private organization and the more critical factors in public organizations. The study used mixed approach (qualitative and quantitative) study focused on ASKU private business organization and Ale Bejimla public business organizations. In addition, questionnaire is designed and distributed for the users in both selected organizations.

#### **3.2 Research Design**

The study used descriptive survey design to identify the more critical factors that affect ERP implementation in private and public organizations in context to Ethiopia. Descriptive study seeks to obtain information that describes phenomena by asking individuals about their perception, attitude, behavior or values and it includes surveys and fact-findings to investigate of different kinds (Lochilit, 2014).

Qualitative approach used to get appropriate data through interview in two cases. Quantitative data source obtained through questionnaire in both cases. It has also applied triangulation for validation purpose and to get the full data.

#### **3.3 Data collection method**

The data collection of this study was the researcher obtained recommendation letter from Addis Ababa University. An authority letter was acquired for both cases before collect the data. On the other hand, the study used qualitative data collection techniques. The main data source that used for this study is survey questionnaires. In addition interviews are also used to address the objectives of this study. Interviews are the most important sources for case study information

(Mohammad, 2010). Therefore, interviews are used as the data collection techniques used for this study. However for this study quantitative method also be used to get more information.

In order to obtained the information for the case studies and for the validity of the research the researcher used interview like personal interview and telephone interviews used as a technique at organization experts, users and project managers. In addition to this, the researcher used relevant document about the system within both organizations..

### **3.3.1 Interviews**

Interviews are the main source of data collection technique for this study. There are three formats of interviews, namely: unstructured, semi structured and structured interview. Unstructured interview uses open discussions and not appropriate to control the scope of the study, whereas, structured interview uses questionnaire based on predetermined set of questions and in semi structured interviews the researcher have used a list of themes and questions to be covered( Kalbasi, 2007). The researcher chose semi structured interview to allow detail discussion that enabling to control the scope of the study. The researcher had prepared certain set of questions that needed to be answered in order to obtain relevant data for this study. Furthermore, the researcher wanted to keep the interview open ended in order to preserve to flexibility of interview to make opportunity for additional information.

The preliminary discussion was made with project managers in both selected organizations. The interview was started by describing the major objectives of the study. After that, interviewees were identified according to their levels and roles for the ERP project and organization. They are project managers, experts and team leaders.

### **3.3.2 Document review**

In order to obtain additional information and to understand about the ERP project within the organization, document and internet were used as source of data. Both cases website were assessed to get the general background and profile. Additionally, some of the documents that were analyzed like human resource, finance and management offices that are documented about ERP system implementations.

### **3.3.3 Survey questionnaire**

The other primary source of data that used for this study is survey questionnaire. Hence questionnaire is used for this study mainly to rank the levels of factors for ERP implementation in both private and public organizations.

The factors that identified in the literature and designed the questionnaire for ranking are listed below.

1. Teamwork work composition for the ERP project
2. Business process reengineering and software configuration
3. ERP system selection
4. Top management commitment and support
5. Having external professional consultants
6. Training and support for users
7. Project champion/project sponsor/ project manager role
8. End user involvement
9. Change management plan
10. Budgetary constraints
11. Test and problem solution
12. Vision statement and adequate business plan
13. Project cost planning and management planning
14. Balanced team for ERP implementation
15. Building a business case
16. Existence of communication plan
17. Empowered decision maker
18. Implementation strategy and time frame
19. Change management
20. Post implementation evaluation
21. Government regulation
22. Team moral and motivation
23. Customization/localization of software according to environment
24. Consultant selection and relationship

25. Training and job redesign
26. Legacy system consideration
27. Managing cultural change
28. Availability and facilitation of IT infrastructure
29. Client consultation
30. Troubleshooting/crisis management
31. Data conversion and integrity
32. Financial plan

(Yousaf, 2015; Mohamed et al, 2016)

As indicated Appendix A, a five point level Likert scale was used for each of the thirty two factors. Likert scales are a psychometric responses scale primarily used in questionnaire used to obtain participants preferences or degree of agreement with a statement or set of statements. Most commonly used as a five point scale ranging from “strongly agree” and “strongly disagree” on the other with “neither agree nor disagree” and “agree” as well as “disagree”. Therefore, respondents are asked to indicate their levels of the agreement with a given statement by way of an ordinal scale (likert\_scale).

To select the levels of affect with the value of selection point shown below.

- 1 = strongly agree
- 2 = Agree
- 3 = Neither agree nor disagree
- 4 = Disagree
- 5 = strongly disagree

These factors were distributed manually for each case study. In addition, survey has one open ended questions to accept any comments from respondents regarding with the factors affect ERP implementation.

### **3.4 Sample selection**

Organizations selected as cases are ASKU private business organizations and Ale Bejimla public business organizations. Because of the two organizations have already implemented ERP system and using the same software packages ( i.e. MS Dynamics ERP solution). So, it is convenient to conduct cases for comparative study.

Sampling techniques provide a range of methods that enable you to reduce the amount of data you need to collect by considering only data from sub group rather than all possible cases or elements. Case study almost always uses purposive sampling to find out what something is occurred and why it occurred (Swaminathan, 2011).The researcher used purposive sampling that basically allows answering interviews. The target population would have been the experts and Project managers to answer interviews and users for survey questionnaires in both organizations.

