

JIMMA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

**ASSESSMENT OF ENTERPRISE RESOURCE PLANNING (ERP)
IMPLEMENTATION: THE CASE OF AUTOMOTIVE INDUSTRY IN ADDIS
ABABA ETHIOPIA**

By

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September, 2020

JU, ABH CAMPUS,

ADDIS ABABA, ETHIOPIA

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**A THESIS SUBMITTED TO JIMMA UNIVERSITY, SCHOOL OF GRADUATE
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ADDIS ABABA, ETHIOPIA

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Shemelis. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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ENDORSEMENT

This thesis has been submitted to Jimma University School of Graduate Studies for examination with my approval as a university advisor.

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LIST OF ACRONYMS

ERP: Enterprise Resource Planning

CSF: Critical Success Factor

MNC: Multi National Corporation

IC: Inventory Control

IS: Information System

MRPI: Materials Requirements Planning I

MRP II: Manufacturing Resource Planning II

APICS: American Production and Inventory Control Society

JIT: Just-In-Time

EDI: Electronic Data Interchange

CRM: Customer Relationship Management

SCM: Supply Chain Management

Abstract

This paper sought to assess the second phase implementation of Enterprise resources planning in automotive companies in Addis Ababa, Ethiopia. The study used descriptive quantitative design. A purposive sampling technique was used to select employees from each functional unit of five automotive companies. Data was collected using questionnaires from 217 samples Population. The collected data was analyzed using descriptive statistical like frequency, average, mean, standard deviation by mainly using computer such as SPSS (Statistical Package for the Social Sciences) version 20. Narrative analysis was used to explain the qualitative results of the survey. The study has tested the implementation effectiveness by selecting major effectiveness variables and other related concepts. The findings of the study point automotive companies were in moderate extent practice of ERP system implementation which means the respondent was in neutral agreement about practice of ERP system implementation as the basis of the selected variable. As a result there is a lack of top management commitment; lack of appropriate training for all system users and as well as lack of allowing user to participate on the implementation process. From this fact the study recommends, top management commitment & support in the area of adoption and full implementation of ERP system in line with the organization mission and vision & take it as a part of long term strategic plan In addition, the companies have to consider the way to give adequate training and development for both end user as well as super user to bring the required level of skill on the system. Finally the companies should emphasis allowing user to participate on the implementation process have an advantage in the real situation.

CHAPTER ONE

1.1 Background of the Study

Information Technology has become an important part of our daily activity. IT and Information Systems changed the business atmosphere.

Nowadays, many companies have responded to these changes by automating their business processes and capturing industry-related information and using it to their advantage. Technology has also forced businesses to remain flexible, adapting their operations to newer and better technological advances (Krume, 2012).

According to Wallace and Kremzar (2001), operating the business in a rapidly changing and highly competitive environment is the primary purpose of implementing an ERP system.

As one part of information system tool Enterprise Resource Planning systems (ERP) have been considered as a part of IT infrastructure that can smooth the flow of information among all business processes in the company (Al-Mashari& Al-Mudimigh, 2003).

In today's age of globalization and competition, firms seek to advance or maintain their competitiveness by using information systems to improve customer service, shorten cycle times, and reduce cost. Firms seek to increase the quality & speed of information exchange between upstream and downstream department units by using computer hardware and software systems to improve the flow of information among organizational units to advance or maintain best competitive advantage. Essentially, ERP systems improve the flow of information among organizational units, reduce administrative and maintenance costs, enhance timeline related information, and finally provide centralization of administrative activities (Gattiker& Goodhue, 2000).

As stated above; the complex nature of some functional units requires more and more inter-functional data flow for decision making, timely and well-organized procurement of product parts, management of inventory, accounting, human resources and distribution of goods and services. In this context, management of organizations needs resourceful information systems to advance competitiveness by cost reduction and better logistics management (Woo, Hong Seng, 2007).

It is stated before ERP system is a packaged business software system that allows a company to automate & integrate the majority of its business processes, and share common data and practices across the entire enterprise (Seddon, Shanks & Willcocks, 2003)

ERP is the largest single IT investment, impacts the greatest number of individuals, and is the broadest in scope and complexity (Chang et al. 2008.). Implementation of ERP is very expensive and multifaceted undertakings, but once it's effectively implemented, significant improvements can be attained such as easier access to reliable information, elimination of redundant data and operations, reduction of cycle times, increased efficiency hence reducing costs (Zhang et al., 2003).

It is generally a misleading insight that implementing an ERP system will not progress the organizations' functionalities overnight. The high expectation of achieving all-round cost savings and service improvements is very much dependent on how good the chosen ERP system fits to the organizational functionalities and how well the tailoring and configuration process of the system matched with the business culture, strategy and structure of the organization. Overall a system is likely to improve both backbone and front-end functions simultaneously (LiaquatHossain et al., 2002:18).

For success of an ERP implementation, as technical knowledge is required, strategic, organizational and people-related factors are significant. Strong top management commitment is also most important issue as it involves a lot of changes in the organization. Also, effective communications, effective project management, training and implementation team are essential throughout an ERP project in order to bind the various together (Ibrahim, 2010).

In addition to the tools being used, the most important success-factor for any big company in implementing ERP system is mainly depend on how well users are involved in deployment & implementation of the ERP system. There are two main areas of user participation when a company or organization decides to implement an ERP system (Esteves et. al.). The first area is when a user participates in the stage of definition of the company's ERP system needs and the second area is user participates in the implementation of the ERP (Zhang et al., 2003).

As clearly enlightened above regarding the topic most of the studies conducted on ERP are in the context of Western countries to assess the problem they observe and filled the gap. But, a country like Ethiopia the implementation of ERP system is a recent phenomenon.

Most of the automotive companies have an aspiration of being a competent company in the industry in order to be a world class, it decided to use a more sophisticated automation tool so that its internal work process is shifted from routine tasks to strategic ones.

Organization should consider timeline, budget, and process. The organization should concentrate on a certain business process and requirement by using gap analysis to identify the dissimilarities of what the system can offer them and what they need, to provide a guideline on which package best matches their business process (Almuharfi, 2014).

Mainly the benefit which is expected from ERP system is realized only when it is implemented considering all the pre and post implementation activities. Otherwise, the system could be a curse to and drag the whole enterprise into spiraling inefficiency. Planning for ERP systems and their implementations requires an integrated approach to meet the requirements of various functional areas. In general; independent of the size of the company, an Enterprise Resource Planning system can either boost or doom a company, if implemented successfully or unsuccessfully respectively.

So, the aim of this research is to fill the above-mentioned gap for both academicians and practitioners. Since automotive industry is highly reliant on technologies the industry (automotive companies) are not new to implement new technology-based system. But regarding ERP system, it is new phenomena. So, the researchers' interest and motive are to assess the implemented ERP system, to show the potential benefits and challenges and finally to recommend possible solution(s).

Beside considering that most of studies on assessment of ERP implementation are contextualized in developed countries. and there are no previous studies under this topic in Ethiopian automotive industry sector, the tremendous amount of expenditures, capabilities and efforts allocated on ERP projects, high failure ration of ERP implementation; this study will assess and measure the success of ERP implementation in automotive companies based on the major selected effectiveness variables.

This research adopts a case study approach to assess the practice of ERP implementation in automotive industry focusing mainly on examining the implemented ERP system in the auto sector based on the determinant factor (CSF) and give recommendation for both academicians and practitioners to automating the division activities of the companies.

1.2 Statement of the Problem

In today's ever-changing digital space, change is inevitable. Companies need to embrace these changes or risk losing their market share. According to Wallace and Kremzar (2001), operating the business in a rapidly changing and highly competitive environment is the primary purpose of implementing an ERP system.

However, there is a deceptive understanding that implementing an ERP system will progress the organizations' functionalities overnight (Liaquat Hossain et al., 2002). According to LiaquatHossain et al., (2002) achieving all round cost savings and service improvements is very much dependent on how good the chosen ERP system fits to the organizational functionalities and how well the tailoring and configuration process of the system matched with the business culture, strategy and structure of the organization.

Not all ERP implementations have been successful. Since ERP implementation affects entire organizations such as process, people, and culture, there are a number of challenges that companies may encounter in implementing ERP systems (Ibrahim, 2010).

As cited by Ibrahim (2010) ERP systems offer benefits in terms of strategic, operational, managerial, organizational and technical related issues

Addressing the difficulties of ERP implementation helps to plan better and facilitate a more successful ERP implementation (Ibrahim, 2010). Regarding the challenges of ERP, as different scholars have categorized them above, some are internal company problems (weaknesses of inside stakeholders) & some are External problems. Among the internal problems, lack of skill of users, lack of commitment of top management and project teams & the implementation process itself are among the major ones. On the other hand the module nature and standardization issue are mentioned as external challenge

Implementation of ERP system in automotive companies is not about vanilla implementation rather it's about customizing and applying the tool in line with the nature of the structure of the company, policies and procedures, internal processes and other vital parameters. Therefore, it is very difficult to say the fiasco of successful implementation practice has existed unless otherwise of the nature of the country, nature of the company, policies and procedures or other things are detailed investigated.

In addition to this the implementation process successful when it infrastructure, hard ware, software and their reliability operating system and access to WAN, LAN or internet are the most important technical infrastructure for ERP implementation.

The researcher has many reasons to conduct this research ,among them nature of the auto industry, nature of Enterprise Resource planning (ERP), nature of auto industry employees‘ competency, Performance and behavior are the major ones; these reasons makes this paper different from those researches which were conducted on the same topic. Mainly, other papers contextualized themselves on developed countries.

1.3 Research question

The current study attempts to answer the general research question “what extent the ERP system implemented successfully in the automotive industry in Ethiopia? To answer this question, the study addressed the following sub-questions which are identified as a critical success factor for the successful implementation of ERP system according to many previously studied researches mentioned on literature review part.

1. How far the project teams clearly understand the change in its organization structure, strategies and process for ERP implementation?
2. How much the customization process matching the organization and considering the nature of the company work and regulation of the countries to meet basic requirements?
3. How much the training & education program properly implemented on the skills and experiences to prepare the end user of the system?
4. What extent the Management Committed and Support for smooth implementation of system?
5. How far the ERP system implemented based on successes indicator?

1.4 Objective of the Study

Following the problem statement stated above, the general objective of this study is to examine & evaluate the overall effectiveness of ERP system implemented in the purposively selected five automotive companies in Addis Ababa, Ethiopia and to recommend possible solution for the gap

1.4.1 Specific Objectives

Specifically, the study has listed specific objectives below:

1. To examine whether the project team clearly understand the change in its organization structure, strategies and process for ERP implementation.
2. To assess the implemented system, match the organization & implementation process to meet basic requirements.
3. To examine the training & education program properly implemented to prepare the user of the ERP system.
4. To assess the commitment & support of top management for smooth implementation of ERP System.
5. To examine the extent of success indicators of ERP system implementation.

1.5 Significance of the Study

- To show management can get accurate data for decision on the daily activities of the organization.
- This study could also be used as a reference for further researches in the area and explore major issues related with the system deployment for designing significant milestones as a base and make it available for academic reference.
- Finally, to provide useful information and practical suggestions for policy maker of the company at different level.

1.6 Scope of the Study

Researcher from the country-wide sector of the automotive industry only focused on in Addis Ababa that Implemented ERP system in their organization due to geographical constraint.

The study is limited to the assessment of Enterprise Resource Planning (ERP) system Implementation in automotive companies, its effectiveness in terms of creating automated work environment, challenge which hinder the implementation effectiveness.

1.7 Organization of the paper

This project has five chapters. The first chapter contains the back ground of the case area, statement of the problem, objective of the study, significance of the study, and scope and limitation of the study. The second chapter deals with review of theoretical & empirical literature. The third chapter outlines the rationale of research design and methodology used in this study. The fourth chapter outline data analysis & interpretation while the last chapter, chapter five obtained summary of finding, conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

In this chapter different theoretical aspects of ERP system will be discuss like its: knowledge-intensive nature of ERP system, the benefits to be obtained through ERP implementation, the drawback of ERP system, the historical background of the system and its related evolutionary stags, the conceptual understanding by differentiating ERP with E-Business, common ERP platforms, it's characteristics from the technical, organizational and information perspective and ERP implementation success and failure factors. On the other hand, the reason behind automotive industry goes for ERP implementation has been assessed under the Imperial review part.

2.1 Theoretical Review

2.1.1. The Meaning of ERP

ERP systems were named differently by different authors, some of them are enterprise systems, enterprise wide-systems, enterprise business-systems, integrated vendor software, and enterprise application systems, but however with no significantly different definitions (Al-Mashari et al., 2003).

Enterprise Resource Planning (ERP) is a useful system to organize activities, decision, and information flows across many different functions and departments in a firm (Jacobs and Weston Jr., 2007; Basoglu et al. 2007; Koh et al., 2008).

ERP is the leading approach to integrate business management and information technology. (Basoglu et al., 2007) defined ERP systems as integrated software solutions used to manage an organization's resources.

According to Watson and Schneider (1998), ERP is an integrated, customized, packaged software-based system that handles the majority of an enterprise's system requirement in all functional areas, such as accounting, human resources, finance, sales, marketing, and manufacturing.

