# ASSESING THE FACTORS AFECTING  SUCCESSFUL IMPLEMENTATION OF ENTERPRISE RESOURCE PLANING: THE CASE OF BRASSERIES ET GLACIÈRES INTERNATIONALES (BGI ETHIOPIA)

*A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTER ARTS DEGREE IN PROJECT MANAGEMENT AND FINANCE (MA)*

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**JUNE 2020**

**ADDIS ABABA**

# DECLARATION

I, the undersigned, declare that this study entitled "*Assessing the factors affecting Successful implementation of ERP: The Case of Brasseries et Glacières Internationales (BGI ETHIOPIA)*" is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the study have been duly acknowledged.

<u>Declared by</u>:

Name: Merga Sori

Date: _____

# CERTIFICATE

This is to certify that this study, *"Assessing the factors affecting Successful implementation of Enterprise Resource Planning:: The Case of Brasseries et Glacières Internationales (BGI ETHIOPIA)"* **for** the partial fulfillment of Master of Arts Degree in Project Management and Finance at Jimma University, is an original work and not submitted earlier for any degree either at this University or any other University.

Mr. Abiy Getahun (Asst. Professor)          Mr. Ganfure Tarekegn

_____                    _____

 (Main Advisor)                                        (Co-Advisor)

# ACKNOWLEDGMENT

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# ACRONYMS AND ABBREVIATIONS

AX:     Microsoft Dynamics AX

BGI:    Brasseries et Glacières Internationales

CRM: Customer Relationship Management

CSF:    Critical Success Factors

ERP:    Enterprise Resource Planning

MRP: Material Requirement Planning

PLC:    Private Limited Company

SAP:    System Application Product

SC:     Share Company

SPSS: Statistical Package for Social Sciences

VIF:    Variance Inflation Factor

# ABSTRACT

*Enterprise resource planning plays an important role in today's enterprise data management system and is becoming to be the backbone of organizations. A lot of research has been done for ERP implementations in environments but, studying ERP implementation in developing countries like Ethiopia which has not had enough experiences would be interesting for developers, vendors, consultants and ERP user companies. So, the purpose of the study was to assess the factors affecting successful implementation of ERP in BGI Ethiopia which has been using this system. The approach of this research was a case study and quantitative methods were used to collect and analyze data. The quantitative data was collected using questionnaires from 60 sample ERP user employees working in different position, roles, with varying work experience . The data was analyzed using SPSS (Statistical Package for the Social Sciences) version 20.00. Out of eight selected critical success factors (CSF) of ERP from literature, only five variables are identified as critical factors for ERP implementations and the remaining three are important but not critical success factors. The study also found that there is a significance relationship between each of the critical factors and the dependent variable, ERP implementation. The CSFs are Organizational culture and readiness, Training and Knowledge transfer, ERP Software Selection, Top management support and commitment, Capability of consultants and implementers. The researcher recommended for similar industry in Ethiopia to consider the five CSFs while implementing ERP system, especially Microsoft dynamics AX. Moreover, specifically for BGI Ethiopia it has big implications for further ERP implementation and also can be used as basis for further study and improvement. Thus, it is recommended for ERP department of BGI to conduct further assessment to concretize this finding so that it will have an evidence-based decision making to address related gaps.*

***Key words****: ERP Implementation,* CSF, BGI, ERP system, *Selected Critical factors.*

# CHAPTER ONE

# INTRDOUCTION

## 1.1. Background of the Study

Nowadays, Enterprise Resource Planning (ERP) implementation has become one of the most important projects in the organization. ERP systems can integrate business process, share data practices across the organization, and produce and access real time information (Moon, 2007). The development and use of ERP is a Modern Phenomenon concerned with the use of appropriate information leads to better planning, better decision making and better results.

ERP systems have developed out of two systems that had emerged in the 1960s known as Materials Requirement Planning and Manufacturing Resource Planning (Kalakota and Robinson, 2001). Both systems were used to control inventory, manage production, evaluate production environment and make adjustments based on different conditions. The development of these systems and their coordination and integration techniques and tools made the development of ERP systems possible (Bedworth and Bailey, 1987). It began to be developed by companies like Oracle, SAP and such others. ERP can be defined as a program that can provide solutions to multiple corporate functions such as finance, human resources, manufacturing, sales, management of materials etc. all in one unified database (Davenport, 2000).