The prior discussions were made from the ERP project managers and different concerned bodies in each case. In addition, to get the general overview of the organizations and the ERP project, the researcher has identified and selected 16 individuals in both cases, who have detail knowhow about the project and contacting as the key informants for this study. Therefore 8 key informants were purposely selected and identified for interview questions in each case study. On the other hand purposive sampling was considered appropriate as only those who supposed to have information required for the study were targeted. Hence 24 individuals were selected purposely to answer survey questionnaires in case one and 15 individuals purposely selected in case two. In case one 21 valid data were collected and 14 valid data were collected in case two.

### **3.5 Validity and Reliability**

According to Kalbasi (2007), validity and reliability have to be considered as to reduce the risk of obtaining incorrect answers for the research questionnaires.

#### **3.5.1 Validity**

Validity is the quality of fit between an observation and the basis on which is made. It concerned with whether the findings are really about what they appear to about (Kothari, 2004). In other words, validity is used to indicate the degree to which an instrument measures what it is supposed to measure.

According to Yin (2003), use multiple sources of evidence is to allow the derivation of any evidence from initial research question to ultimate case study conclusion. In this study, the researcher used interviews, questionnaires and also used documents as complementary sources. Additionally, the researcher has made references to all sources from which evidence has been collected.

According to lochilit (2014) Validity is used to identify items in the questionnaire that are not clear to the respondents and the researcher changed or modified them. This can helps to the researcher familiarize with the administration of the instrument. Hence, the instruments were adopted from lochilit (2014), Fozia, (2017) and Sintayehu, 2014) to be more standardized and scientific.

### **3.5.2 Reliability**

Reliability is refers to the stability and consistency of the result derived from the study. The objective of reliability is to be sure that another researcher will acquire the same results whenever they would repeat the result. Therefore, reliability is used to minimize the errors and biases of the study (Kalbasi,2007). This implies one factor may be affecting the reliability of the study when the respondents have lack of knowledge and lack of willingness. If the respondents are negative attitude towards the interview and questionnaire, it can affect negatively on the reliability of the study.

The researcher tried to select best respondents who have technically and / or functionally knowhow about the ERP system for doing interview and for distribute questionnaire. The interview time was scheduled by respondents in order to obtain sufficient and convenience time to complete the interview questions. To be successful, the researcher designed interview guide which reflect the concept of the research questions. Finally, the researcher organized this research in a way that any other researchers can access desired instruments.

### **3.6 Data collection procedure**

The data collection of this study started with the researcher obtaining authority letter from Addis Ababa University in information science department. An authority letter was given for both cases

to acquire their permissions. After obtaining the permission, the researcher has made an appointment with the managers to notify and to request the permission to carry out the study in the organization and to inform the employees to respond the questions and adjust the convenience time to interview respondents.

In addition, the researcher has identified different literatures that are globally and locally reviewed. In the literature different factors that affect ERP implementation in any organization are obtained. The researcher has distributed the questionnaires personally to the respondents who were given sufficient time to respond the questions. Finally, the data is collected and analyzed in both cases.

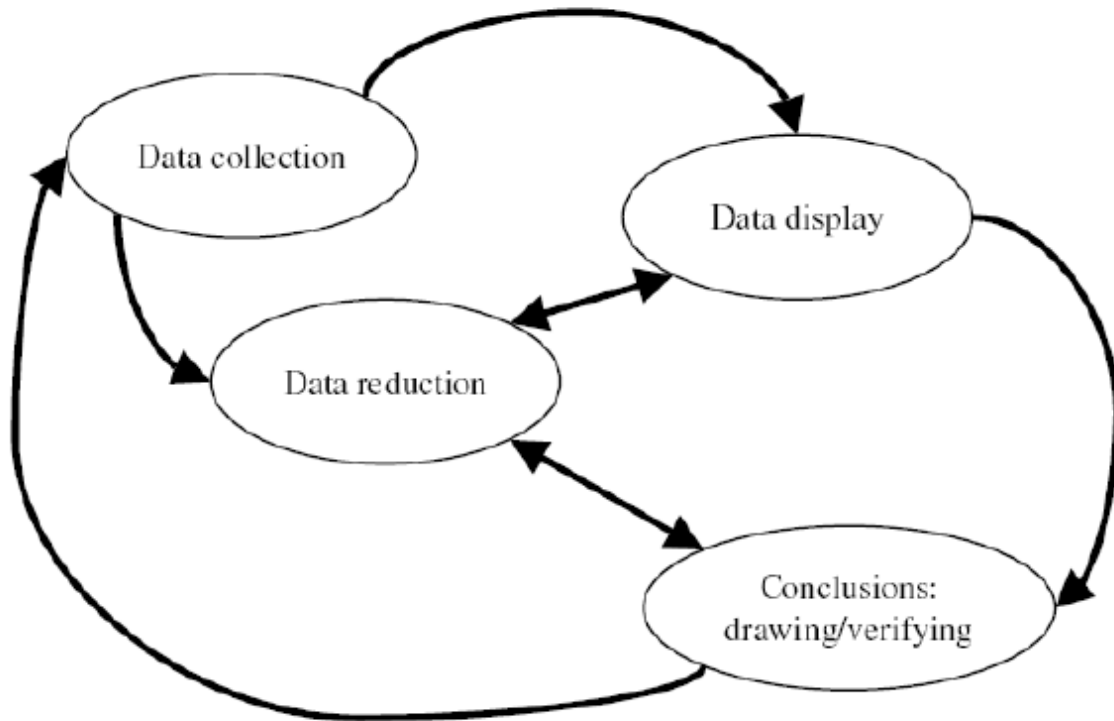
### **3.7 Data analysis**

Statistical Package for the Social Sciences for Windows (SPSS V-20) was used as the main tool to manipulate the data. Survey questionnaire was analyzed using descriptive statistics such as frequencies and percentage. Hence, the analyzed data was presented in the form of tables.