ERP systems provide a seamless integration of all the information flows in an organization to eliminate cross-functional coordination issues in the business process (Davenport, 1998).

Therefore, ERP can be defined as an integrated information system that supports the business processes and functions through managing the entire organization's resources efficiently and effectively.

Ehie and Madsen (2005) define an ERP system as an integrated software solution that spans the range of business processes that enables companies to gain a holistic view of the business enterprise. An ERP system allows the integration of functions, divisions of businesses in terms of information exchange and flow, and the integration of business functions as diverse as accounting, finance, human resources, operations, sales, marketing, customer information and even the supply chain (Koh & Saad, 2006; Motwani et al, 2002; Tarn et al, 2002; Kumar & Van Hillegersberg, 2000; Palaniswamy & Frank, 2000).

2.1.2 Benefits of ERP

Several research studies have identified various important benefits the ERP systems bring to organizations. (O'Leary, 2000) stated that an ERP system integrates the majority of the business processes and allows access to the data in real time. Furthermore, ERP improves the performance level of a supply chain by helping to reduce cycle times (Gardiner et al., 2002). There are also some intangible benefits that an organization may get pleasure from by implementing an ERP system including, better customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, improved information accuracy and improved decision-making capability (Gar et al., 2004 & Siriginidi, 2000). (Shang et al., 2000) have identified several benefits of an ERP system for the organization. It includes operational benefit, managerial benefit, strategic benefit, IT infrastructure, and organizational benefits. Also (Olhager et al, 2007) stated that ERP system helps reduction of lead time, on-time shipments, double business, and increase of inventory turns to over, cycle time, and work in progress.

2.1.3. Drawbacks of ERP

Despite the potential benefits discussed above, however, ERP systems also have a number of drawbacks. For example, most ERP systems tend to be large, complicated, and expensive (Mabert et al., 2001). Moreover, ERP implementation requires an enormous time commitment from an organization's information technology department or outside professionals. In addition, because ERP systems affected most major departments in a company, they tended to create changes in many business processes. According to (Shang and Seddon, 2002) putting ERP in

place requires new procedures, employee training, and both managerial and technical support. ERP systems have more advantages in information quality and the integration of business processes and operations, but it does not decrease the information technology costs (Shang et al. 2000).

2.1.4. Characteristics of ERP

ERP system has a set of specific characteristics, so these characteristics is derived and based on the literature search on ERP system characteristics in general and the comparisons with traditional IT project. In analyzing the characteristics attributed to ERP systems in the literature, one attempts to identify those that are most significant, common to all and unique features of ERP project were identified and used as a help to understand what they are, what they can do, how they differ from other IT packages, and what characteristics of an ERP development methodology (Brehm, 2001).

Different researcher identifies the main characteristics of ERP systems such as complexity, integrated and packaged software, which perform number of applications through a number of functions, and manage the organization with the integration of business processes McGraw-Hill (2008).

For a better understanding, the ERP characteristics regrouped under three dimensions according to their classifications, namely technical, organizational and informational as described below (Zughoul, et al, 2013).

2.1.5. Evolution of ERP

In this part will mainly focus on the evolution of ERP in its historical context. This will be clarified by firstly explaining MRP and MRP II systems as a first and second phase of ERP systems. Moreover, reasons why MRP and MRP II implementation fail will be investigated to get a clear overview of ERP evolution. Secondly, ERP's feature, advantages, and disadvantages as well as reasons why ERP implementation fails will be discussed. Lastly, the relationship between ERP and e-business will be presented.

The evolution of ERP systems closely followed the spectacular developments in the field of computer hardware and software systems. During the 1960s most organizations designed, developed and implemented centralized computing systems, mostly automating their inventory

control systems using inventory control packages (IC). These were legacy systems based on programming languages such as COBOL, ALGOL and FORTRAN.

Enterprise Resource Planning (ERP) or information systems integration in general are doubtlessly amongst the most central topics arising at the interface of Information System (IS) and accounting within the past 20 years. Bhatt (1995) states that “By accessing enterprise-wide information from databases, IS integration is providing numerous opportunities to coordinate organizational activities by facilitating communication and information exchange across departments without the need to go up and down the vertical chain of command. The access to timely, accurate and consistent information is crucial in business process improvement and accounting. IS integration, through communication networks and database systems, enables organizations to create and sustain process improvement through timely retrieval of consistent and accurate information” (Bhatt, 1995).

ERP initiated from the large packaged application software that have been widespread since the 1960’s. Among the first packaged business applications available was Material Requirement Planning (MRP), introduced in the 1960’s and proposed by Joseph Orlicky, who regarded as the father of MRP in 1960 in the USA (Vollmann et al., 1992). During the 1970’s the MRP packages were extended and further applications were added (Chung and Snyder, 2000). The extended resulted in the introduction of Manufacturing Resource Planning (MRP II) Systems; this development has been continued (Koh et al., 2000). Moreover, these systems later evolved to Enterprise Resource Planning (ERP) systems, a term coined by Gartner Research Group in 1992 and the name can probably be derived from the MRP and MRPII Systems (Klaus et al., 2000). ERP systems are highly integrated software packages (Holland et al., 1999). However, ERP systems, like all information technology, are rapidly changing. During the 1980’s this was abandoned and replaced by the client-server architectures and now newly released web-enabled versions become more and more widespread (Markus and Tanis, 2000).

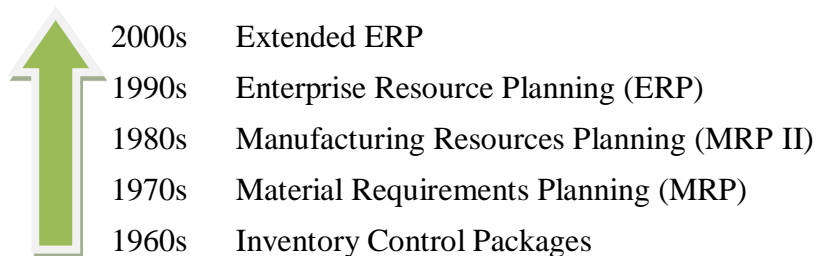


Fig. 1 Evolution of ERP

Source: - The Evolution of ERP Systems: A Historical Perspective, Mohammad A. Rashid (P-4, 2002)

2.1.5.1 Material Requirement Planning (MRP) System

Materials Requirements Planning (MRP, or MRP-I) system was launched in the mid-1960s and quickly became popular for providing a logical, easily understood method for determining the number of parts, components, and materials needed for the assembly of each end item in production. As computer power grew and demands for software applications increased, MRP systems evolved to consider other resources besides materials. Software modules were added to include functions such as scheduling, inventory control, finance, accounting, and accounts payable.

MRP-I system, is a computer-based system for managing inventory and production schedules. This approach to materials management applies to large job-shop situations in which many products are manufactured in periodic lots in several processing steps (Bedworth and Bailey, 1987). MRP and Push systems are often used interchangeably. Conceptually, MRP can be viewed as a method for the effective planning of all resources of a manufacturing organization (Russell and Taylor, 1998).

According to Daft (1991) MRP can be defined as a “dependent demand inventory planning and control system that schedules the exact amount of all materials required to support the desired end product”. “It is an inventory ordering and time-phased scheduling technique, which uses bill of material, inventory data, and the master production schedule to calculate requirements for material and determine when to release the material replenishment order” (Torkzadeh and Sharma, 1991).

Thus, MRP can be defined as a computer-based planning, scheduling, and control system that give management a tool to plan and control its manufacturing activities and supporting operations obtaining a higher level of customer service while reducing costs.

2.1.5.2 The Purpose of MRP Systems

MRP is primarily used for scheduling high-value commissioned parts, materials, and supplies when demand is reasonably well known (Ballou, 1999). Ballou (1999) further states that precise timing of material flows to meet production requirements is the principle behind MRP. According to Chase and Aquilano (1995), MRP help the organization for materials planning to ensure the required inputs into the manufacturing process are available to meet demand from order proposals; single item if the MRP controller wants to plan a particular material; and a bill of materials sequencing the assembly parts of the final product.

The main function of MRP according to Ballou (1999) is to monitor stocks and to determine which material the company needs, in what quantity, at what time and to create the corresponding order proposals automatically.

In MRP, the system compares available warehouse stock orders scheduled receipts from purchasing or production with planned requirements in the net requirements calculation. In the case of a material shortage, that is, if available stock is less than the quantity required, the system creates an order proposal (Ballou, 1999).

The objectives of MRP are similar to those of any inventory management system. These objectives are improving customer service, minimizing inventory investment, and maximizing production operating efficiency (Chase and Aquilano, 1995). According to Torkzadeh and Sharma, (1991) MRP is an inventory control and production planning system designed for ordering and scheduling dependent demand of inventory, which includes the following components: Master Schedule, Bill of Material and Inventory record file.

2.1.5.3 Advantages of MRP Systems

Material requirements planning (MRP) methods try to avoid, as much as possible, carrying items in inventory through precise timing of material flows to meet requirements (Ballou, 1999). It is a preferred method when demand is reasonably known due to the uncertainty of the forecasting component. If demand is forecast to change, MRP planning adapts to this new level of requirements. Nahmias (1997) says that MRP may be considered a top-down planning system in that all production quantity decisions are derived from demand forecasts.

Coyle et al., (1996) consider a principal advantage of MRP is the ability to maintain reasonable safety stock levels and minimize or eliminate inventories wherever possible.

2.1.5.4 Disadvantages of MRP Systems

(Nahmias, 1997) states that, in a push system, items are produced based on a plan or forecast and pushed to the next level. (Simchi-Levi et al., 2000) stated problems that are associated with push systems are slow to react and sometimes even unable to react to changes in the market place; Product obsolescence may occur in a push system as consumer preferences and demand changes for a certain product; and Inventory and carrying costs are generally higher in a push system (Simchi-Levi et al., 2000).

However, the trade-off in costs associated with MRP concepts is between having the materials arrive before they are needed, in which case they are subject to a holding charge, and the expected cost of the materials arriving after they are needed so the materials are subject to a late charge. According to Ballou (1999) the challenge of scheduling models (MRP) is to determine the optimal time to release the request for materials ahead of requirements.

Moreover, a major problem with MRP modeling is that not all uncertainties are taken into account. Uncertainties include changes in demand that were not captured by the forecast and the variance in lead-times. Ballou (1999) further adds that the challenge of MRP is to find the optimal release time for materials to meet requirements. There is uncertainty associated with the release time as the required time for the transportation component of the supply chain may vary between points.

2.1.5.5 Reasons for the Failures MRP

Many authors state that struggles associated with MRP systems to be implemented correctly, to a certain extent, with organizational and behavioral factors (Turbide, 1995; Chase and Aquilano, 1995). Yet, it seems to be generally agreed that failure of an MRP installation can be traced to problems such as:

Lack of Top Management Commitment

MRP system requires a major commitment from top management in order for it to be successful. This means not only the commitment of resources, but also the commitment of top management's time to ensure the right coordination among the various functions. A well-functioning schedule can use the firm's assets effectively and efficiently, and this in sequence

will increase the firm's profits. Thus, MRP should be acknowledged by top management as a planning tool with particular reference to profit results (Chase and Aquilano, 1995).

Intensive executive education is needed

In nearly every study conducted, the lack of proper training is considered a key barrier to MRP implementation. (Raysman, 1981), comments that lack of understanding about systems is frequently quoted as a reason for failure of companies endeavors. (Sum and Yang, 1993) recognized that the lack of MRP expertise and training were main problems facing companies to implement MRP. In a desire to convert to the new system quickly, there is often an under performance in the training of personnel at all levels.

However, proper training is required from the technical perspective as well as from the users' perspective. Thus, the IT department within an organization needs to entirely understand all of the technical characteristics of the system in order to provide the proper support to the business functions that use it. Simultaneously, the business functions need to recognize the different procedures for entering data and producing reports.

Too rigid

The aims of the MRP system are to minimizing inventory investment, and maximizing production operating efficiency (Chase and Aquilano, 1995), thus the accuracy of the recorded levels becomes significant. Chase and Aquilano (1995) state that "Perhaps one of the biggest complaints by users is that MRP is too rigid. When MRP develops a schedule, it is quite difficult to veer away from the schedule if need arises".

2.1.6 Manufacturing Resource Planning (MRP II) Systems

As it was shown, the MRP contains a method for planning and procuring the materials to support production. During years of using MRP, the need for other functions arose that would, together with MRP, create an actually integrated manufacturing management system. Thus, it was done by creating a large production control system named manufacturing resources planning (MRP II).

2.1.6.1 Definition of MRP II systems

Manufacturing Resource Planning (MRP II) system is defined by the American Production and Inventory Control Society (APICS) as a system for the effective planning of all the resources of a manufacturing business (Higgins et al., 1996). It is a direct successor of the Material Requirements Planning (MRP). MRPII is concerned with managing the flow of material into, through, and out of the organization (Arnold, 1998).

Thus, MRPII is a system in which the entire production environment is evaluated to allow master schedules to be adjusted and created based on feedback from current production/purchase conditions (Bedworth and Bailey, 1987).