*Figure1.1: Benefits of ERP (VanPutte, 2015)*

ERP is a suite of application modules that can link back-office operations to front-office operations, as well as internal and external supply chains and ERP allows a company to manage its business with potential benefits of improved process flow, reduced inventories, better data analysis, better customer service, and improved profit margins (Dezdar, & Ainin, 2011). ERP implementation project involves a wide range of complicated resource and issues. Unless they do proper plan, supporting procedure, organizations may spend a lot of money, resource, and time for ERP implementation (Bingi and Sharma, 1999). A Successful implementation of ERP system has advantages for cost minimization and high system quality (Lucas,1988). Implementation of ERP system is very expensive, and once it is implemented successfully, significant benefits such as improved customer service, better production scheduling, and reduced manufacturing costs can be gained.

Critical Success Factors (CSF) of ERP and related to information systems were initially proposed by (Rockart, 1979). According to the author, CSFs can be understood from their relationship with company's processes and the field of activity of the organization. To be considered essential, the element should have the following characteristics: first have attention and investment adequately regarding cost, time and effort, to ensure the excellent performance, thus providing the success of the organization; second present information to check indicators that enable the control to take corrective and improvement actions; and finally be intimately connected to the organization's business.

## 1.2. Background of the Organization

BGI Ethiopia Private Limited Company is a subsidiary company of BGI (Brasseries et Glacières Internationales). BGI is a large-scale brewery and beverage production wing of Groupé Castel operating internationally in more than 53 countries. BGI, towards the end of 1997, BGI – the brewery and beverage production wing of Castel Group – was established as BGI Ethiopia P.L.C. to facilitate private investments in the brewery sector, which was the first of its kind in Ethiopia, in the town of Kombolcha (Wollo) during the time.

BGI Ethiopia PLC established the first privately owned brewery by acquiring 47 hectares of land and the Kombolcha Brewery was officially inaugurated, producing two brands: Bati Beer, which was a mainstream local brand, and Castel Beer, an international premium brand. In conjunction

with operating its own brewery and producing its own beer brands, BGI Ethiopia purchased the historic St. George Brewery and the iconic St. George Beer brand in December 1998. After privatizing the St. George Brewery, BGI Ethiopia invested heavily on several renovation, modernization, and expansion projects to bring the old brewery, the quality of its products and the competency of its workforce to international standards.

BGI Ethiopia also invested considerably in conducting unique marketing campaigns and corporate social responsibility schemes, which were non-existent in the industry at the time. Several product innovations were also introduced, including the first pasteurized draft beer. BGI owns three breweries including the iconic St. George Brewery in Addis Ababa, Kombolcha Brewery and Hawassa Brewery with a combined production capacity of 3.6 million hectoliters of bottled and draft beer annually. The holding company is Groupe Castel, which was founded by the 9 brothers and sisters of the Castel family in 1949. The Castel group's activities in the beer and soft drinks sectors are mainly managed through the operational subsidiary BGI.

By mid of 2012, BGI Ethiopia has also ventured into the winemaking business, building and operating the first privately owned winery and vineyard in Batu town with an initial investment of 22 Million USD. Currently, BGI Ethiopia has acquired more than 80 percent of Raya Brewery SC and more than 60 percent of Zebidar Brewery Share Company.

Before implementing ERP, BGI Ethiopia was using Peachtree Accounting software which did not have a capacity to accommodate all company's financial data and could not integrate all business functions, production sites or departments have no real time integrated environment and moreover Peachtree has no customized feature which can fit company's information and reporting needs. Hence, BGI Ethiopia had decided and implemented the software called Micro Soft Dynamics AX 2012 R2 by the end of 2014, to operate the different production sites in a decentralized manner of business activities with clearly defined but centralized process flow for various departments. In addition, share reports (dashboard) amongst managers for a faster and precise decision-making effort on pertinent issues. The ERP acquired by BGI Ethiopia was supposed to cover below modules: these include Financial (Including General Ledger, Accounts Receivable, Accounts Payable, Cash and Bank Management and Fixed Assets), Trade and

Logistics (Supply Chain), Sales and Marketing, Procurement and Sourcing, Process Manufacturing and Human Resources and Payroll

Except process, a manufacturing module which was omitted from the original scope, all the above modules have been implemented for BGI Ethiopia since 2014 and currently all the respective departments are using these modules.