In this study, there are two cases were selected for comparison: public sector organizations and private sector organizations. In order to identify the crucial issues that found in both cases are collected from the respondents, the researcher applied Pareto approach (80-20 rule). The data collected and analyzed was ranked according to their frequencies and prioritize their order. On the other hand, qualitative data was analyzed by explaining and interpreting the collected data. Finally discussed the data obtained to made similarities and differences in the two cases. Therefore, the output data is presented and discussed in chapter four in detail.

When analyzing the data collected, the intensions were to find answers for the research questions ( Kalbasi, 2007).

The following flow of activity is used to explain the analysis.



**Figure 3.1 components of data analysis (adopted from Kalbasi,2007)**

**Data reduction** is the process of selecting, focusing, simplifying, abstracting and transforming the data. The purpose is to organize the data that were collected.

**Data display** is taking the reduced data and displaying it in an organized compressed way that leads to the conclusion is easily drawn/ verifying.

Conclusion is deciding what things mean, and providing explanation for the analyzing data.

### **3.8 chapter summary**

The objective of this study was identifying which factor is more critical factor for private organization and which factors are more critical factors for public organization in relation to ERP implementation. This chapter briefly outlined various methodologies that the study used in conducting this research and covers different approaches such as research approaches, data collection method and sampling method. It explained various scientific methods that used to collect the data depending on the nature of the problem. Next chapter, chapter five will present data analysis and discussion.

## CHAPTER FOUR

### FINDING AND DISCUSSION

#### 4.1 Introduction

In the previous chapter, the researcher has discussed the methods and the techniques that were used to answer the research questions has been presented in chapter one. In this chapter the researcher has focused on the analysis of the results that were obtained from the questionnaires and interviews. The result has obtained from the selected cases of Ale Bejimila public business organization and ASKU private business organization. The researcher identified which factors are more critical for public organization and which factors are more critical for private organization in regarding ERP implementation. The detail discussions for results are presented as follows.

#### 4.2 Demographic Data

This section shows Numbers of respondents in organization and background information of respondent's gender, age, levels of education and years of experience in ERP system. In addition, it contains to ask respondents that ERP used in organization or not and extent to implement successfully as well as USERS acceptance in ERP system.

Table 4.1 demographic data based on respondent's information

		<b>Frequency</b>	<b>Percent</b>
<b>Numbers of respondents in organization</b>	Public	21	60.0
	Private	14	40.0
	Total	35	100.0
<b>Gender</b>	Male	15	42.9
	Female	20	57.1
	Total	35	100.0

<b>Age</b>	20-30	20	57.1
	30-40	11	31.4
	40-50	4	11.4
	Total	35	100.0
<b>Levels of education</b>	secondary school	2	5.7
	College	2	5.7
	University	27	77.1
	Masters	4	11.4
	Total	35	100.0
<b>Experience in ERP system</b>	<2 years	1	2.9
	>2 years	23	65.7
	3-5 years	11	31.4
	Total	35	100.0
<b>ERP used in both organizations</b>	Yes	35	100.0
<b>ERP implemented successfully</b>	very large extent	8	22.9
	large extent	24	68.6
	small extent	3	8.6
	Total	35	100.0
<b>USERS accept the implementation of ERP system</b>	very willing	6	17.1
	Willing	24	68.6
	less willing	5	14.3
	Total	35	100.0

Table 4.2 Frequency Count for Each Factors – Private organization

<b>List of factors</b>	<b>Frequency</b>	<b>Percent</b>
Team work composition	12	85.7
Business process reengineering and software configuration	12	85.7

Ways of ERP selected	8	57.1
Top management support and commitment	12	85.7
Having external professional consultants	9	64.3
Training and support for users	12	85.7
Project champion/project sponsor/ project manager	4	28.6
End users involvement	12	85.7
Change management plan	7	50.0
Budgetary constraints	10	71.4
Test and problem solution	7	50.0
Vision statement and adequate business plan	4	28.6
Project cost planning and management planning	3	21.4
Balanced team for ERP implementation	8	57.1
Building business case	6	42.9
Existence communication plan	12	85.7
Empowered decision maker	9	64.3
Implementation strategy and time frame	6	42.9
Change management	7	50.0
Post implementation	8	57.1
Government regulation	5	35.7
Team moral and motivation	10	71.4
Customization/localization of software according to environment	9	64.3
Consultant selection and relationship	12	85.7
Training job redesign	9	64.3
Legacy system consideration	8	57.1
Cultural change management	6	42.9
Availability and facilitation of IT infrastructure	12	85.7
Client consultation	7	50.0
Troubleshooting/crisis management	10	71.4
Data conversion and integrity	11	78.6
Financial plan	11	78.6

The above table (table 4.2) indicates that the frequency count for each factors in private organization and the total percentage of each factor. From here, each factor is listed that was obtained from the respondents survey result.