2.1.6.2 Functions of MRP II Systems

The functions of MRP II according to (Higgins et al., 1996), it enables operation and financial system is the same; enable predictions to be made beforehand, involves every facet of business from planning to execution and also it is extremely important that feedback from the process is monitored regularly. Information that is shared among functions can help to reduce errors, especially with lead times (Kessler, 1991).

2.1.6.3 Disadvantages of MRP II Systems

The inaccuracy of the bill of materials and inventory database is a common problem with MRP II systems (Bayhan, 1999). Inaccurate bills of materials mean inaccurate material and capacity plans. Providing a management system that will facilitate data accuracy will likely require major adjustments in strategic management approaches (Correll, 1995).

However, the MRP II systems contain a method for planning and procuring the materials to support production. During years of using MRP II, the need for other functions arose that would, together with MRP II, create an actually integrated manufacturing management system. Consequently, it was completed by creating a large production control system named Enterprise Resources Planning (ERP) Systems. The following section will explain this system.

2.1.7. Enterprise Resources Planning (ERP) Systems

ERP is an extension of MRP II with additional capabilities, such as better graphical user interface, the use of relational database, fourth language generation, open system portability, and is much more integrated than MRPII (Boyle, 2000). In addition, (Kapp et al., 2001), state that the differences between ERP and MRP II is the inclusion of a variety of manufacturing processes within ERP, in which modern ERP software is able to handle both discrete work orders and flow orders, Just-In-Time (JIT) and MRP, Electronic Data Interchange (EDI), and hand-entered orders. (Wainwright, 2002) also stated that MRP was used for tracking suppliers, work-in progress and the output of finished goods, while ERP was used for all type of business with additional functions including financials, payroll and human resources management.

According to Wallace and Kremzar (2001) ERP is far better than MRP II for three reasons: ERP applies a single set of resource planning tools across the entire enterprise, Provides real-time integration of sales, operating, and financial data, and ERP connects resource planning approaches to the extended supply chain of customers and suppliers.

2.1.7.1 Definition of ERP Systems

ERP is the technological back bone of electronic business (e-business) in the back office. It was common during the 1990s to find the computing software for the finance department was different from that used by the human resources or stores departments. According to (Kalakota and Robinson, 2001) ERP “overcomes the integration challenges posed by disconnected, uncoordinated back office applications that have often outlived their usefulness”.

There are several ERP definitions that are all more or less similar (Hicks, 1997). ERP is defined as module-based integrated software packages that control all the personnel, material, monetary and information flows of a company (Granlund and Malmi, 2002).

(Gelinas et al., 1999) suggest an alternative definition for ERP systems as “integrated software packages designed to provide complete integration of an organization’s business information processing systems and all related data. “These systems are conceptually based on event-driven systems concepts, which include the capturing of both financial and nonfinancial data to facilitate access and ad hoc analysis”. (Gelinas et al., 1999).

Yet another definition is given by (Wallace and Kremzar, 2001), they state that ERP systems are an enterprise-wide information system solution set of management tools that balances demand and supply, including the ability to link customers and suppliers into a complete supply chain, employing confirmed business processes for decision-making, and providing high degrees of cross-functional integration among sales, marketing, manufacturing, operations, logistics, purchasing, finance, and human resources, thereby enabling people to run their business with high levels of customer service and productivity, and simultaneously lower costs and inventories; and providing the foundation for effective e-commerce (Wallace and Kremzar, 2001).

Thus, for the purpose of this paper ERP can be defined as software that can be used to integrate information across all functions of an organization to automate corporate business processes. Some ERP systems, according to (Markus and Tanis, 2000), were developed out of administrative (financial and human resources) sides of the business (e.g. SAP and PeopleSoft), and others grew from materials resource planning in manufacturing (e.g. Baan).

2.1.7.2 Feature of ERP Systems

The many features of ERP systems have greatly increased the quantity and quality of information provided to enterprises, helping them to achieve efficiency in their management processes. Over the years, much has been learned about the success of ERP systems. Several researchers show that ERP provided tremendous support for business planning and organizational objectives (Bingi et al., 1999).

Some of the major feature of ERP and what ERP can perform for the business system are as below based on the literature reviewed.

Integration

ERP first appeared on the decision-support horizon in the early-1990s (Granlund and Malmi, 2002). As an integrated enterprise-wide information system, ERP was designed to provide managers with easy access to internal and external information that are crucial to the success of a company in the business environment. Companies need to establish a streamline business process, which can significantly enhance the communication and cooperation among functional departments. To achieve this objective, functional integration is required (Zheng et al., 2000; Tarn et al., 2002). The current ERP systems provide companies with the mechanism to

systematically and effectively measure the performance of key business processes and evaluate the contribution of various aspects of the business (Davenport, 1998).

An ERP System has the potential to integrate all processes and functions of a business, and to present a complete picture of the entire organization. ERP assures “seamless integration of all the information flowing through a company” (Davenport, 1998) by means of a single database that enables the various departments within an organization to successfully share information and contact each other (Hedman, 2002). The single database approach means common access to a single set of data.

Packages

ERP Systems are commercial packages that are bought from software vendors (e.g. SAP, Baan, Oracle, J.D. Edwards and People Soft) (Harrell et al., 2001). Software vendors such as SAP, People Soft, and Oracle have developed a variety of applications suitable for adoption by financial services industry, highlighting the change from the more traditional uses of ERP systems within business to a more general perspective (Martin, 1998). (Pawlowski et al., 2000) indicate that ERP packages can be considered shared information systems, which are systems which cross typical organizational boundaries and therefore have multiple users and stakeholders who have different cultures and approaches to work.

Best practices

Best practices can be defined as “those practices that have been shown to produce superior results selected by a systematic process; and judged as exemplary, good, or successfully demonstrated”, these practices are then adapted to fit a particular organization (APQC, 1997). The use of best practices, when incorporated within all areas of an organization, including its stakeholder relationships, can lead to an organization attaining world class performance. ERP packages are intended to fit the needs of many organizations, and therefore support generic business processes. ERP vendors therefore claim to have designed “best practices”. By looking at academic theory and individual companies, they claim to have designed the best way to do business (Markus and Tanis, 2000). Best practices in an ERP System are captured in the different choices that must be made when implementing the system. An ERP System generally has a number of different best practices available, which implies that a company can customize the software significantly and make it fit the specific needs of the organization. For example, SAP’s R/3 system offers more than 1.100 best practices. Because such a large number of best practices are available, virtually each implementation is unique. Since, the portfolio of best practices chosen varies from implementation to implementation (O’Leary, 2000). However, since ERP

packages are based on best practice they are of a normative nature. Because of the normative nature of ERP, the performance often requires changing business processes and therefore includes at least some degree of Business Process Reengineering (BPR) (Hedman, 2002). BPR can be defined as “the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in measures of performance such as quality, speed and services” (Hammer and Champy, 1993). BPR is a vital part of the process innovation, helping in the redesign and re-evaluation of the processes used in organizations to achieve their objectives (Turban et al., 2000). However, the inclusion of BPR in the implementation of ERP adds considerably to the risk and expense of the implementation (Markus and Tanis, 2000).

2.1.7.3 Advantages of ERP Systems implementation

The benefits of installing an ERP system are wide spread. An ERP system restructures a company’s data flows and provides management with a direct access to a wealth of information (Davenport, 1998). According to Wallace and Kremzar(2001), operating the business in a rapidly changing and highly competitive environment is the primary purpose of implementing an ERP system. (O’Leary, 2000) states that “one of the primary reasons for the movement toward ERP is that the competition has it [and that] a lot of ERP purchases are premised on the need just to stay in business”. Thus, the implementation of an ERP System can be seen as a competitive necessity. Although implementing an ERP system may be costly and time consuming, the benefits are worthwhile. With careful planning and selection of the right ERP system, a company may expect to achieve significant benefits including dramatic increases in responsiveness, productivity, on-time shipments and sales, as well as decreases in lead times, purchase costs, quality problems, and inventories (Wallace and Kremzar, 2001). According to a survey regarding R/3 cited in (Al-Mashari, 2001), the most common reason for implementing ERP is standardization of processes and systems. Another much cited reason for implementing ERP is the mixing benefits of the system (Al-Mashari, 2001). While the ability to enhance the management of internal processes is one benefit of implementing an ERP system, enterprise resource planning also benefits many of the external processes of an organization.

(Turban et al., 2000) argue that ERP system assists with customer relationship management by offering customers a more efficient and higher-quality level of service, including the ability to order products online and to inquire about product pricing and the status of an order. (Kalakota and Robinson, 2001) explain that for large companies, ERP speeds communications and the distribution and analysis of information, facilitating the exchange of data across corporate divisions by unifying the company’s key processes, product planning, logistics, accounting and

financial services, human resources and sales distribution. ERP system enables an organization to integrate all data that is used in the entire organization.

2.1.7.4 Disadvantages of ERP Systems implementations

Although the implementation of an ERP System brings many advantages, it may also bring disadvantages. One of the main disadvantages is the lack of feature-function fit between available packages and company needs (Markus and Tanis, 2000).

ERP implementation can be a considerable drain upon an organization in terms of both cost and development time. Even a medium-sized installation can take up tens of millions of dollars and require years of tweaking before the benefits appear. This is reflected in the identification that approximately 90 per cent of ERP implementations are late or over budget (Holland et al., 1999).

It takes an average of eight months after the new system is installed to see any benefits (Koch et al., 1999). ERP's can have a negative impact on the work practices and culture of an organization if it is being implemented inaccurately (Soh et al., 2000). However, the more the accurate ERP implemented the more benefit the company will achieve

2.1.8. Implementing Enterprise Resource Planning (ERP) Systems

The implementation of an ERP changes the way organizations perform business and how people complete their work (Koch et al., 1999). Consequently, the implementation of ERP systems ultimately results in changes to processes (business-oriented activities), which in turn inflicts changes to work practices (people-oriented activities).

ERP implementation should involve the analysis of current business processes and the chance of re-engineering, rather than designing an application to make the best of bad processes (Scheer and Habermann, 2000). The implementation of ERP software is not a technical task. The implementation of ERP systems is a business-based endeavor, as organizations try to match the technological imperatives of the ERP software with the business needs of the company.

(Davenport, 1998) states that technical challenges are not the main reasons that enterprise systems fail. Organizations fail to reconcile the technological imperatives of the ERP system with the business needs of the enterprise itself (Davenport, 1998).

Although statistics are quoted showing many companies are adopting ERP technology (Kumar and Hillegersberg 2000), it may be contested that these are following a trend rather than making sound business decisions (Caldas and Wood 1998).

Primary implementation motivators are often cited as a desire to integrate all parts of a business, achieve business change, replace outdated, unsupported software, to take into account new tax restrictions, and overall, to improve company stability and increase competitive advantage and profit (Davenport, 1998; Kumar and Hillegersberg, 2000; Markus and Tanis, 2000).

2.1.9. Reasons Why ERP Implementations Fail

Implementing a new ERP system does not always guarantee successful results. There is according to (Bermudez, 1998) number of reasons why ERP systems failed to improve manufacturing planning: The level of detail in ERP systems is too rough for adequate decision making. Also, the existing technology which is used for ERP systems does not allow greater detail for real time analysis and simulation, which enables adequate decision-making; the tools used within ERP systems are used infrequently and are sometimes incomprehensible for senior management; and there is no consideration given to the interdependency of material and capacity availability (Bermudez, 1998). Other reasons why ERP systems failed according to (Kappet al., 2001) can be: Inadequate training: As companies try to cut back on the budget for implementing an ERP system, the first item on the chopping block is often training. This will seriously hamper long term chances of success. Employees' resist: The real reason ERP implementations fail is because employees resist the new ERP software rather than embrace it (Kappet al., 2001).

Companies fail to reconcile the technological imperatives of the ERP with the business requirements of the enterprise itself (Davenport, 1998). If a company rushes to install an ERP without first having a clear understanding of the business implications within an Internet economy, the dream of integration can quickly turn into a dreadful. The logic of the ERP may conflict with the logic of the e-business. Thus, the main reasons for ERP implementation failures are due to business and management problems (Davenport, 1998; Al-Mashari, 2003)

2.1.10. ERP and E-business

The Internet continues to grow as a medium for commerce, allowing a company to conduct business everywhere, all the time. E-commerce and the Internet eliminate the constraints of time and in operating a business and enable a multitude of connections between customers, suppliers and trading partners (Fingar et al., 2000).

E-business according to (Ahmed et al., 2003) can be defined as a shorthand term that embraces a complex mixture of technologies, infrastructures, processes, and products brings together whole industries and narrow applications, producers and users, information exchange and economic

activity into a global marketplace called “the Internet”. Similarly, (Kalakota and Robinson, 1999) maintain that “e-business is about redefining old business models, with the aid of technology, to maximize customer value”.

The characteristics of the new economy has increased the level of competition in all the industries and the internet presents an important opportunity for even small firms to launch new products or services because of the speed and low cost of doing business (Alwabelet al., 2003).

E-commerce also reduce inefficiencies caused by buyer search costs to obtain information about the price and product offerings as well as the cost of sellers to communicate information about their prices and product offerings (Lynch and Ariely,2000). By assembling a network of partners that specialize and excel in the links of the value chain, it is possible for organizations to achieve new levels of quality, flexibility and cost savings.