BGI used the phase approach for ERP implementation project by sourcing independent ERP consultants outside the company and created a project team from internal staff which includes project director/Manager, steering committee, project team, key users, IT team, and end users. The independent consultant firm was Zeeyon Computer Tech PLC, Zeeyon is local company which has been using ERP developers and functional consultants from India.

Figure 1.2 ERP project implementation approach of BGI Ethiopia
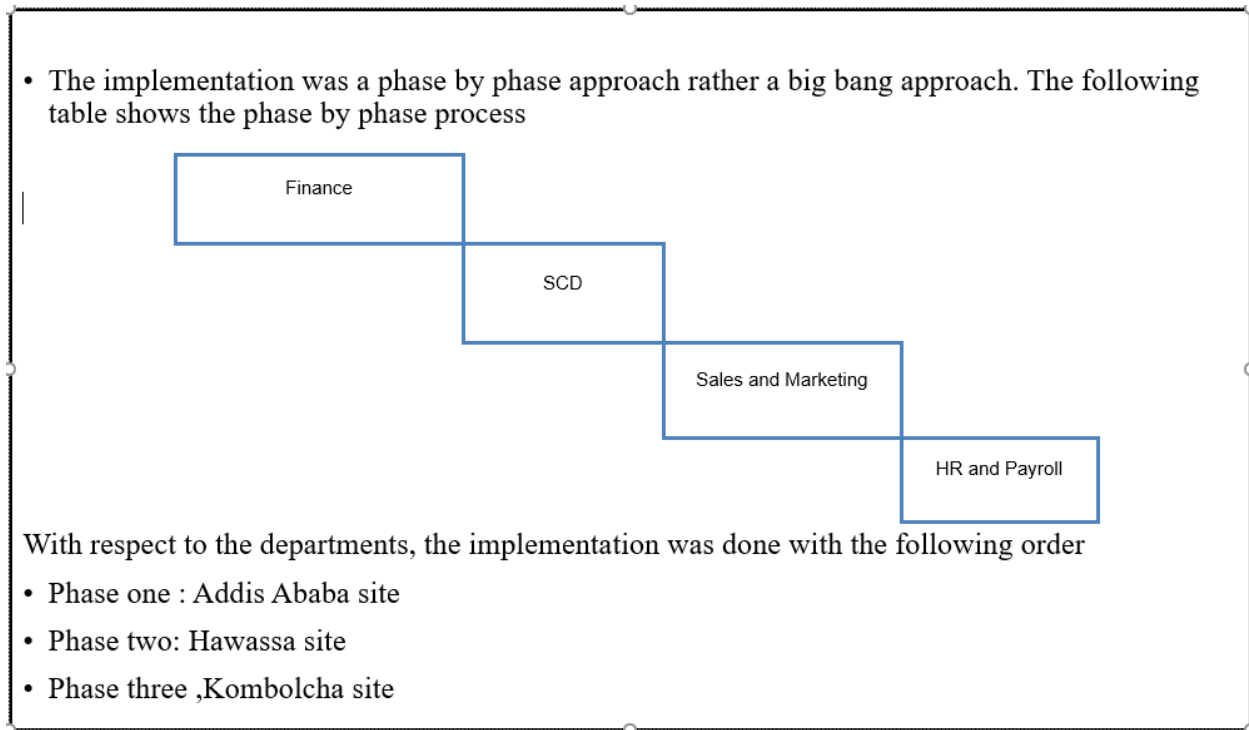


*Source: BGI Ethiopia's ERP Project report*

Currently BGI Ethiopia is using ERP dynamics AX system for its day- to-day business operation and all the modules implemented are fully functional.

## 1.3.    Statements of the Problem

According to Marbert (2003) most of the companies around the world those implemented ERP system are facing challenging tasks. As per Gefen and Rogowsky (2005) the complex nature of ERP system has required many organizations to commit significant organizational and financial resources to their indicatives, which have encountered unexpected challenges associated with the system.