Table 4.3 Frequency Count for Each Factors – Public organization

<b>List of factors</b>	<b>Frequency</b>	<b>Percent</b>
Teamwork composition	18	85.7
Business process reengineering and software configuration	12	57.1
Ways of ERP selected	7	33.3
Top management support and commitment	18	85.7
Having external professional consultants	14	66.7
Training and support for users	16	76.2
Project champion/project sponsor/ project manager	12	57.1
End users involvement	13	61.9
Change management plan	17	81.0
Budgetary constraints	19	90.5
Test and problem solution	14	66.7
Vision statement and adequate business plan	6	28.6
Project cost planning and management planning	4	19.0
Balanced team for ERP implementation	17	81.0
Building business case	6	28.6
Existence communication plan	16	76.2
Empowered decision maker	17	81.0
Implementation strategy and time frame	18	85.7
Change management	17	81.0
Post implementation	17	81.0
Government regulation	9	42.9
Team moral and motivation	12	57.1

Customization/localization of software according to environment	18	85.7
Consultant selection and relationship	10	47.6
Training job redesign	13	61.9
Legacy system consideration	9	42.9
Cultural change management	6	28.6
Availability and facilitation of IT infrastructure	18	85.7
Client consultation	7	33.3
Troubleshooting/crisis management	11	52.4
Data conversion and integrity	17	81.0
Financial plan	19	90.5

In similar situation, the above table (table 4.3) indicates that the frequency count for each factors in public organization and the total percentage of each factor. From here, each factor is listed that was obtained from the respondents survey result.

Table 4.4 Summary of frequency for private organization results in descending order

<b>Factors affect ERP implementation</b>	<b>Frequency</b>	<b>Rank</b>
Business process reengineering and software configuration	12	1
Training and support for users	12	1
End user involvement	12	1
Existence of communication plan	12	1
Teamwork composition	12	1
Consultant selection and relationship	12	1
Availability and facilitation of IT infrastructure	12	1
Top management support and commitment	12	1
Budgetary constraints	11	2
Financial plan	11	2
Data conversion and integrity	11	2
Team moral and motivation	10	3
Troubleshooting/crisis management	10	3

Training and job redesign	9	4
Customization/localization of software according to environment	9	4
Empowered decision maker	9	4
Post implementation evaluation	8	5
Balanced team for ERP implementation	8	5
Ways of ERP system select	8	5
Legacy system consideration	8	5
Test and problem solution	7	6
Change management	7	6
Client consultation	7	6
Change management plan	7	6
Building a business case	6	7
Implementation strategy and time frame	6	7
Managing cultural change	6	7
Government regulation	5	8
Having external professional consultants	5	8
Project champion/project sponsor/ project manager	4	9
Vision statement and adequate business plan	4	9
Project cost planning and management planning	3	10

After listed the frequency count, the researcher listed each factor in descending order. Hence, the above table (table 4.4) indicates that all factors that found in private organizations are listed in descending order according to their frequency and percentage.

Table 4.5 Summary of frequency for public organization results descending order

<b>Factors affect ERP implementation</b>	<b>Frequency</b>	<b>Rank</b>
Budgetary constraints	19	1
Financial plan	19	1
Implementation strategy and time frame	18	2
Availability and facilitation of IT infrastructure	18	2
Customization/localization of software according to environment	18	2
Top management support and commitment	18	2
Teamwork composition	18	2
Change management plan	17	3
Balanced team for ERP implementation	17	3
Post implementation evaluation	17	3
Change management	17	3
Data conversion and integrity	17	3
Empowered decision maker	17	3
Existence of communication plan	16	4
Training and support for users	16	4
Having external professional consultants	14	5
Test and problem solution	14	5
Training and job redesign	13	6
End user involvement	13	6
Team moral and motivation	12	7
Business process reengineering and software configuration	12	7
Project champion/project sponsor/ project manager	12	7

Troubleshooting/crisis management	11	8
Consultant selection and relationship	10	9
Legacy system consideration	9	10
Government regulation	9	10
Client consultation	7	11
Ways of ERP system select	7	11
Managing cultural change	6	12
Building a business case	6	12
Vision statement and adequate business plan	6	12
Project cost planning and management planning	4	13

Similarly, the researcher listed each factor in descending order. Hence, the above table (table 4.5) indicates that all factors that found in public organizations are listed in descending order according to their frequency and percentage.

Table 4.6 Summary of top critical success factors applying Pareto analysis (80-20Rule)

<b>Private organization</b>			<b>Public organization</b>		
<b>List of top critical factors</b>	<b>Frequency</b>	<b>Rank</b>	<b>List of top critical factors</b>	<b>Frequency</b>	<b>Rank</b>
Business process reengineering and software configuration	12	1	Budgetary constraints	19	1
Training and support for users	12	1	Financial plan	19	1
End user involvement	12	1	Implementation strategy and time frame	18	2
Existence of	12	1	Availability and facilitation	18	2

communication plan			of IT infrastructure		
Teamwork composition	12	1	Top management support and commitment	18	2
Consultant selection and relationship	12	1	Customization/localization of software according to environment	18	2
Availability and facilitation of IT infrastructure	12	1	Teamwork composition	18	2
Top management support and commitment	12	1			

The objective of the study is identifying key factors that found in private and public organizations by applying Pareto approach (80-20 Rule). Therefore, from the above table 4.2, it has been selected and ranked 8 issues out of 32 are contributing 80% of the total percentage contribution in private organizations. Therefore, those 8 issues are regarded as key critical factors for implementing ERP system in private organizations. Similarly, in public organization 7 issues have been selected which is contributing 80% of the total percentage. Hence, those 7 issues are identified as key critical factors for implementing ERP system in public organizations.