ERP and e-business are not competitive systems. Their greatest benefits can only be achieved when they are used in agreement, completing each other. Thus, without successful ERP system thee-business systems would have only little to present, as in today’s new business environment, power has shifted toward consumers who demand intelligent products that deliver new dimensions of value time and content in addition to the current ones price and quality (Aldrich and Douglas, 1999).

The basic functionality of ERP and the e-business are different. Yet, ERP is an integrated software packages system that handles organization’s internal information whereas e-business is fundamentally a distribution medium and does not involve a lot of processing.

Although the information flowing through e-business is becoming more willing to processing all the time, it is still processed by applications, and the best business applications are still ERP and other enterprise packages from major vendors. 66 % of IT manager, according to a recent survey of e-business and ERP (Norris et al., 2000), viewed ERP as their most important and strategic platform because it provides a solid foundation and information backbone for e-business.

When ERP and e-business are properly implemented, they supercharge each other. Best vehicle to share business information with partners for creating major B2B synergies (Norris et al., 2000). A fully integrated ERP system will capture and create accurate, consistent and timely relevant data, and assist in intelligent business decision-making when any parts of the supply chain have access to other’s business information, organizations can streamline their processes and automate data processing and business activities all through the supply chain (Norris et al.,

2000). Furthermore, ERP systems according to (Jaiswal, 2002) can be organized to smoothly integrate various business functions and even can be extended to external business partners.

2.1.11 ERP Future Trends

The ERP system has had a major impact on the manufacturing industry for a decade. The ERP system can serve the manufacturing businesses as well as other industries, such as financial services, health care, and the consumer goods sector. The future of ERP is all about improving the supply chain and promotion greater collaboration across multiple enterprises. ERP vendors now provide continuous product enhancements to the organizations that already have ‘gone live’ with their ERP package. Customer Relationship Management (CRM) and Supply Chain Management (SCM) are functions that ERP vendors are now attempting to sell to organizations that have already bought and implemented an ERP package (Chen, 2001)

2.1.12. ERP Life-cycle

As previously mentioned on different studies, there are many ERP systems lifecycle models developed. Indeed, the infamous enterprise systems implementation process lifecycle model developed by (Markus et al, 2000) is one of the most adopted models in ERP literature, however, in this section the study going to present the model developed by (Jose et al., 2014).

The main reason behind selecting this model is that it includes the retirement phase which this study addresses also it is comprehensive. It consists of two phases that is structured using phases and dimensions framework. According to study, the phases are the different stages of an ERP system life-cycle within an organization and dimensions are the different viewpoints by which the phases could be analyzed.

2.1.12.1 Phases of the ERP Life-cycle

The phases of the ERP life-cycle consist in the several stages that an ERP system goes through during its whole life within the hosting organization. They are the following: adoption decision phase, acquisition phase, implementation phase, use and maintenance phase, evolution phase and retirement phase. Next follows a brief sketch of each.

Adoption decision phase

This phase is the one during which managers must question the need for a new ERP system while selecting the general information system approach that will best address the critical

business challenges and improve the organizational strategy. This decision phase includes the definition of system requirements, its goals and benefits, and an analysis of the impact of adoption at a business and organizational level.

Acquisition phase

This phase consists of the product selection that best fits the requirements of the organization. Thus, it will help to minimizing the need for customization. A consulting company is also selected to help in the next phases of the ERP life-cycle especially in the implementation phase. Factors such as price, training and maintenance services are analyzed and, the contractual agreement is defined. In this phase, it is also important to make an analysis of the return on investment of the selected product.

Implementation phase

This phase consists of the customization or parameterization and adaptation of the ERP package acquired according to the needs of the organization. Usually this task is made with the help of consultants who provide implementation methodologies, know-how and training.

Use and maintenance phase

This phase consists of the use of the product in a way that returns expected benefits and minimizes disruption. During this phase, one must be aware of the aspects related to functionality, usability and adequacy to the organizational and business processes. Once a system is implemented, it must be maintained, because malfunctions have to be corrected, special optimization requests have to be met, and general systems improvements have to be made.

Evolution phase

This phase corresponds to the integration of more capabilities into the ERP system, providing new benefits, such as advanced planning and scheduling, supply-chain management, customer relationship management, workflow, and expanding the frontiers to external collaboration with other partners.

Retirement phase

This phase corresponds to the stage when with the appearance of new technologies or the inadequacy of the ERP system or approach to the business needs, managers decide if they will

substitute the ERP software with other information system approach more adequate to the organizational needs of the moment.

2.1.12.2 Dimensions of the ERP Life-cycle

In this part the researcher defined four areas of concern or viewpoints by which the different phases of the life-cycle should be analyzed: product, process, people and change management.

Product

This dimension focuses on aspects related to the particular ERP product in consideration, such as functionality, and on related technical aspects, such as hardware and base software needs. A thorough understanding of the software tool's capabilities must exist in order to make an alignment with the business strategy in order to determine whether the software is being used effectively, in accordance with the needs of the organization, and how it can best be applied to further the goals of the organization.

Process

Each organization has its own core capabilities and functionality that must be supported by an ERP system. Also, an ERP system must help the decision making required to manage the resources and functions of the organization. Usually, the main ERP investment focus is on re-engineering processes to enable the organization to adapt to the new business models and functional requirements of the ERP system in order to achieve better performance.

People

This dimension refers to the human resources and their skills and roles in an ERP system life-cycle. These skills and roles must be developed to minimize the impact of the introduction and diffusion of an ERP system, in order to reduce risk and manage complexity, while facilitating organizational change. Dealing with contingencies, changing practices, and adapting to a new organizational structure and culture are some aspects that must be learned.

Change management

This dimension refers to the body of knowledge that is used to ensure that a complex change, like that associated with a big system, gets the right results, in the right timeframe, at the right costs [Holland & Davis, 1998]. The change management approach tries to ensure the acceptance and readiness of the new system, allowing the organization to get the benefits of its use.

2.1.13. ERP Critical Success Factors

In the past few years, reviewers have published articles that have given attention to the factors that contribute to the success of ERP implementation (Ahn& Choi, 2008). Others focused on indicating how ERP implementation succeeds. They concluded that ERP can be identified when the business organization can achieve its objectives at the most desired duration and according to the most specific budget. It is alleged that ERP succeeds when it enables the organization to minimize costs of production and maximize revenues, through assigning a project group and project manager that are committed, select the appropriate system that matches the organization, and vendor support with qualified skills and wide knowledge (Dezdar&Sulaiman, 2009).

Numerous prior studies attempted to approach the factors that can be named behind the success of ERP implementation in different types of business organizations. These factors refer to a set of critical success factors (CSFs) for ERP implementation. These critical success factors (CSFs) are alleged to involve: (1) support from the senior management in the organization, support of the vendor, competence of consultants, support from the users, capacities of the organization's IT, and leadership of the project management. However, business process re-engineering was not considered as an effective factor in the success of the implementation process of the ERP system by (O'Connor, 2012). In addition to other reviewers, who indicate that the most significant factors that contributed were only the management of the project, activities of consultant planning, and internal auditing (Basu&Lederer, 2011).

Similar to the previous research study, Hasibuan and Dantes (2012) considered 20 key success factors of ERP system implementation and also related them to the ERP system implementation stages. The stage of implementation is one of the most important key success factors identified as follows: communication factors, appropriate selection of ERP package in project preparation, change management, and users. Business process re-engineering was dropped as a less effective factor.

While Shatat (2015) reviewed the previous literature and ordered the 20 factors into three categories high, medium, and low depending on their degree of importance. He reached the top ten and ranked them respectively, these factors are top management support, user involvement, clear goals & objectives, strategic IT planning, user training & education, vendor support, teamwork & composition, project champion, monitoring & evaluation of performance, and education on new business processes. He pointed out that organizations should take these factors into account to help them implement the ERP system successfully.

Ziamba and Oblak (2013) identify essential critical success factors for the implementation of ERP systems in public administration by dividing the factors into four categories related to public procurement procedure, government processes management, project team competencies, and project management. The study found that the following factors are critical for the implementation of systems. These factors are clear goals and objectives, identified processes, process re-engineering, project team competence, consultants, cooperation with research centers, expertise in IT, top management support, clear roles and responsibilities, change management, risk management, end users' involvement, communication, and project management.

In the sum of articles that shed light on the factors that stand behind the successful implementation of the ERP system, a set of factors were explicitly discussed. This set of success factors has been reached based on a review of academic and industry literature; the following factors are identified as factors of ERP implementation success:

Proper and successful implementation of ERP occurs when there is clear identification of the vision, goal, and business plan that lead the organizations strategy and business goals showing the merits, resources, costs, and risks. Research has focused on the essential need for organizations to set their scope and objectives as clearly as possible just before starting to implement their ERP system (Kronbichler et al., 2009).

2.1.13.1 Top Management Commitment and Support

The second factor in the set that enables organizations to successfully implement their ERP system is the support received from the organizations management. This support seems to be essential for implementing ERP (Garg, 2010). Once top management delegates the process of ERP implementation to lower levels of management, there is less commitment to the successful implementation of the ERP system. When top management positively supports and motivates the implementation of ERP, success is anticipated (Basu&Lederer, 2011).

2.1.13.2 Project Management

Thirdly, when the organization effectively manages the ERP project, success is almost granted for implementing the ERP system. Thus, reviewers claim that it is important to plan properly for ERP systems implementation. The organization needs to have an integrated approach to satisfy the needs of different functional areas in the organization. When there is effective management, the organization is likely to adequately plan, organize, and monitor these different activities related to ERP implementation (O'Connor, 2012).

2.1.13.3 ERP System Matching the Organization

The organization has to study and review many ERP systems implemented in business processes, to choose the most convenient and applicable system for its own operations. Therefore, fitting the ideal ERP package to the organization should consider timeline, budget, and process. The organization should concentrate on a certain business process and requirement by using gap analysis to identify the dissimilarities of what the system can offer them and what they need, to provide a guideline on which package best matches their business process (Almuharfi, 2014).

2.1.13.4 User Training and Education

Users of the ERP system must have the appropriate skills and capabilities while running the system, namely they should be aware of its concepts, features, and logic. Hence, the relevant aspects of training content were divided into features of the ERP system software, logic and concepts of ERP, and hands-on training (Alsabaawi, 2015).

2.1.13.5 Business Process Re-Engineering (BPR)

In addition, one of the essential factors that are crucial for ERP implementation success is business process re-engineering. It is understood as the core brainstorming and comprehensive redesign of business processes to reach considerable improvements in concurrent measurements of performance, like quality, cost, speed, and service. To reduce customization activities, organizations should have the ability to fit the ERP system by differentiating their business from others. This reality necessitates an examination of business processes, which is one of the critical and beneficial results of ERP system implementation. There is no one ERP solution, which can be demonstrated to be a cure and satisfy every business requirement. Thus, organizations always face the challenge of integrating different system packages from many vendors and demand business process re-engineering of a high standard (Abdelrazek, 2015).

2.1.13.6 Communication

There is no doubt that when an organization possesses effective communication among its stakeholders internally and externally, the success of the ERP system implementation is granted, communication, data sharing, and knowledge concerning the project gives particular power to the participants so that better results occur (Chen et al., 2008).

2.1.12.7 Change Management

Managing change within the organization includes creating some balance of the forces that stand behind change against those forces that reject change. Reviewers allege that when the organization essentially understands the need for change, they are likely to remain competitive. Moreover, implementation of the ERP system is anticipated to succeed (Hasibuan&Dantes, 2012).

2.1.13.8 Cultural Factors

There are clues that when the organization understands the cultural factors and their importance to the implementation of the ERP system, the employees of this organization are likely to cooperate to make the ERP system implementation succeed. Writers in this domain allege that the culture of the organization and the ability to manage change are among the factors that are most cited when describing the success of ERP implementation (Wittstruck & Teuteberg, 2012).

2.1.13.9 Vendor Support

Having qualified vendor support is a material advantage in implementing the ERP system stage, where the initialization of the system needs to be very accurate and professional in a way that launches it appropriately. The essential tasks and operations should be examined to detect bugs and errors to reduce problematic issues in the next phase. However, the testing and examination of the system will not prevent technical and operational issues from arising here, when the organization would need consultation and guidelines to solve these issues. In addition, difficulties in processing some transactions while operating may need the customization of a specific type of processing where the vendor can put in a customized option that will fill this need. On a regular basis, organizations and users of the ERP system will need consultancy help on how to implement the transactions and management to monitor the practice of users (Vilpola, 2008).

2.1.13.10 Implementation Team

The presence of staff members who are experts in ERP project implementation and their involvement in the implementation process promotes success. The literature confirms that when the implementation team possesses more experience and knowledge, there are more chances for success (Chao et al., 2012).

2.1.12.11 ERP User Involvement

User involvement is one of the most critical factors for implementation success. Active user involvement in the design and implementation of the system often leads to user acceptance and facilitates the desired transformation (Moon, 2007).

2.1.13 Reasons for Automotive companies to go for ERP

Information Technology has become an important part of our daily activity. IT and Information Systems changed the business atmosphere.