According to Panorama Consulting PLC 2017 ERP report, the ERP implementation success rate70 percent and 26 percent rate of failure. As per Aberdeen 2007 ,globalization and economic growth demand organizations to implement and benefit from ERP systems as their backbone systems. ERP is considered as mission critical strategy in globalization ERP implementation is considered to rely on behavioral processes and actions (Al Mudimigh et al, 2001).

Only putting ERP is not intended for every business (Gargeya and Brady, 2005). When considering the decision to invest in an ERP system, a business case must be developed to provide an understanding of ERP, factors that affect successful implementation and to formally assess the benefits that the company can expect to achieve. The analysis must consider not only the obvious cost/benefit analysis but also the non-financial factors. It includes information visibility and flexibility (Sandoe, 2001).

According to Davenport (2000), ERP implementation costs are incurred in three areas: software, hardware and personnel. The human resources cost is by far the largest and most expensive, but at the same time has been the area given the least amount of consideration. The software and hardware costs are often easily quantifiable; but the human cost is not.

Despite inconsistency on the numbers and naming of those factors, there are research studies around the world that identify the critical success factors of ERP implementation. But in Ethiopia there are very few researches that have been conducted in evaluating on critical success factors of ERP implementation unlike Microsoft Dynamics AX 2012 R2. This shows that there should be more research on ERP Microsoft Dynamics AX has to be conducted in Ethiopian context.

In terms of knowledge gaps, it was found out that there is a consensus among theories of ERP describing it as a quite complex to understand to the fact that several factors influence ERP implementation which made this project relevant and worthwhile to exploring additional knowledge on the subjects. Based on learning from an extensive review several researchers and articles across different disciplines and industries there is an increased tendency to see the effects of the selected critical factors of ERP implementation. Contrariwise, this research aims to assess factors that affects successful implementation of ERP.

This study is initiated to assess the critical success factors of the ERP implementation in BGI Ethiopia. In addition, currently BGI is planning to implement for Raya and Zebidar Brewery SC. So that the company should learn the critical success factors of ERP implementation and this will be important lesson for the new ERP project.

Though BGI Ethiopia has implemented ERP successfully, it is not understood by which factors of ERP that is being successful. It is these rationales that motivate the researcher to conduct this research. Moreover, it is this concern that motivates the researcher to find out whether or not the company benefited from the implementation.

Thus, this study will assess the factors affects successful implementation of ERP.

## 1.4. **Research Question**

The study is dedicated to answer the following basic research questions:

- ✓ What are the critical factors that affects successful implementation of ERP in BGI Ethiopia?
- ✓ What are the benefits BGI obtained from implementation of ERP?

## 1.5. **Objectives of the Study**

### 1.5.1. General objective

This study is to find out the factors affecting critical successful implementing of ERP in the case of BGI Ethiopia PLC.

**1.5.2. Specific objectives**

This research has the following specific objectives:

- ✓ To identify critical success factor affecting successful implementation of ERP in BGI Ethiopia.
- ✓ To describe the benefits of BGI Ethiopia after adopting ERP.

**1.5.3 Hypothesis**

As per the review of empirical studies and literature reviews , researcher has developed below hypothesis.

i. H1: Top management support and commitment is positively correlated with ERP implementation

ii. H2: ERP Software selection is positively correlated with ERP implementation.

iii. H3: Clear user requirement and need assessment is positively correlated with ERP implementation.

iv. H4: Capability of consultants and implementers is positively correlated with ERP implementation.

v. H5: Project scope management is positively correlated with ERP implementation.

vi. H6: Training and knowledge transfer is positively correlated with ERP implementation

vii. H7: Team composition and capacity is positively correlated with ERP implementation

viii. H8: Organizational culture and readiness is positively correlated with ERP implementation.

## 1.6. Significance of the Study

Analyzing the critical success factor of ERP implementation supposed to have significant importance for brewery industry specifically for BGI Ethiopia and its subsidiaries; moreover; as reference materials to academicians for ERP related sources, generally can serve as ERP project lessons for business practitioners. By identifying the critical success factors affecting successful implementation of ERP, the finding of this study will enable management of BGI Ethiopia to have an insight about the systems functionality by highlighting the gains achieved, and the challenges faced. In addition, the recommendations of this study will also be used as an input for

the planned new or rollout ERP System implementation project in BGI Ethiopia. Other companies who have a plan to implement ERP system could also learn from the result of the study. Moreover, the study will play a significant role as a literature base on future researches of related topics.