### 4.3 Discussion

From the survey questionnaires and by applying Pareto analysis, the researcher found that 8 factors are identified as the more critical factors responsible for the success of ERP implementation in private organization and 7 factors are considered as more critical factors in public organizations as well as 3 factors were identified in both categories. But some factors that are found to be more critical for private organizations may not be more critical for public organizations. The objective of this study is to find out those critical factors that have exclusively and commonly found in private and public organizations.

### **4.3.1 Discussion of top factors that found in private but not public organizations**

As described in the above section 4.7, factors that are found to be more critical factors for private organization but not public organizations are listed below:

- Business process reengineering and software configuration
- Training and support for users
- End user involvement
- Existence of communication plan
- Consultant selection and relationship

#### **1. Business process reengineering and software configuration**

When implementing ERP system, the organization should be reengineered to use ERP system functionalities properly. As the survey result indicates that, business process reengineering and software configuration is considered as the more critical factors that needed to give special attention during the implementation of ERP system in private organizations. Although, all issues which are listed on the above section should be factors in both public and private organizations, BPR is found to be more closely impacts on the success of ERP system in private organizations.

Some studies provide indications of numbers of significance difference between public and private organizations in terms of BPR. According to (Alves&Mathos, 2012), the results for implementing ERP system, the private organization respondents indicated “BPR” (26 %) and the public organization respondents indicated “BPR” (38 %). This indicates that BPR is the most significant factors in public organizations than private organizations. But in context to our country, the successful of ERP implementation is quoted from the significant frequency and percentage of respondents “BPR” (frequency = 12 and percentage = 85.7 %). This implies that, private organizations are more achieve their internal business process reengineering program as compared with public organizations. Hence, public organizations are less exposed to the market, resulting in less incentive for effectiveness and more legal and formal constraints as well as higher political influences that lead to affect ERP implementation as compared with private organizations.

In order to reengineer the business process, private organization can provide special consideration in the organization development aspects and work flow process as well as different operations than public organizations whereas the higher level of bureaucracy and more numbers of decision making levels in public organization posed some challenges in BPR .

## **2. Training and support for users**

Training and support of the users are found to be the most significant factors in private organizations as compared in public organizations. Most of the private organization respondents have strongest arguments on training and support of users that makes difference in private and public organizations. Although ERP systems are successfully implemented, the system is technically complex and difficult for the users. Moreover the users have lack of awareness for the use and utilize of the system that may result to resist ERP implementation. Therefore, training should be required for all users who are involved with the organization. This implies that, private organizations provide training for their users simply because they are highly dedicated for the business process.

## **3. End user involvement**

The common problems that encountered in implementing ERP system at any organization is end user involvement. However, the survey result indicates that in private organization end user involvement is considered as a critical issue that needs to provide concentrations for the successful implementation of ERP system. As indicate the above table 4.3, the result of end user involvement is putting in the higher levels of frequency (i.e frequency= 13 and percentage= 61.9 %) and ranked as the first level. This shows us to consider the more critical factor that may affect ERP implementation in private organization that public organization. Additionally, the interview result indicates the users should highly involve for accepting and supporting when implementing ERP system. This implies that, private organization users are highly motivated and involved with the system whereas public organization users are slightly resist to involve the system due to the fear of losing their jobs.

#### **4. Existence of communication plan**

This factor is found to be the most significant factor in private organization than public organization. Among the private organization 85.7 % respondents indicates that they did expect to achieve the project and realized the success of ERP implementation by applying good communication plan at various levels the organization.

Although communication is needed and vitally important factor that involves between different levels of the organization, private organization should strongly focused on this issue when implementing ERP system in context to our country. There is no doubt that when an organization possess effective communication among its stakeholders internally and externally for the success of ERP system implementation. Also, the communication between team members and in between end users from different department has critical impact on the successful implementation of ERP system.

#### **5. Consultant selection and relationship**

Most of the private organization respondents are agreed on this factor is crucial and more significant factors to adopt ERP system properly. During interviews, the informants are pointed out incompetent consultant and unskilled project persons were major challenges for ERP system implementation. In addition, finding the right people and keeping them through the implementation was the main challenge. They are also provide that, consultants with specific industry knowledge, such as private organizations, are fewer in number.

Organizations should give priority for consultants who have the ability to offer before and after the implementation to make the system is high quality, keep track with the updated technological changes, troubleshooting, support and maintenance. Therefore, for the success or failure of the project depends on how the organizations manage and smoothly related with consultants as well as applying the necessary knowledge transferring between the consultant and the internal employees.

### **4.3.2 Discussion of top factors that found in public but not private organizations**

The following factors are found to be more critical for public organizations but not private organizations:

- Budgetary constraints
- Financial plan
- Implementation strategy and time frame
- Customization/localization of software according to environment

#### **1. Budgetary constraints**

ERP systems are very complex and huge software packages; it needs highest investment to implement the system in any organizations.

In this study, the researcher used descriptive statistics to describe the respondent's level of agreement on each factors. The responses to the levels of agreement were coded using five point level Likert scale (0= strongly agree, 1=Agree, 2= neither agree nor disagree, 3 = Disagree and 4 =strongly disagree).Among public organizations 90.5 % respondents are highly agreed on the budgetary constraints can affect ERP implementation. Therefore, this issue is considered as the backbones whether the failure or success ERP implementation. In the private organization 71.4 % respondents are agreed on budgetary constraints are considered as the factor of ERP implementation. It was conclude that, public organization members were more agreed with budgetary constraints than private organizations members. This implies that, in cost of implementing ERP system may make it prohibitive in private organizations whereas public organizations are highly focused on cost in ERP system implementation.