Nowadays, many companies have responded to these changes by automating their business processes and capturing industry-related information and using it to their advantage. Technology

has also forced businesses to remain flexible, adapting their operations to newer and better technological advances (Krume, 2012).

Apart from that in the age of globalization and competition, firms seek to advance or maintain their competitiveness by using information systems to improve customer service, shorten cycle times, and reduce cost. In line with this, firms seek to increase the quality & speed of information exchange between upstream and downstream department units by using computer hardware and software systems to improve the flow of information among organizational units to advance or maintain best competitive advantage. According to Wallace and Kremzar(2001), operating the business in a rapidly changing and highly competitive environment is the primary purpose of implementing an ERP system.

For companies to improve transparency of their business, they need to have up-to-date information about all operation and financial indicators, assets and resources of all departments and divisions. Actuality is very important: information for the previous quarter or month will not help in making justified decisions. Hence, the requirements for a powerful system that can quickly process large volumes of information are highly required.

ERP is an information system for company management, designed for the efficient planning and management of all company resources, as well as for the automation of all or individual key business processes. This solution enables proactive resources management for the quick adaptation of business processes to changing market conditions and allows evaluations of company's current state of affairs, which helps to increase the company's competitiveness across the board.

With the similar reasons mentioned above some well-known automotive companies in Ethiopia, introduce this system with the vision of becoming world class businesses & service provider. ERP system implementation provides best quality of business for the customers in all aspects of product and services for the fulfilling the expected requirement and to support the steady growth of the country's economic development.

Thus, the major reasons that drive the automotive companies to choose for ERP are mainly related to improving company's performance and decision making, to reduce labor costs, bureaucracy and other related errors. And the other reasons are: to enhance the integration among work units, and establish organizational standardization across different locations.

2.1.14. Conceptual Framework

A conceptual framework is an analytical tool with many variations and contexts. It is used to make conceptual distinctions and organize ideas by using diagrams or charts and the like. Hence, the study tries to see the relationship between Independent variables (project team understanding about change, ERP system matching organization, user training & top management commitment and support) and dependent variable (ERP System implementation success). The study chose these variables due to the fact that previous researchers which are discussed in the literature review section identified that these variables are the critical success factors (CSF) that affect ERP implementation. Moreover, these variables are the one that captures the essence of the study.

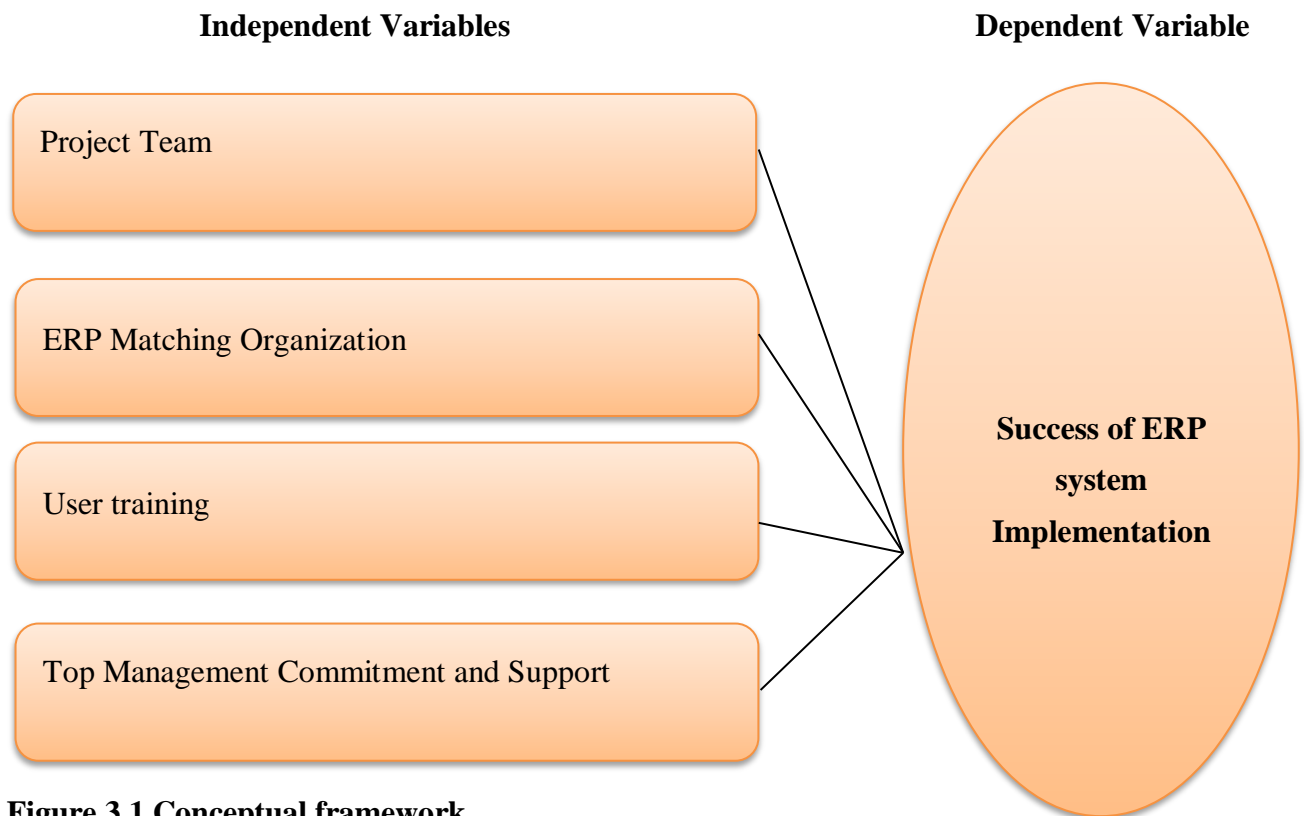


Figure 3.1 Conceptual framework

Source: Designed by the researcher

2.2 Empirical Evidence

A number of studies have been conducted on risk management. This section will review the empirical studies in view of the study.

Javad& Mohsen (2012) studied the challenges of ERP system implementation: focused on identifying ERP as a Technology Transfer Project. The aim of the study was identifying CSFs of ERP implementation. In this study sees ERP system implementation from a technology transfer perspective. The study revealed that Critical Success Factors (CSFs) that integrate the concepts of ERP implementation and TT. The study employed exploratory research design. A questionnaire based on these CSFs was designed and distributed among four Iranian large companies and their ERP developers. Based on EFA, 26 identified and validated CSFs were clustered into five main Factors. These five factors are named: Culture, Organizational Structure, Project Management, Support Activities & Training Issues, and the Interaction between Transferor and Transferee. The study recommended that, through learning from TT literature review and practice, we can find a set of main factors that decrease complicated challenges in ERP implementation and increase success chance of implementation.

Ahmad (2015) conducted a research on the Critical Success Factors in Enterprise Resource Planning (ERP) System Implementation. The study investigated the CSFs that play a crucial role during the implementation process in Omani organizations. Moreover, it identified the CSFs that are most important in ensuring a successful ERP system implementation. The study employed an exploratory Study design. The survey was distributed to 35 enterprises using an ERP system. The result identified 10 CSFs as the most important for Enter Resource Planning (ERP) System Implementation which are monitoring and Evaluation of Performance, Project Champion, Top Management Support, Clear Goals & Objectives, User Involvement, Strategic IT Planning o User Training And Education, Teamwork & Composition , Vendor Support and Education on New Business Processes.

Abazi et al. (2016) conduct a study on the Critical success factors in ERP implementation. This study conducts state of the art literature review of critical success factors for enterprise resource planning systems implementation success. Since research on critical success factors for ERP implementation success is very rare and fragmented, this study provides a more comprehensive list of ten factors that

companies that have adopted and struggle with the implementation, as well as companies who are in the process of considering implementation of ERP system can easily adopt and follow. The main contribution of this paper is that these ten new critical success factors are identified through a thorough analysis of 22 selected research papers and is more comprehensive and straightforwardly employable for use.

Mohamed & Sabaawi (2015) studied the Critical success factors for ERP implementation. The paper has discussed the critical success factors of ERP implementations in Cihan University. The study reveal 8 CSFs in relation to ERP implementations in high education sector at developing countries where identified and these are Commitment and support of top management, Project management, User training and education, Business Plan and Vision, Technological infrastructure, Departments (Stakeholder) participation, Change Management and Communication. The study used descriptive research design. A questionnaire was designed to collect primary data & analyzed using SPSS. The study has contributed to academic research by producing the empirical evidence to support the theories of CSFs and ERP implementation success at higher education. Understanding these factors is critical for the progression of the field in both academia and practice; therefore, providing a strong foundation of CSFs for further research in ERP implementation is very essential. All of these eight aspects are important to be aware of and managed in order to ensure the success of ERP initiatives in developing countries.

Kumar and Rawani (2016) conduct a research on ERP system implementation issues and challenge in developing Nation. Issues and challenges of ERP system implementation in developing nations differ from those of developed nations. The main objective of this study is to unearth the issues and challenges of successful ERP system implementation in developing nations like India. Data are collected by having an extensive literature review of about past fifteen years. Analysis and synthesis of collected data reveals that clear scope of implementation, top management commitment, proper implementation strategy, proper vendor selection, project management, user training & education, end user involvement and lack of experienced implementers are the important issues and challenges. The study suggests that understanding of issues and challenges will help organizations to adopt appropriate implementation strategies leading to success of ERP system in an organization.

Omar & Rami (2016) conduct research on Factors Influencing the Success of ERP System Implementation in the Public Sector in the Kingdom of Bahrain. The study aims empirically to analyze

the critical factors that impact the success of ERP system implementation in the public sector in the Kingdom of Bahrain and to clarify the benefits gained from the implementation. The study used a questionnaire as a measuring instrument. The finding revealed that The CSFs are top management commitment and support, ERP system matching organization, business process re-engineering, vendor support, and training users found to have a significant impact on ERP system implementation and the results illuminate the high level of success in implementing ERP systems. While simultaneously demonstrating that an organization with a functioning ERP system does not achieve the desired benefits by default, but rather the organization requires certain Critical Success Factors (CSFs) to be present and in effect for those benefits to be achieved.

Enderas (2017) conduct research on assess the implementation of Enterprise resources planning in ethio-telecom. The purpose of the study to assess the second phase implementation of Enterprise resources planning in ethio-telecom and to recommend possible solutions for the gap created during the implementation. As a result, the researcher has tested the implementation effectiveness by selecting major effectiveness variables and other related concepts. This research has a descriptive nature. The questionnaires were used as data collection instrument. The result revealed ERP system was not properly implemented as the basis of the selected variable. There was a lack of top management commitment; lack of appropriate training for all system users and as well as lack of allowing user to participate on the implementation process. Thus, the researcher recommends that the top management is expected to improve in the area top management commitment on ERP project. In addition, the company has to consider the way to give adequate training and development for both end user as well as super user to bring the required level of skill on the system. Finally the company should emphasis allowing user to participate on the implementation process have an advantage in the real situation.

Sintayehu (2014) conduct research on Success Factors for Implementation of Enterprise Resource Planning System at Ethiopian Airlines. The aim of the study was to identify the Success Factors for Implementation of Enterprise Resource Planning System at Ethiopian Airlines. The research takes the case of SAP ERP system implementation project at Ethiopian Airlines. The research is qualitative type case study. The result of the research found out twenty critical success factors for success of ERP systems. Factors such as project planning, top management support, project management and leadership, capability of consultants, change management and communication, organizational readiness and overall knowledge transfer are among the factors found to be critical for ERP system implementation in the Ethiopian context.

Haregewoin (2017) conducted a study on the Assessment of Critical Success Factors of ERP Implementation. The study was conducted with the pursuit of assessing the perception of warehousing operation employees of ethio telecom on critical success factors of ERP implementation. The study tries to analyze factors that made ERP implementation successful in the company warehouses located in Addis Abeba and examine the association between critical success factors and successfulness of ERP. Structured questionnaire was data collection instrument. Descriptive and explanatory research design was applying. The findings of multiple regression analysis done on SPSS showed that all the nine critical success factors (top management commitment and support, project management, user training, data accuracy, effective communication, change management clear goals and objectives, perceived usefulness and consultant support) were found to have a positive relationship with successfulness of ERP in ethio telecom warehouses. And except for change management the 8 variables (CSFS) were found to be the significant predictors of successfulness of ERP implementation in ethio telecom warehouses. In order to get the perceived advantages of ERP the company must work on change management and should also work more on the rest critical success factors.

2.3 Summary and Knowledge gap

Most Studies focus on an identifying the Critical Success Factors of ERP system Implementation. There are limited studies on assessment of ERP system implementation based on the components of CSF frame work in automotive industry. Even if the issue of ERP system implementation is equally important for all country, it is less focused and only few studies are conducted in Ethiopia. However, as per the researcher's knowledge no study is conducted to assess the ERP system implementation practice of automotive companies in Ethiopia by using the components of CSF framework. Hence, this study aims to fill the gap in the literature by focusing on the components of CSF to assess the practice of automotive companies in Ethiopia to implement ERP system.