## 1.7. Scope of the Study

The study conducted a cross-sectional research to examine the critical factors of ERP implementation, which means the data is collected at one point in time. Among other contributing factors on ERP implementation, the current study examined the critical factors affecting implementation of ERP. The study focused on one dependent variable, which is ERP implementation. Due to availability of information and limited resource to cover broader scope of ERP implementation in Ethiopia, the study conducted on BGI Ethiopia staffs across head quartered (Addis Ababa) and three regions. The study considered existing employees.

## 1.8. Limitation of the Study

The study focus is limited to the factors of ERP implementations in BGI Ethiopia which poses difficulties to compare with other organizations as . The researcher believes that the finding of this study would have more important if it has been conducted on wider scope organizations in Ethiopia, but due to time and information constraint , it was not covered in this research. The study considered only users of ERP whom are eligible for being assessed by the ERP implementations.

## 1.9. Organization of the Paper

This study report is organized into five chapters. Chapter one is on introduction. It also covers units such as background of the study, problem statement, objectives of the study, research questions, significance of the study, scope of the study, Limitations and organization of the study. The second chapter deals with review of related literature concerning the study. The third chapter deals with an explanation of the research process and the methods adopted for collecting and analysing data. It focuses on description of the study area, research approach, research design, population and sample data source and type, data collection procedure, ethical consideration and data analysis. Chapter four focuses on the data analysis and interpretation in

relation the research objectives and research questions of the study and summary of findings. Chapter five were presents conclusion and recommendation of the study.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

## 2.1. Theoretical Literature

### 2.1.1. Enterprise Resource Planning (ERP) system

Many of organizations on the world have been implemented Enterprise resource planning (ERP) systems since mid-1990s. This ERP system is multi-module application software that helps organizations to streamline their business process (Yulong,2011). The concept ERP system can be explained by the benefit associated with implementation and utilization. As mentioned in Hauge (2010), the benefits of ERP systems are reduction of cost staff employed and information technology (IT), improved internal process, better customer service, strategic enhancements. ERP software provides organizations with a set of integrated applications that run the following business functions: Human Resource (HR), accounting, controlling, project management, production, materials management, and sales and distribution. These applications are linked by a common database, which allows them to share data (Davenport, 2000).

Figure 2.1 shows ERP system.
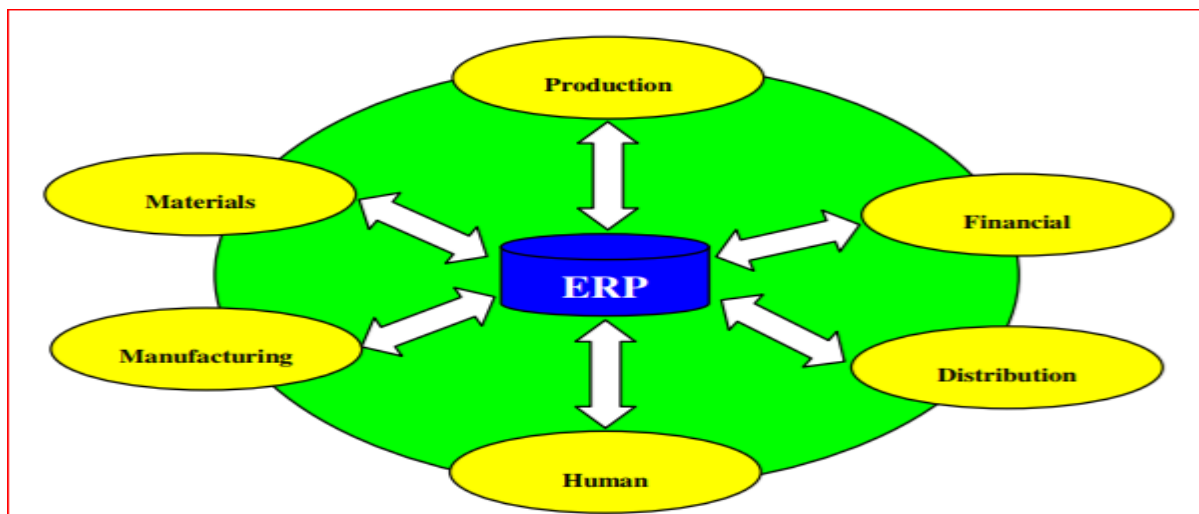
### 2.1.2. The evolution of ERP system