#### **2. Financial plan**

Financial plan is also identified as very essential factor for implementing ERP system in public organization than private organization. The result of this study indicates that, 78.6 % of the private organization respondents are agreed on financial plan is the factor for implementing ERP

system, but in public organization 90.5 % of respondents are agreed on financial plan is considered as more critical for implementing ERP system( see table 4.2 and 4.3 respectively).

According to (Harrison, 2004) clearly financial cost associated with ERP implementation should focused on the cost components of IT projects like software, support software, support infrastructure, customization, implementation, training and change management. For all these components carefully stated and defined financial plan should exist in order to implement the ERP system successfully. Hence, the researcher conclude that financial plan is should provide special concentration for implementing ERP system in public organization.

### **3. Implementation strategy and time frame**

As noticed in the table 4.3, 85.7% of public organization respondents agreed on implementation strategy is the most critical success factor for ERP implementation while 42.9 % of private organization respondents are agreed as implementation strategy is considered as critical factor for ERP implementation. This implies that, in public organization Implementation strategy can be fulfilled a Pareto approach (i.e 80- 20 Rule). Therefore, the researcher concludes that implementation strategy is the more critical success factor than private organization.

There are different fundamental strategic approaches for implementing ERP system that organizations must decide to adopt based on their time and budget. These are: Big-bang approach (all at once end to end), vanilla approach (use ERP core functionality), and phase wise approach (incremental and module wise) (Upadhyay et al.,2010). In order to implement the ERP system successfully, the management should decide to how the ERP system is to be implemented.

### **4. Customization/localization of software according to environment**

Numerous studies of critical issues on ERP implementation conclude that, the preferable way to implement ERP software is modification (Upadhyay et al., 2010). In this study, most of the public organization respondents conclude that customization as one of the critical factor in ERP implementation. Hence, 85.7 % of public respondents agreed on customization are critical factor

to affect ERP implementation. This implies that, public organizations should care about the customization during the whole process of implementation. In addition, the interview informant provides that customization is the hottest issues in ERP system. Because the organization business process and the software are not fit each other. Due to this reason the software should needs to minimal customization in order to fit the business.

### **4.3.3 Discussion of top factors that found in both private and public organizations**

Factors that are found to be more critical for both private and public organizations are listed below:

- Availability and facilitation of IT infrastructure
- Teamwork composition
- Top management support and commitment

#### **1. Availability and facilitation of IT infrastructure**

From this study, the researcher has identified availability and facilitation of IT infrastructure is the more critical success factors that appear in both private and public organizations. In private organization majority (85.7 %) of respondents indicated that availability and facilitation of IT infrastructure can affect implementation of ERP system. On the other side, majority (85.7 %) of respondents also indicates that availability and facilitation of IT infrastructure can affect ERP system. This indicated that, both private and public organizations are similar in availability and facilitation of IT infrastructure that needs to focus when implementing ERP system. If there is no IT infrastructure, any organization is not able to implement ERP system. Because ERP system is should be run using IT infrastructure.

IT infrastructure should available in both organizations in order to implement ERP system successfully. According to (Yousaf, 2015) availability and IT infrastructure has always been the

critical factor in any organization. Therefore, the organization should check the preparedness and the current strength of IT infrastructure before implementing ERP system.

## **2. Teamwork composition**

Teamwork composition was the common issue in both private and public organizations that found as critical factor in implementing ERP system. As noticed table 4.2 and 4.3 respectively, majority (85.7%) of private organization respondents are agreed teamwork composition is considered as critical factor and majority (85.7%) of respondents also equally agreed on this factor is considered as critical for ERP implementation. From this, the researcher conclude that teamwork composition is cannot make difference among in private and public organization.

According to (Lochilit, 2014) lack of teamwork composition among managers, IT staff, project teams and different cross functional department may negatively affect ERP system. Therefore, ERP system needs adequate knowledgeable and experienced team for successful implementation of the project. Although many project team members and project managers felt that their implementation was a success, some others did not achieve their expected success (Lorraine, 2004). Therefore, to implement ERP system in any organization, the organization give emphasize on the team composition so as to know and understand the business process behind the system as well effectively accomplished the project.

## **3. Top management support and commitment**

In this study, Top management support and commitment was listed as one of the most critical factors factor to the success of ERP implementation within private and public organizations. As noticed in table 4.2 and 4.3 respectively, the factor that ranked the highest indicating that the factor was presented as critical for the implementation. Majority (85.7%) of private organization respondents are indicated that top management support and commitment is more critical and majority (85.7%) of public organization respondents are also equally agreed on this factor is considered as more critical. The responses implied that, top management support and commitment is needed throughout the implementation. In addition, both private and public

organization interviewees reported that top management support may result successfully implement ERP system. If an implementation doesn't have top management support and involvement, the implementation can fail to meet desired expectation.

According to (Lorraine, 2004), top management support and commitment was listed as one of the most critical factor listed in both private and public organizations. Private organization respondents were 79.0% and public organizations respondents were 76.0%. These results were consistent among both private and public organizations. But in this study, the result shows that top management support and commitment is the most critical factors that are equally appear in both private and public organizations in context to Ethiopia.