CHAPTER THREE

RESEARCH APPROACH and METHODOLOGY

This chapter outlines the rationale of research design and methodology used in this study. It includes research design, Population & sampling source of data collection, data type & collection method, design, sample selection, data presentation & analysis, variables of the study, research instrument, data analysis methods, reliability and validity.

3.1 RESEARCH DESIGN AND METHODOLOGY

The methods and techniques used for this research are explained here below.

3.2. Research Design

The rationale of the research is to assess and describe the factors that affect ERP system implementation in the automotive industry, the major purpose of the research is description of the state of affairs as it exists at present, so the research design that was employed in this study is descriptive design.

Descriptive researches are those studies which are concerned with describing the characteristics of an individual, or group and it includes surveys and fact-findings enquire of different kinds (Sakaran, 2003:58).

3.3 Population and Sample design

According to Addisbiz.com (2019) there are 30 automotive companies in Ethiopia. Survey method of data collection was employed to select all the automotive companies which were implemented the ERP system. With this method five (5) private automotive companies that implemented ERP system were involved in this study. Namely:

- 1) RIES ENGINEERING S.C.
- 2) NYALA MOTORS S.C
- 3) THE MOTOR & ENGINEERING COMPANY OF ETHIOPIA Ltd. S.C. (MOENCO)
- 4) EQUATORIAL BUSINESS GROUP P.L.C. (EBG)
- 5) AUTOMOTIVE MANUFACTURING CO. OF ETHIOPIA (AMCE)

Purposive sampling techniques applied in selecting different managerial and no managerial employees of the company. According to this method, which belongs to the category of non-probability sampling techniques, sample members were selected on the basis of their knowledge, relationships and expertise regarding a research subject (Freedman et al., 2007).

The populations utilized for the study were 5 (five) automotive companies’ employees residing in the Head Quarter in Addis Ababa.

There were 1,500 staffs work in the selected respondent companies’ headquarters in Addis Ababa and 500 were staffed under those five companies divisions in which ERP is fully deployed.

Because of the geographical constraint, the study was concentrated on the staffs of Head Quarter in Addis Ababa. Moreover, studying different zones and regions would not bring significant different since company follows centralized management system most of activities are similar. As a result, 500 employees were taken as a population for this study.

To determine the sample size, formula of Glenn D. Israel from University of Florida was used.

Equation 1=
$$n_0 = \frac{Z^2 pq}{e^2}$$

This is valid where:

n_0 = sample size

Z^2 = abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the Desired Confidence level, e.g., 95%)

e = desired level of precision

p = estimated proportion of an attribute that is present in the population, and q is $1-p$.

*The value for Z is found in statistical tables which contain the area under the normal curve Then, the sample size determined for the large population have been used to determine sample Size for a finite population.

Therefore, the following formula is derived from equation 1:

Equation 2
$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where n is the sample size and N is the population size.

Hence, the sample size for the given population (500)at $e = \pm 5\%$, confidence level = 95%,

And $p = 0.5$ (maximum variability)

$$\text{Equation 1: } \frac{(1.96)^2 (.5) (.5)}{(.05)^2} = 385 = \text{given}$$

Finally, the sample size is determined using Equation 2: -

$$n = 385 / (1 + (385-1) / 500) = \mathbf{217 \text{ Sample size}}$$

Based on the above sample rate the questionnaires were distributed to all five automotive companies and the response rate summarized as follows.

Table 3.1: Questioner Distribution

Distributed			Type of Division	Distributed		Collected
Companies	Distributed	Collected		Managers	Non managers	
MOENCO	44	42	Finance and Property Admin	9	41	50
NYALA	44	44	After Sales	24	45	69
EBG	43	40	Administration & Human Resource	5	5	10
AMCE	43	41	Sales and Marketing	13	49	62
RIES	43	43	IT Department	5	14	19
Total	217	210	Total	56	154	210

3.3. Source of Data Collection

For the purpose of this research both primary and secondary data was employed to achieve the research objectives. The secondary data was collected from the company’s work processes, policies, procedures, forms, other documents which are linked with the ERP implementation and different literatures on the area. The primary data was collected through questionnaire. Primary data means first hand data. It includes open ended and close ended questions. According to (Kothari, 2004:32), this instrument of data collection is quite popular, particularly in case of big enquiries.

3.4. Data Type & Collection Method

In this study quantitative data for which its sources are primary was employed. The research instrument that was used in this study was questionnaires.

Questionnaires are lists of carefully structured questions with a view to exploring a reliable response from a chosen sample (Hussey and Hussey, 1997). Data was collected using primary data collection techniques. And it was gathered basically through structured questionnaires. Primary data was important for answering questions about the best practice of successful ERP system implementation. The questionnaire and an information sheet explaining the purpose of the study was distributed to all purposively select managerial and non managerial respondents of automotive companies' head quarter employees in Addis Ababa, Ethiopia.

The questionnaire was carefully designed in such a way that the respondents would understand easily. Due care also taken in developing the questionnaire items. Accordingly, it was developed by taking in to account the previous research questionnaire which has relation with the title ENDERAS (2017), automotive companies' ERP implementation guidelines and CSF for ERP implementation.

The questionnaire has five parts, the first part focused on the project teams clearly understand the change in its organization the second part system matching the organization, the third part, the user training & education/ capacity building program/ the fourth top management commitment and support and the fifth success of the implemented ERP system.

The questionnaires were arranged on the following range and the respondents were asked to indicate their level of agreement on a five-point Likert scale with the following ratings. Strongly agree (SA; or 5), agree (A; or 4), neutral (N; or 3), disagree (DA; or 2), and strongly disagree (SD; or 1). The numbers are indicating in the questionnaires to provide a feel of ordinal scale measurement and to generate data suitable for quantitative analysis. The central issue to argue that Likert scales produce ordinal data is because of no way at all of knowing whether the differences between the different points on the scale are truly equivalent, and the points on an ordinal scale are not necessary equally spaced as they must be in order for it to be regarded as an interval scale Hole (2011).

3.6 Data Analysis and Presentation

3.6.1 Data Analysis

According to Mugenda (2003), data analyses were used to process to bringing order, structure and meaning to the mass of information collected.

Once the needed information gathered the next step is analyzing it. To analyze the collected data, the computer software known as SPSS version 20 is employed.

In order to answer the research questions descriptive statics is used. Descriptive statistical methods such as frequency, percentage, standard deviation, mean, tables are used in order to describe the gathered data.

3.6.2 Data Presentation

The collected data in order to drawn meaningful conclusion, data is summarized and presented using appropriate table format for classifications of responses for easier understanding and also for visual impression by using tables which is expressed in the form of frequency, percentage and mean.

The collecting data from questionnaires is adopted and coded for completeness and accuracy and the response on each item put into specific themes in scientific way for easy analysis. The findings of Likert scale measures is evaluated according to Best; the score from 1-1.80 is lowest, from 1.81- 2.61 is lower, from 2.62-3.41 is average/moderate, from 3.42-4.21 is good/high, and 4.22-5 is considered very well. And, a value of SD of 1 and less shows less variability in a five-point Likert scale Best (1977).

3.7 Variables of the study

The variables of the study are Project teams clearly understand the change in its organization, ERP system matching the organization, user training and, top management commitment and support.

According to previously studied on (CSF) for ERP Implementation by different researcher is used to determining whether an entity’s ERP implementation is “effective” is a judgment resulting from an assessment of whether the six components are present and functioning effectively. Thus, the components are also criteria for effective/successful ERP system implementation.

3.8 Reliability and validity of the study variables

3.8.1 Reliability

As stated by Hair et al., (2007) reliability indicates the extents to which a variable or set of variables is consistent in what it is intended to measure” (Cited by Siddiqi; 2011:20). Reliability analysis used to measure the consistency of a questionnaire. There are different methods of reliability test, for this study Cronbach’s alpha is considered to be suitable. Cronbach’s alpha is the most common measure of reliability.

Table 3.1 Reliability test

Indicators	Number of items	Cronbach Alpha
Project Team Understanding change	7	.754
ERP Matching Organization	5	.645
User Training	9	.739
Top Management Commitment and Support	3	.773
Overall	4	.841

3.8.2 Validity

Conceptually, validity seeks to answer the following question: “Does the instrument or measurement approach measure what it is supposed to measure?” Similarly, as of Bhattacharjee (2012), Validity, often called construct validity, refers to the extent to which a measure adequately represents the underlying construct that it is supposed to measure.

Hence, to make measurement approach or instrument robust thorough analysis of both theoretical and empirical literatures were performed and consequently the study variables were developed. With regard to validity its attributes/items are developed taking in to account international standards, previous studies and the regulatory guidelines of ERP implementation of business companies.

3.9 Ethical considerations

The current study was subjected to certain ethical issues. All participants reported their written acceptance regarding their participation in the research, through a signed Consent and Briefing Letter. The information /data obtained from any source will be for the exclusively use of this study. It cannot be disclosed to any party & rather kept confidential. The right of respondents or other data provides are respected. At the same time, sample members were asked to sign a Debriefing and Withdrawal Letter. The aim of both letters is to reassure participants that their participation in the research is voluntary and that they are free to withdraw from it at any point and for any reason.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

Introduction

This chapter discusses about the presentation, analysis and interpretation. The study has been carried to assess Enterprise Resource Planning/ERP system implementation practice in automotive industry in Addis Ababa. Data are presented and analyzed based on data collected through structured questionnaires. For this purpose, 217 samples were taken from 500 staff members of ERP system implemented department of the five automotive companies, which are, Ries Engineering S.C., Nyala Motors S.C., Motor & Engineering Company of Ethiopia (MOENCO), Equatorial Business Group (EBG) and Automotive Manufacturing Company of Ethiopia (AMCE).

The descriptive analysis using frequency and percent, and inferential analysis were carried out for the response. The findings are intended to answer the study's research question. Some of the explanatory variable and respective results are combined and reports delivered in the form of tables and charts and qualitative analysis done in text. Moreover, regression analysis was run to measure the relationship between dependent & independent variable.

4.1 RESPONSE RATE

The study takes from the total of all 500 targeted populations 217 as sample targeted respondents and 210 questionnaires were filled in and returned that which makes a respondent rate of 97%. This response rate was good enough to make conclusions for the study.

4.2 The General Background of the Respondents

The background information of respondents was deemed necessary because the ability of the respondents to give satisfactory information on the study variables greatly depends on their background. In the following table, the demographic information of respondents is presented. These include gender, age, the level of education, work experience of respondents and division. To get information on these issues the respondents were asked a structured question and their responses are presented and analyzed as follows. The results of this survey processed using the SPSS software.

Table 4.1 Background Information

Demographic Information	Classifications	Frequency	Percent
Gender	Male	121	57.6
	Female	89	42.6%
	Total	210	100%
Age in years	Less than 26	47	22.4%
	26-35	77	36.7%
	36-40	46	21.9%
	Above 40	40	19.0%
	Total	210	100%
Level of Education	College Diploma	13	6.2
	BA/BSC	64	30.5
	Master & Above	133	63.3
	Total	210	100%
Employees Category	Director	9	4.3%
	Manager	26	12.4%
	Foreman	20	9.5%
	Supervisor	26	12.4%
	Staff	129	61.4%
	Total	210	100%
Service Years	<5	49	23.3%
	6-10	77	36.7%
	11-15	57	27.1%
	16-20	4	1.9%
	21and Above	23	11%
	Total	210	100%
Division	Finance & property admin	50	23.8%
	After Sales	69	32.9%
	Administration & Human Resource	10	4.8%
	Sales & Marketing	62	29.5%
	IT Department	19	9.0%

	Total	210	100%
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Source: Analysis of Survey data 2020, using SPSS 20

The respondents were asked to state their sex. This was necessary for the study to get a balanced picture of the respondents' views. As shown on the table 4.1 above, there are a total of 210 respondents, of these, 121 are male and 89 are female. The number of male and female respondents is almost proportional. These findings represent the views of the two sexual category groups about ERP System implementation.

The study sought to establish the background information of the respondents in terms of level of education the table 4.1 also indicates level of education of the respondents. Accordingly, out of 210 respondents, 30.5% have degree, 63.3% of the respondents have Master's Degree and 6.2 % have Diploma in different educational qualifications. These results indicated majority of the respondents have a good level of educational qualification that is Degree and Master's Degree. This implies that the respondents were equipped with the information concerning ERP system implementation practice and able to respond questionnaire accurately given to them by the researcher.

The other background information of the respondents is years of experience. As shown in the table above out of 210 respondents, 23 % of total respondents represent a group that covers 1 to 5 years of service experience, 37 % of total respondents represent a group that covers 6-10 years of service experience, 27% of total respondents represent a group that covers 11 to 15 years of service experience and the rest 13% of respondents were under the ranges of greater than 16 years of experience. One can understand 37% of the respondents have more than 6-year experience. It implies that most of the staffs acquired enough experience to understand ERP system implementation practice & able to respond the questioner appropriately.

4.3 The study Findings and Analysis

The main goal of the research is to answer the researcher questions. This section will provide an adequate amount of information to realize the research objectives, try to answer the research questions, and recommend possible solution. To assess the ERP system implementation find out what are the critical factors that most impact the success of ERP system implementation, this question was divided

into sub-questions. The following results represent an overview of the analysis of descriptive variables, depending on the extraction of means and standard deviations.