The development of Enterprise Resource Planning systems started with simple inventory control applications. Systems such as IBM's IMPACT from 1960 were intended to control stock levels for a large number of items. These systems calculated forecasts of future demand through advanced algorithms. Based on these forecasting numbers, the applications determined ordering parameters such as safety stocks, reorder points and lot sizes. The computer power was used for performing calculations in these early days. Somewhat later, around 1965, the first planning and scheduling applications came into being. Again, an IBM package (CLASS) is a good example. the focus of these packages was on advanced calculations, perhaps following the success of linear programming in the decade before. At the end of the sixties, the concept of Material Requirements Planning (MRP) was invented (Orlicky, 1975; Fogarty et a1. 1991). This concept was based on two principles. First, it relied on the consequent usage of time phased information in calculating orders. The well-known time-phased representations of MRP are based on time-phased representation of all material requirements and time-phased representation of scheduled receipts. The MRP netting and lot-sizing logic leads then to a time-phased plan for releasing orders. This systematic use of time-phased representations was almost impossible in earlier, manual systems. Therefore, MRP-calculations employed the computer's calculation power and memory.

The 1970s brought a substantial change, because integrated support of business processes became possible. Writers such as Blumenthal (1969) made a plea for architectures which would combine decision support, transaction processing, and management information applications into an integrated whole. This vision slowly became reality, due to two technological innovations.

In 1990s although the requirements for more functionality remained a pressure on ERP vendors, the most eye-catching developments have not been in functionality. Rather, the outside look and feel of ERP-packages has changed considerably. Closely related, the architecture was brought up to date. Finally, tools were added to master the complexity of design, implementation and maintenance.