In general, any organization should be given priority for top management in order to implement ERP system successfully. According to (Swaminathan, 2011), the project must receive approval from top management system before starting implementation. Top management needs openly and clearly identify the project as a top priority. Hence, senior management should be committed with its own willingness and involvement to allocate valuable resource for ERP system implementation effort. Therefore, the researcher concludes there is no difference among private and public organizations for this factor.

#### **4.4 Interview results for AlleBejimla public organization**

According to all interviewees, ERP system is very important and interesting system for our country. In this study, after reviewing different factors that affect ERP implementation in different organization, interview questions were designed to complement these factors.

The following are the basic benefits of ERP implementation that obtained from interview results.

- Get accurate information
- Reduce exertion of employees
- Creating easy workflow among the organization
- Selling and purchasing easily takes placed
- Remove duplication of data
- Increase data integrity

- Easy to data accessing

After analyzing the interview, the following issues are obtained to be considered as the factors to be affect ERP implementation

- Users resistance/ staffs attitude towards the system
- Lack of well experienced staff
- Lack of providing adequate training for the users
- Human errors appear as a result of system complexity
- Lack of monitoring and controlling management
- Lack of communication between internal staffs and external experts.
- Lack of supporting local consultants
- During installation the system is not fit with the business
- Customization
- Lack of budget
- Lack of knowing the exact business requirement
- Lack of encouraging top management support
- Other technological barriers such as network and internet

#### **4.5 Interview results for ASKU private business organization**

As discussed in chapter three, 8 dedicated informants were selected for interview in both cases. In ASKU private organization the researcher select 4 informants. Namely: project manager, two sERP supper users and one technical team leader.

Although implementing ERP system is not easy undertaking, most organizations are successfully implementing to offer many benefits. According to the interview result, the following issues are the basic benefits that offer in implementing ERP system.

- Improve employee's satisfaction through removing redundancy and tediousness from day-to-day activities.
- The organization can gain competitive advantage among different business organizations.
- The entire business process within the organization is become integrated.
- Easily handle the data

- Reduced manual work process
- Improved transactional process under unified data base
- Improved internal workflow

The followings factors are obtained during interviews that considered as critical factors that affect ERP implementation.

- Lack of users involvement during ERP implementation
- Lack of providing adequate training for users due to the complexity of the system
- Lack of internal and external communication in between different departments and different ERP implementation parts
- Lack of top management support and involvement that leads to not fulfilled basic infrastructure for ERP project
- Lack of well experienced staffs

## **4.6 chapter summary**

In this chapter, the data was analyzed and in detail discussed. It was identified the top critical success factors in both private and public organizations. After identifying the top critical success factors, the researcher was separated them that considered as the more critical success factors that found in private organization than public organizations and also identified similar factors that found in both cases. Hence it was found 8 factors that found in private organization and 7 factors was found in public organization as well as 3 factors were identified in both categories. Next chapter, chapter five will present conclusion, recommendation and future research.

## CAPTER FIVE

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the conclusion and recommendations as well as future research. The objective of this study is identifying the more critical success factors that are related to ERP implementation in private and public organizations. In addition, it identifies the similarities between private and public organizations regarding ERP implementation success factors. Based on the findings of this study, the following conclusions are presented.

#### 5.2 summary of the findings

In this section, the researcher presents the summary of key findings according to the objectives.

In this study, the researcher used detail interview, survey questionnaires and document review to answer the research questions. ASKU private business organizations and AlleBejimla public business organizations are selected as cases for this study. The objective of this study is comparative analysis of factors affecting ERP implementation in private and public organization in context to Ethiopia. To identify the more critical success factor, the researcher was applied Pareto approach (20-80Rule). Hence, in private organizations 8 factors are identified as more critical success factors and in public organization 7 factors are identified as more critical success factors as well as 3 factors were identified in both categories.

In relation to private organization the following issues are identified as top critical factors.

- Business process reengineering and software configuration
- Training and support for users
- End user involvement
- Existence of communication plan
- Consultant selection and relationship

In relation to public organization the following issues are identified as top critical factors.

- Budgetary constraints

- Financial plan
- Implementation strategy and time frame
- Customization/localization of software according to environment

In relation to both private and public organizations the following issues are identified as top critical factors.

- Availability and facilitation of IT infrastructure
- Teamwork composition
- Top management support and commitment

### **5.3 Conclusion**

From the findings of this research, the perspectives of managers, users, implementers and holds significance for any private and public organizations that needs to influence the integration of the business process by implementing ERP system in their organization. Hence, public organization should be focused on the availability and facilitation of IT infrastructure, teamwork composition, top management support and commitment while private organizations should be focused on business process reengineering and software configuration, training and support for users, end user involvement, existence of communication plan, consultant selection and relationship. On the other hand, both private and public organizations are should give priorities for budgetary constraints, financial plan, implementation strategy and time frame, customization/localization of software according to environment when implementing ERP system.

Finally, the researcher concludes that there are similarities and differences between private and public organization regarding ERP implementation success factors. The implementers and any decision makers should be concentrated on these issues which were identified on this study.