4.3.1 Project Teams Clearly Understand the Change in its Organization

In order to study project team understanding the change in its organization factor the researcher designed seven questions (see table 4.3.1) and distributed these questions to 217 users of the ERP system in the automotive companies in Addis Ababa, Ethiopia.

Table 4.3.1: Project teams clearly understand the change in its organization

Services	Mean	Std. Deviation
The ERP team had well prepared and committed for system implementation	3.50	1.125
Is there sufficient evaluation to measure the Operation of the new ERP system?	2.73	1.281
There were sufficient communication channels to let user know the project progress and to help them solve the problem	2.46	1.182
The project team fully understands the Customization Process with the company policy and procedure	3.25	1.247
Coordination and Cooperation between project team of each division.	2.80	1.401
The system is easy for cross-functional integration	3.84	1.111
The company apply and utilize all feature of ERP system	2.50	1.412
Overall	3.01	0.122

Source: *Analysis of Survey data 2020, using SPSS 20*

The assessment statements were ranked in terms of their mean and standard deviation as a way of interpreting the results. The findings of Likert scale measures were evaluated according to Best (1977). The details of the study in this regards are discussed as follows:

According to table 4.3.1, the respondents agreed that ERP project teams had well prepared and committed for system implementation with a representative mean of 3.5. According to Best (1977) from 3.42-4.21 is good/high. This shows that they generally agree about the ERP team had well prepared and

committed for ERP system implementation. However, the standard deviation value of 1.125 suggests varied responses from the respondents. This implies those who participate in the ERP team do have divergent views on their participation of ERP system implementation; this could indicate that the integrator, user and management members might not be equally committed.

Those findings imply the project teams were well prepared and committed for ERP system implementation which indicate there is a supportive culture of ERP system implementation. This in turn shows that the preparation and commitment of ERP teams took into consideration during ERP system implementation and this will enable the automotive companies to have a successful ERP system.

This finding is consistent with the study of Engidayehu (2014) which considered project team as a CSF for ERP system implementation.

According to table 4.3.1, the respondents agreed that there was sufficient evaluation to measure the operation of the new ERP system with a representative mean of 2.73. However, the standard deviation value of 1.281 suggests varied responses from the respondents. Respondents agreed that there were sufficient communication channels to let users know the project progress and to help them solve the problem with a representative mean of 2.46. This study also discovered that the respondents agreed that the project team fully understands the Customization Process with the company policy and procedure with a representative mean of 3.25. However, standard deviation 1.247 suggests varied responses from the respondents. The study revealed that Coordination and Cooperation between project team of each division agreed that with representative mean of 2.80. However, standard deviation 1.401 suggests varied responses from the respondents. The respondents agreed that system is easy for cross-functional integration with representative mean of 3.84. The respondents agreed that the company apply and utilize all features of ERP system with representative mean of 2.50. This implied that companies providing sufficient communication channels to let users know the project progress and applying and utilizing all features of ERP system aspects were low extent. Thus, the companies must take further consideration on providing sufficient communication channels to let users know the project progress and apply and utilize all features of ERP system for successful ERP system implementation. This finding was completely agreed by earlier findings of Omar & Rami (2016), Engidayehu (2014) and Hanafizadeh et al. (2010) which consider ERP system project team as one of the CSFs for ERP system implementation.

Though, the overall scores are about 3.01, according to Best (1977) from 2.62-3.41 is average/moderate which represent the moderate extent as per the Likert scale, used in this study. This implied that most of

the seven aspects were moderate extent except the two aspect which represents low extent as discussed above and thus affected the performance of project teams in the process of successful ERP system implementation. The overall finding revealed that ERP project teams had well prepared, fully understand the change and committed for system implementation. This finding was completely agreed by earlier findings of Omar& Rami (2016), Engidayehu(2014) and Hanafizadeh et., al (2010) which consider ERP system project team as one of the CSF for ERP system implementation. However, the project teams need to consider coordination and cooperation between project team of each division, using all features of the ERP system and find sufficient measure mechanism to evaluate the operation of the new ERP system.

4.3.2 ERP Matching Organization

To exploring the ERP system customization process matching the organization and considering the nature of the companies work and regulation of the countries to meet basic requirements in automotive companies the researcher design 5 (as shown in table 4.3.2) questions and offered these questions to 217 users of ERP system.

Table 4.3.2: ERP Matching Organization

Services	Mean	Std. Deviation
Is there the correct assignment of the right person to give an information for the customization from each division	3.37	1.028
The system is fully customized in line with the companies' policy and procedure	3.16	1.022
Country 's policies and Procedures are considered during integration	3.16	1.252
The company's business requirement is fully considered and integrated	3.27	1.011
Additional features obtained from the system beyond the pre-defined requirements	3.08	1.355
Overall	3.21	0.159

Source: Analysis of Survey data 2020, using SPSS 20

The findings show most of the respondents were in moderate agreement with the fact existence of the components of ERP system matches the organization. It means thus, that proper application of these

components enhances overall effectiveness of ERP system implementation.

From the information revealed by table 4.3.2 clarify that the ERP system matching the organization operational transactions is median from the respondents' perspective, in which all of the factors had a median level of importance and the overall factor mean is 3.208 with significant standard deviation of 0.159. According to Best (1977) from 2.62-3.41 is average/moderate which represent the moderate extent as per the likert scale, used for this study. This finding represents a sufficient consideration of ERP system customization process matching the organization and considering the nature of the companies work and regulation of the countries to meet basic requirements in automotive companies'. Thus, an improvement on matching ERP system for the companies should be taken into consideration for successful implementation of ERP system. This finding was completely agreed by earlier findings of Omar & Rami (2016), Engidayehu (2014) and Enderas (2017).

The result obtained above is consistent to previous study of Engidayehu (2014) in ethio telecom Ethiopia the system is not fully customized considering the companies and the countries process, policy & procedure regulatory. In addition most of the respondents also believe that the system implementation has not been viewed from the companies' long term strategic objective. Thus, improvement is requires on ERP matching organization.

According to table 4.3.1, the mean ranged from 3.08-3.37, the highest mean was for the first variable, and the lowest mean was for the fifth variable with a standard deviation of 1.355 and 1.028 respectively which is median level of agreement. This finding explains that the correct assignment of the right person to give information for the customization and obtaining pre-defined additional features from the system might affect ERP system implementation. Thus, companies must considered the assignment of the right person to give information for the customization from each division and give special attention to get additional features to meet the requirement of user is important for successful implementation of ERP system. This finding was completely agreed by earlier findings of Omar & Rami (2016), Engidayehu (2014) and Enderas (2017) which believes that matching ERP system as CSF for ERP system implementation.

4.3.3 User Training

This section contains the findings in respect to objective three which sought to assess the user training practice of ERP system in automotive companies. The respondents were asked to indicate their level of agreement with the following statements that relate to the user training practice in automotive companies. To this they responded as provided in Table 4.3.3.

Table 4.3.3: User Training / Capacity Building

Services	Mean	Std. Deviation
There is adequate training material on ERP modules in the organization	2.29	1.419
There is continuous training on new technologies among staff	3.21	.822
The training given on the system was adequate and useful to your functional module	2.86	.912
Further enhancement training is required on the system	4.33	.984
There was a gap between the imparted training and companies' business requirements	4.03	1.028
The support exerted by integrators make the users familiar with the system	3.29	.827
The companies' super users are trained in a way that can fully replace the integrators support activity	2.92	.866
The level of dependency on integrates are still high	3.04	1.128
The functional and technical support is successful in relation to knowledge transfer	3.24	.687
Overall	3.25	0.200

Source: Analysis of Survey data 2020, using SPSS 20

User training is one of the main components of successful ERP system implementation. The user training practice embraces many activities as shown in the above table 4.3.3. Questions on these areas were put before the respondents and the results indicate regarding availability of effective user training practice for successful implementation ERP system.

From the information revealed by table 4.3.3, respondents believe that the companies do have user training practice in place. This is revealed by overall average mean value of **3.25** and a significant standard deviation of 0.200 is clearly a sign of common understanding on the issue of user training

practice. According to Best (1977) from 2.62-3.41 is average/moderate which represent the moderate extent as per the likert scale. The findings show most of the respondents were in average (moderate) agreement with the existence of the components of user training practice. This finding represents a sufficient user training consideration in automotive companies. However, an improvement in training programs for users of ERP system should be taken into consideration. This finding was completely agreed by earlier findings of Omar & Rami (2016), Engidayehu (2014) and Enderas (2017) which considered user training as a CSF for ERP system implementation.

The findings in table 4.3.3 reveal that the respondents agreed that adequate training material on ERP modules in the companies used for user training with a representative mean of 2.29 however the standard deviation of 1.419 is clearly a sign of varied responses from respondents. The result show the use of adequate training material of ERP modules as measure of user training practice on ERP System is low. Thus, improvement is needed on providing adequate training material on ERP modules. This finding is in agreement with a study by Engdayehu(2014); in Ethio Telecom Ethiopia.

According to table 4.2 the respondents agreed that continuous training on new technologies among staff were available with a representative mean of 3.21 and the standard deviation value of 0.822 which is less dispersed result. This finding shows the median level of agreement about the presents of continuous training on new technologies among the staff. Respondents agreed that training given on the system was adequate and useful to for functional module with a representative mean of 2.86 and the standard deviation value of 0.912 which is less dispersed result. This study also discovered that the respondents agreed that further enhancement training is required on the system with a representative mean of 4.33 with a significant standard deviation value of 0.984 which is less dispersed result. According to the findings, it is clearly evident that respondent was in high agreement on the requirement of further enhancement training as existence of effective user training of ERP system. This finding is in agreement with a study by Engedayehu (2017) said that there is no enough training intervention to capacitate employees on the system. Thus, additional enhancement training is highly required to enable employees of the companies who are working on the system capable of performing their day to day business operation in a professional and expertise manner.

According to table 4.2, the respondents agreed that there was a gap between the imparted training and companies' business requirements with a representative mean of 4.03. The respondents agreed that support exerted by integrators make the users familiar with the system with a representative mean of 3.29. Respondents agreed that the companies' super users are trained in a way that can fully replace the integrators support activity with a representative mean of 2.92. The respondents agreed that the level of dependency on integrators are still high with a representative mean of 3.16. The respondents agreed that the functional and technical support is successful in relation to knowledge transfer with a representative mean of 3.24. This implied that the most aspects were moderate extent and thus the result show the performance of user training with respect companies' super users are trained in a way that can fully replace the integrators support activity is low. From the finding it is clearly evident that user are not trained in a manner that can fully support any technical and functional issues raised by the end-users; as a result the company will become highly dependent on the integrators which might expose the company in different risks in addition to the costs incurred due to the extended dependability on them. Thus, considering all factors of user training is CSF for ERP system implementation. The findings agreed with earlier findings by Omar & Rami (2016) and Engidayehu (2014), Enderas (2017) which considers user training is one of the most important critical success factors for ERP implementation.

4.3.4 Top Management Commitment & Support

This section contains the findings in respect to objective four which sought to assess the commitment & support of top management for smooth implementation of ERP System. The respondents were asked to indicate their level of agreement with the following statements that relate to the assessment of top management commitment and support for ERP implementation in automotive companies. To this they responded as provided in Table 4.3.4.

Table 4.3.4: Top Management Commitment & Support

Services	Mean	Std. Deviation
Adoption and full implementation of ERP system supported by the Management in line with the Organization mission and vision.	2.72	1.353
The Management considers ERP implementation is part of the Organization long term strategy.	3.09	1.295
Work Culture that favors collaboration is important to ERP implementation.	3.51	1.227

Overall	3.11	0.063
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Source: Analysis of Survey data 2020, using SPSS 20

According to table 4.3.4 respondents believe that there is moderate level of agreement on adoption and full implementation of ERP system supported by the Management in line with the organization mission and vision and the management considered ERP implementation is part of the Organization long term strategy .These are revealed by a mean value of 2.72 and 3.09 with a significant standard deviation of 1.353 and 1.395 respectively is clearly a sign of varied responses from respondents.

From the information collected from respondents according to table 4.3.4 respondents believe that there is high level of agreement on work culture that favors collaboration is important to ERP implementation. These are revealed by a representative mean value of 3.51 and a significant standard deviation of 1.227 is clearly a sign of varied responses from respondents.

The findings show most of the respondents agreed with the fact existence of the top management commitment and support. This is revealed by overall mean value of 3.11 with a significant standard deviation of 0.06. According to Best (1977) from 2.62-3.41 is average/moderate which represent the moderate extent as per the likert scale, used in this study. This clearly evident that respondent agreed in moderate extent on top management commitment and support on ERP system implementation. Thus, improvement is needed on top management commitment and support for effective implementation of ERP system. The result obtained above was consistent with previous studies of Omar & Rami (2016) which considers top management commitment and support is one of the CSF for ERP system implementation. According to Basu & Lederer, (2011) when top management positively supports and motivates the implementation of ERP, success is anticipated.