Figure 2.2    ERP Evolution
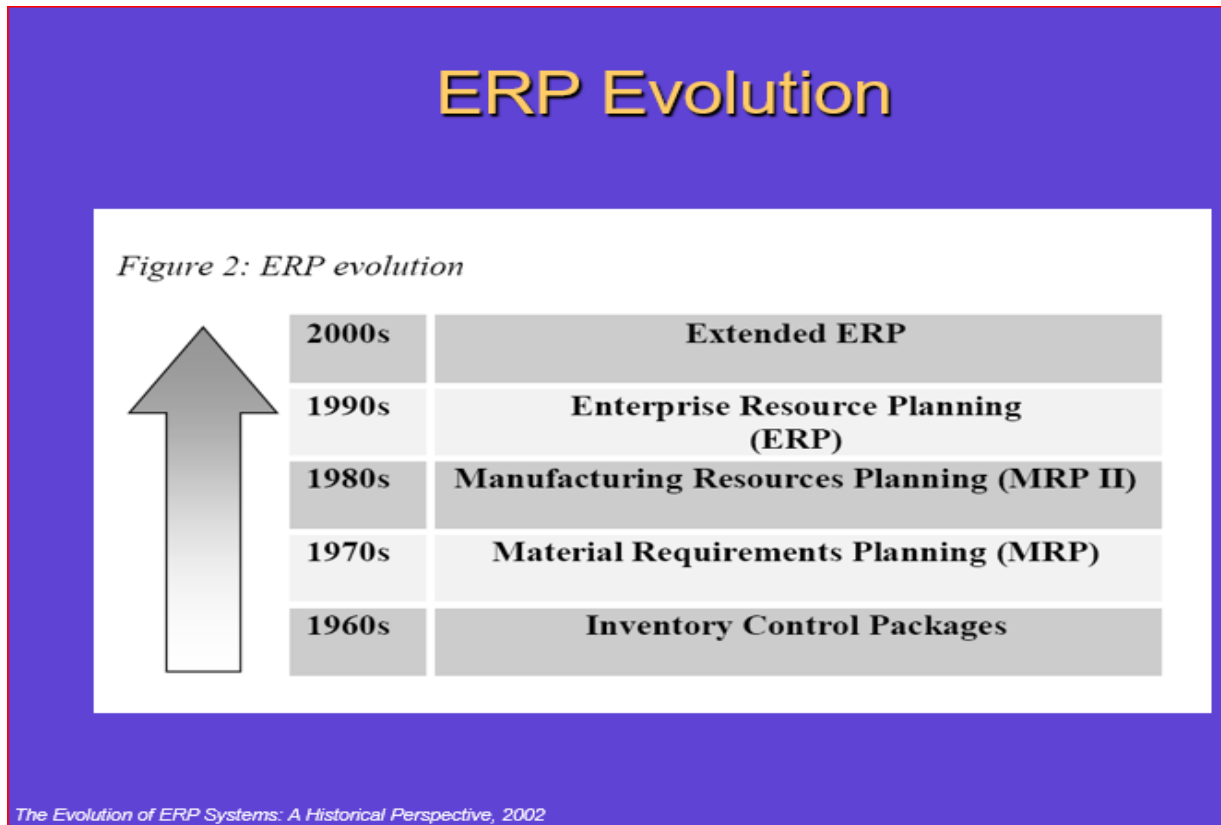


Source: Davenport (2001)

### 2.1.3.  ERP life cycle stage

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

- Adoption Decision
- Acquisition phase
- Implementation phase

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- User and Maintenance phase
- Evolution phase
- Retirement phase

**Adoption Decision Phase**

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

**Acquisition Phase**

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

**Implementation Phase**

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

**Use and Maintenance Phase**

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

**Evolution phase**

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

**Retirement phase**

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

ERP system is commonly viewed as a back-office support system. But practically it is also a front office system. Components or modules of an ERP system are divided into two as core ERP components and extended ERP components as in figure 2.3. Core ERP components are the traditional components which are included in most ERP systems and they primarily focus on internal (back-office) operations. Extended ERP component are extra components that meet the organizational needs not covered by the core components and primarily focus on external (front-office) operations. Core ERP components are accounting and finance (FI), human capital management (HCM) and logistics (LOG) which contains production and materials management. Extended components are modules such as business intelligence, customer relationship management and portal.

*Figure 2.3: Core and extended components of an ERP system*
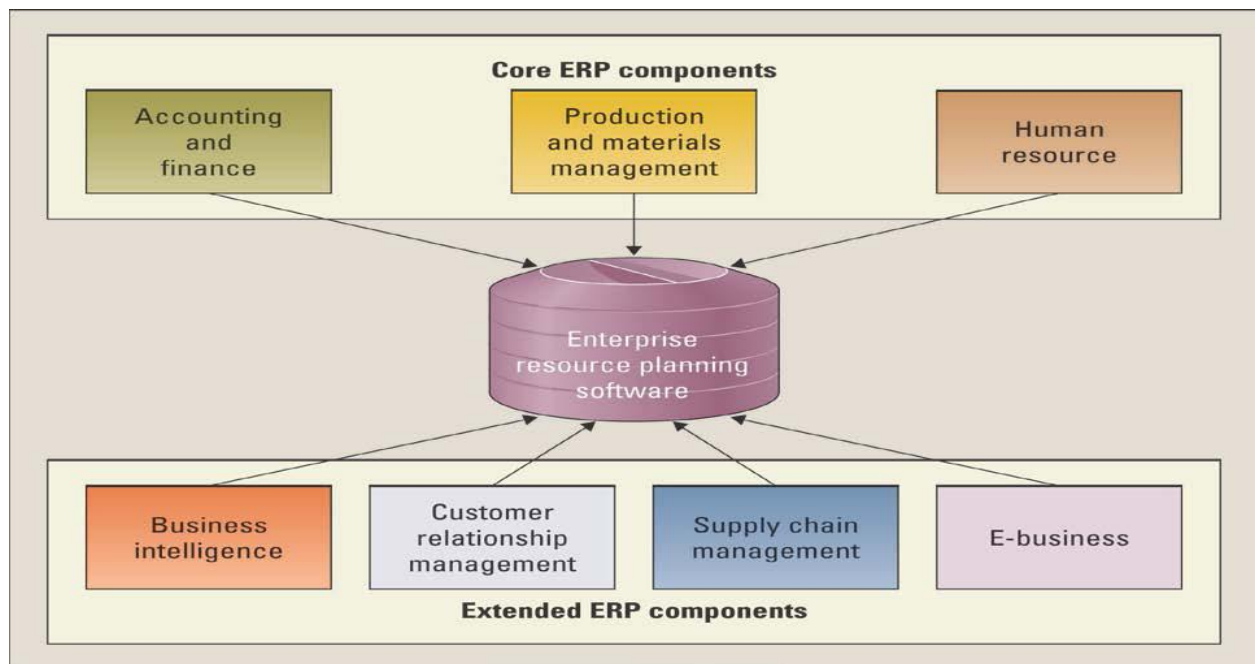