## **5.4 Recommendations**

Based on the finding, the following were the recommendations of the study:

- The researcher recommends that the managers, users and any stakeholders should be focused on the availability and facilitation of IT infrastructure, teamwork composition, top management support and commitment should be give prior attention when implementing ERP system in any organizations.
- It is recommended that business process reengineering and software configuration, training and support for users, end user involvement, existence of communication plan, consultant selection and relationship need special concentration in implementing ERP system at private organization.
- It is recommended that budgetary constraints, financial plan, implementation strategy and time frame customization/localization of software according to environment should be considered as the key issues in ERP implementation at public organizations.
- Every organization should be communicated and share their knowledge and experience while implementing ERP implementation that leads to adopt successfully.
- As both cases respondents indicated that, adequate training is mandatory to provide for the internal staffs in order to minimize the complexity of the system.
- Finally, it is recommended that ERP implementation is very important system that every organization must adopt in order to improve their business process.

## **5.5 limitations of the study**

In this study, the researcher has faced the following limitations.

- The sample size is limited, but when taking more may provide detail understanding of the ERP system.
- The scope is limited to single private and public organization. This leads to lack of enhancing the study by taking in to consideration different type of organizations like manufacturing and industries and obtaining more detail results by extending number of respondents.

## **5.6 Suggestions for Future Research**

This study was carried out in private and public organizations in Ethiopia. The study focused on identifying the more critical factors in private and public organizations and also identifies the similarity and difference among private and public organizations regarding ERP implementation success factors. The researcher recommends that other multi case studies need to be conducted to obtain more factors in relation to the issue under consideration. This study focused on comparing only identifying factors that appear in both cases. But, another research should be needed on ERP implementation in both cases to determine the extent of presence of critical factors in pre-implementation stage, during implementation and post implementation. Which issues are found in pre-implementation stage and which issues are appeared during implementation as well as which issues are appeared in post implementation stage is another research area.

On the other hand, this study focused on only private and public organizations, but comparative study among small medium enterprise and large enterprise in context to our country is another research area. In addition, comparative study for private and public organizations based on modules to be implemented is another suggestion for the future research.

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**Appendix A: Survey Questionnaires**

**Dear respondents,**

I am SisayMsganaw, a postgraduate student in Information science department at Addis Ababa University, College of Natural and Computational Sciences. Currently I am doing masters' thesis entitled "*Comparative analysis of issues affecting ERP implementation in private and public organizations in Ethiopia.*" My objective is identifying critical issues that affect ERP system implementation in private and public organizations in context to our country.

As you may know, organizations are widely implementing ERP systems to modernize their business processes. However different issues affect the ERP system that leads to challenges holding organizations back. In order to address those challenges it requires collecting data for identifying the critical factors that faced in organizations.

Therefore, in this study I want to kindly ask you participate in my survey questionnaires. Because you are functionally and/or technically involved in ERP system and you have knowhow about the system as well as have a good experience on the area. You are selected purposely to participate on this questionnaire. It requires about 15 minutes filling the questionnaires. The information that you provide me is very important and valuable to accomplish my study successfully and addressing the problems properly. It will help the private and public organizations to understand the ERP factors and properly implement and utilize the system.



4. Years of experience in ERP adopted organization:

Less than 2 years                      3-5 years  
 6-10 years              above 10 years

**II. Factors affecting ERP implementation**

5. Do you use ERP in your department?

Yes                                      No

6. To what extent does ERP implementation successfully implemented?

Very large extent              large extent              small extent              no extent

7. How did the USERS accept the implementation of ERP system?

Very willing              Willing              less willing              not willing

*The following statements are factors that affect ERP system. Please select the levels of your agreement with each statement.*

**0-strongly agree    1- Agree    2-Nither agree nor disagree  
 3- Disagree    4-Strongly disagree**

<b>Statement</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Teamwork work composition for the ERP project affect ERP system					
Business process reengineering and software configuration/some modification can affect ERP system					
The way ERP system selected is affect ERP system					
Top management support and commitment affect ERP system					
Having external professional consultants affect ERP system					
Training and support for users affect ERP system					

Project champion/project sponsor/ project manager role affect ERP system					
End user involvement affect ERP system					
Change management plan affect ERP system					
Budgetary constraints affect ERP system					
Test and problem solution affect ERP system					
Vision statement and adequate business plan affect ERP system					
Project cost planning and management planning affect ERP system					
Balanced team for ERP implementation affect ERP system					
Building a business case affect ERP system					
Existence of communication plan affect ERP system					
Empowered decision maker affect ERP system					
Implementation strategy and time frame affect ERP system					
Change management affect ERP system					
Post implementation evaluation affect ERP system					
Government regulation affect ERP system					
Team moral and motivation affect ERP system					
Customization/localization of software according to environment affect ERP system					
Consultant selection and relationship affect ERP system					
Training and job redesign affect ERP system					
Legacy system consideration affect ERP system					
Managing cultural change affect ERP system					
Availability and facilitation of IT infrastructure affect ERP system					
Client consultation affect ERP system					
Troubleshooting/crisis management affect ERP system					

Data conversion and integrity affect ERP system					
Financial plan affect ERP system					

8. What would you recommend to be done to enhance ERP implementation in any organizations?

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Thank you for your co-operation

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**Appendix B: Interview Guide**

1. What was the goal of ERP implementation in your organization?
2. Does ERP system achieve the needs of organizational business process?
3. Which modules of ERP are implemented?
4. Which modules of ERP are used?
5. How did it take to stabilize ERP system after implemented?
6. How much did your business process fit to the ERP package?
7. Did ERP system shows benefits immediately up on start-up?
8. What were the factors to implement ERP system successfully?
9. How was users motivation and involvement before ERP implementation?
10. Did you get the expected benefits from the ERP system?
11. Any ideas and comments of your experience on the ERP project?