However, the result also shows that the automotive companies not fulfill some components of top management and support; those are management support on adoption and full implementation of ERP system in line with the organization mission & vision and considering ERP implementation as part of the organization long term strategy. This finding is in agreement with a study by Enderas (2017), assessment of Enterprise Resources Planning (ERP) Implementation: The Case of Ethio telecom in Ethiopia.

Thus, as the framework of CSF asserted to ensure successful ERP system implementation top management commitment and support need to be improved on adoption and full implementation of ERP system in line with the organization mission and vision and consider ERP system implementation as part of the organization long term strategy. The result obtained above was consistent to previous studies Sabaawi et al. (2015), Sintayehu (2014), Haregewoin (2017) and Enderas (2017) which considers top management commitment and support is one of the CSF for ERP implementation.

4.3.5 ERP system success

For sightseeing the success of ERP System implementation in automotive industries in Addis Ababa the researcher designed five questions (as shown in table 4.3.5 below) and offered these questions to 217 users of ERP system.

Table 4.3.5: Extent of ERP system success

Services	Mean	Std. Deviation
Decreased the financial close cycle	3.97	.483
Improved decision making	3.93	.553
Improved on time delivery	3.92	.401
It reduced time for pay slip generation	4.17	.550
Better coordination and cooperation between functional departments.	4.10	.359
Overall	4.018	0.087

Source: Analysis of Survey data 2020, using SPSS 20

The findings show most of the respondents were in high agreement with the fact existence of the effective ERP system implementation. It means thus, that effective application of ERP system enhances overall effectiveness the organization.

According to table 4.3.5 respondents believe that there is high level of agreement with a representative overall factor mean of 4.018 with significant standard deviation of 0.087. The finding revealed that all of the variables had a high degree, this implies that successfully implemented ERP System has helped

the organizations to reduce financial cycle, improve decision making & time delivery also provide better coordination and cooperation between functional departments and improve the quality of the system and services.

The result obtained above was consistent to previous studies of Ahmad (2015), Abazi et al. (2016), Mohamed & Sabaawi (2015), Enderas (2017) and (Shang et al., 2000) which have identified several benefits of an ERP system for the organization. It includes operational benefit, managerial benefit, strategic benefit, IT infrastructure, and organizational benefits. Also (Olhager et al, 2007) stated that ERP system helps reduction of lead time, on-time shipments, double business, and increase of inventory turns to over, cycle time, and work in progress.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the findings, conclusions drawn from them and the recommendations. The implications of the research are discussed and suggestions made on areas of further study. Some useful recommendations for the automotive companies are proposed by this study at the end of the chapter to enable to see their performance according to the CSF requirement, with regard to the problem statement and based on the research findings. The overall objective of this study was to assess the ERP system implementation in automotive industry in Addis Ababa, Ethiopia.

5.1. Summary of findings

The summary of the findings is based on the five study objectives that included: to assess practice of project team clearly understand the change in its organization structure, strategies and process for ERP implementation, to assess practice of customization process matching the organization, to assess user training and to assess practice of top management commitment and support for smooth implementation of ERP system & to assess the extent of ERP system success.

5.1.1. Project Team Understanding change

Findings revealed that project teams clearly understand the changes in its organization. It's included that top management, end user and developer of the ERP system. This proves that ERP system

implementation process is set with caution and they involved sufficiently in the process of ERP system implementation, which indicate there is collaboration & supportive work culture for ERP system implementation process.

It can then be concluded that the Project teams are clearly understand the change in its organization, well prepared and committed for ERP system implementation and fully understands the customization process with the company policy and procedure.

However, the study also found out that in the practice of ERP System implementation project teams lack sufficient communication channels to let user know the project progress and help them solve the problem. Insufficient Coordination & Cooperation between projects teams of each division, beside that there were no enough evaluations to measure the operation of the new ERP system.

By clearly communicating the user of the ERP system about the business requirements can increase broad understanding about ERP system implementation and help the companies to apply and utilize all feature of ERP system.

5.1.2. ERP Matching Organization

The study revealed that there are indicators that the ERP system customization process matching the organization. Commonly uses various techniques to practice ERP Matching the organization; these are considering correct assignment of the right person during information gathering, considering on companies' policy and procedure during customization, considering Country's policies and Procedures during integration and considering business requirement during integration.

The study revealed that the customization process had correct assignment of the right person, considered companies' policy & procedure in line with the country's policy. In addition to that, the company's business requirement is fully considered and integrated.

ERP Matching Organization has been constantly recognized the most vital and CSF in ERP system implementations regulatory requirement and CSF framework.

5.1.3. Top Management Commitment and Support

The study revealed that there are indicators that the ERP system implementation commonly uses various techniques to practice top management commitment and support; these are considering managements support in line with organization mission and vision during adoption and full implementation,

considering management commitment to take ERP system implementation as part of the organization long term strategy and creating work culture that favors collaboration.

Based on the finding, the commitment and support of top management for smooth implementation of ERP system is satisfactory. It can then be concluded that Top Management commitment and support is in place and practicing as laid down regulatory requirement and CSF framework. However, the study also found out that in the practice of ERP System implementation process top managements lack considering ERP system adoption and full implementation in line with the organization mission and vision.

5.1.4. User Training

The study revealed that there are indicators that, ERP system implementation commonly use various techniques to practice user training; these are providing adequate training material, giving continuous training on new technologies, giving adequate training, identifying the gap between the imparted training and companies' business requirements, making support exerted by integrators made the users familiar with the system, making companies' super users are trained in a way that can fully replace the integrators and making support is successful in relation to knowledge transfer. From the finding it can then be concluded that the automotive companies used in moderate extent the user training components in the practice of ERP system implementation.

However, the study also found out that in the practice of user training on ERP system implementation there were lack on, providing standard training program with satisfactory training materials, supporting the integrator to make the user fully independent, identifying the gap between the imparted training and companies' business requirements and providing training to the companies' super users in a way that can fully replace the integrators support activity. It can then be concluded that the level of dependency on integrates are still high.

By setting & reviewing user training & education regularly the automotive companies can evaluate the success of ERP system implementation practice. This in return will help for decision making to continue as it is or to take corrective action during the process.

5.1.5: ERP system success

The study revealed that there are indicators that, the implemented ERP system commonly used techniques to show effectiveness of the system ; these are decreased the financial close cycle, Improved decision making, Improved on time delivery, reduced time for pay slip generation, and provided better coordination and cooperation between functional departments.

The finding revealed that all of the variables had a high degree, this implies that the successfully implemented ERP system has helped the organizations to reduces financial cycle, improve decision making & time delivery also provide better coordination and cooperation between functional departments and improve the quality of the system and services.

5.2. Conclusion

Based on the study findings, it is concluded that the automotive companies have moderate ERP system implementation practice.

Project teams were composed of integrator, top managers and user this lead to project teams can clear understands the change in its organization. However, the project teams lack sufficient communication channels to let user know the project progress, Coordination & Cooperation between projects teams of each division. In addition to that, there were not evaluations to measure the operation of the new ERP. This led the automotive companies not to perform ERP system implementation in effective manner.

The research found that matching ERP system for the organization practices have been conducted effectively. ERP system customization process had correct assignment of the right person, considered companies' policy and procedure in line with the country's policy. In addition to this, the company's business requirement is fully considered and integrated. This leads the automotive companies to benefit from the implemented ERP system.

In regard to user training practice: automotive companies the user training practice sated in moderate extent in ERP system implementation. There were lack in, providing standard training program with satisfactory training materials, supporting the integrator to make the user fully independent, identifying the gap between the imparted training and companies' business requirements and providing training to the companies' super users in a way that can fully replace the integrators support activity. It can then be concluded that the level of dependency on integrates were high.

The final conclusion of this indicates practice of top management commitment and support for smooth implementation of ERP system is sated. However, there were lack on considering adoption and full implementation of ERP system in line with the organization mission and vision and considering ERP system implementation as part of the organization long term strategy.

The overall indication of the study point out most of the component of ERP system implementation practice are in moderate extent this indicate most of the respondent are in neutral agreement which shows they are not sure on the practice of successful ERP system implementation and the automotive companies need to give due attention and awareness about the practice of ERP system implementation.

5.3. Recommendation

- Regarding to the project team clearly understand the change: automotive companies sated project teams understanding the change and practice the customization process with respect to CSF for implementation of ERP system . However there is need for improvement in the communication, coordination between user and project teams, setting evaluations mechanism to measure the operation of the new ERP and apply and utilize all feature of ERP system.
- Regarding ERP system match the organization: automotive companies effectively assigned the right person, considered companies' policy & procedure in line with the country's policy during the customization process. In addition to this, the company's business requirement is fully considered and integrated. However; there is need for improvement in obtaining additional features from the system beyond the pre-defined requirements to fill system requirement gap.
- User training practice: automotive companies invest in enterprise resource planning (ERP) as a way of making their operation more efficient, implementing an ERP system is overwhelmingly seen as an IT project. However there is need for improvement in the understanding the importance of employee training has become the down fall for some, Having this in mind, provide in standard training program with satisfactory training materials, supporting the integrator to make the user fully independent, identifying the gap between the imparted training and companies' business

requirements and providing training to the companies' super users in a way that can fully replace the integrators support activity must be done for the successful implementation of ERP system.

- Top management commitment and support practice: automotive companies effectively stated top management commitment and support practice for smooth implementation of ERP system however; there is need for improvement on considering adoption and full implementation of ERP system in line with the organization mission and vision and consider ERP system implementation as part of the organization long term strategy

5.4. Suggestion for further studies

The researcher suggests the following areas for further studies: Assess ERP system Implementation by using different frameworks and also Assess ERP system Implementation Practice by considering all Branches.

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Questionnaire

Jimma University

ABH Campus

School of Graduate Studies

Masters of Business Administration Program

This questionnaire is designed to collect information about the Enterprise Resource Planning /ERP practice in Automotive Industries in Addis Ababa. The data or information collected in such a way shall be used as primary data in my thesis, which I am conducting as a partial fulfillment for the requirement of my study in **Master of Business Administration (MBA) at ABHCampus, Jimma University**, and School of Graduate Studies.

The researcher would like to thank you in advance for your kind response in giving your precious time infilling the questionnaire.

No need to mention your name and the information provided is to be used only for this study and any information given will be kept confidential.

Thank you for your kind Cooperation

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Part I: Background Information

Please use this \surd mark for each question to indicate your response

1.1. What is your gender?

Male

Female

1.2. Age Group:

≤ 25

26 – 35

36–40

41 & above

1.3. Educational Status

Secondary Education

College Diploma

BA/BSC

Master & Above

1.4 year of Service

≤ 5

6-10

11-15

16-20

21 and Above

1.5 Which Division/Department are you working in?

Finance & property admin

After Sales

Administration & Human Resource

Sales & Marketing

Import & logistic

IT Department

1.6. The position you hold in the organization

Director

Manager

Supervisor

Staff

Foreman

Part II: Issues Related with the study area

The research questions on these topics are operationalized through a series of statements, to which participants are required to respond using a five-point format.

Please read each statement carefully and show the extent of your agreement on the statements by **writing** the numbers in the column using the following rating scale (Likert Scale).

Where: 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1. To what extent the project teams clearly understand the change in its organization structure, strategies and process for ERP implementation?					
STATEMENT	SCALE				
	1	2	3	4	5
The ERP team had well prepared and committed for system implementation					
Is there sufficient evaluation to measure the Operation of the new ERP system?					
There were sufficient communication channels to let user know the project progress and to help them solve the problem					
The project team fully understands the Customization Process with the company policy and procedure					
Coordination and Cooperation between project team of each division.					
The system is easy for cross-functional integration					
The company apply and utilize all feature of ERP system					

2. To what extent the customization process matching the organization and considering the nature of the company work and regulation of the countries to meet basic requirements?					
STATEMENT	SCALE				
	1	2	3	4	5
Is there the correct assignment of the right person to give an information for the customization from each division					
The system is fully customized in line with the company's policy and procedure					
Country 's policies and Procedures are considered during integration					
The company's business requirement is fully considered and integrated					
Additional features obtained from the system beyond the pre-defined requirements					

3. To what extent the training & education/ capacity building program/ properly implemented on the skills and experiences to prepare the end user of the system?					
STATEMENT	SCALE				
	1	2	3	4	5
There is adequate training material on ERP modules in the organization					
There is continuous training on new technologies among staff					
The training given on the system was adequate and useful to your functional module					
Further enhancement training is required on the system					
There was a gap between the imparted training and companies' business requirements					
The support exerted by integrators make the users familiar with the system					
The company's super users are trained in a way that can fully replace the integrators support activity					
The level of dependency on integrates are still high					
The functional and technical support is successful in relation to knowledge transfer					

4. To what extent the Management Committed and Support for smooth implementation of system?					
STATEMENT	SCALE				
	1	2	3	4	5
Adoption and full implementation of ERP system supported by the Management in line with the Organization mission and vision					
The Management consider ERP implementation is part of the Organization long term strategy					
Work Culture that favors collaboration is important to ERP implementation.					

5. To what extent ERP System implementation successfully?					
STATEMENT	SCALE				
	1	2	3	4	5
Decreased the financial close cycle					
Improved decision making					
Improved on time delivery					
It reduced time for pay slip generation					
Better Coordination and cooperation between Functional departments.					