*(Source: The McGraw-Hill Companies, Inc., 2013)*

These core and extended ERP modules are themselves comprised of different sub-modules. Finance core module includes general ledger, receivables, payables, asset management and related sub-modules. Payroll, personnel planning and time management are some of the sub modules in human resources core module while materials management and production planning are sub-modules of logistics core component. Some of the ERP main modules are explained as here below.

**• Financial Accounting - FI**

This module collects all the data relevant to financial accounting into an integrated General Ledger. It provides comprehensive and consolidated financial reports and integrates the different sources of financial data including Accounts Payable, Accounts Receivable, Asset Management and Treasury. It also provides up-to-date or real time information for enterprise-wide control and planning. The FI module is for external reporting purposes and it is compatible with the international accounting standards.

**• Controlling – CO**

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CO module includes a variety of planning and controlling tools for enterprises following a uniform system of reporting. It provides comprehensive reports to support most common cost-accounting issues. Controlling module is usually for internal reporting purposes.

## • Human Capital Management – HCM

HCM is the other common ERP module. ERP HCM module is used as the core employee record with details of personnel actions, benefits administration and payroll, position management and compliance with government regulations. HCM consists of three sub-modules namely Organizational Management (OM), Time Management (TM) and Payroll (PY).

## • Materials Management–MM

MM module supports the procurement or purchasing process to optimize the logistics chain within the enterprise. MM enables automated supplier evaluation and can lower procurement and warehousing costs with accurate inventory and warehouse management. It also integrates invoice verification. Tools for inventory control and purchasing information help to identify trends and plan accordingly.

## • Production Planning

This is a module which supports production planning, manufacturing processes, analysis and production control. PP covers the production process from the creation of master data to production planning, material requirement planning and capacity planning up to the production control and costing.

## • Project System

Project system module coordinates and controls all phases of a project with direct cooperation with Purchasing and Controlling, from quotation to design and approval, to resource management and cost settlement.

The core and sub-modules of ERP system are summarized as in table 2.1 below.

In traditional IT systems, each of the system components are found separated as applications by their own with one database system for each of them. However, ERP system integrates all of the components through one central database which is common for all the modules as in table 2.4

*Table 2.1---Main and sub-modules of ERP system*

| ERP Main Modules | Sub-Modules |
|---|---|
| Human Resources | • PY - Payroll<br>• OM - Organizational Management<br>• Personal planning<br>• TM - Time management<br>• Travel expenses<br>• Training |

| Logistics & Operations | • MM - Materials Management |
| --- | --- |
| | • PP - Production planning |
| | • Materials planning (MRP) |
| | • Inventory management |
| | • Quality management |
| | • PS - Project System management |
| | • Shipping |
| Sales & Marketing | • Order management |
| | • Sales management |
| | • Sales planning |
| | • Pricing |
| | • After-sales service |

*Source: (Rashid et. al, 2002)*

Unlike the traditional function-oriented departmental systems, ERP systems are enterprise-wide and oriented towards processes instead of being function-oriented. Corporate computing with ERP systems allows companies to implement a single integrated system by replacing and re-engineering their mostly incompatible old traditional information systems.

**ERP Critical success factors:**

**Top Management Support**

Successful ERP implementation depends on management to prepare for challenges that might be faced (Motwani, et al, 2002), as well as senior management who are involved in overall strategy of the company and are not familiar with technical aspects (Yusuf et al., 2004). Also, top management commitment and support leads to overall organizational commitment across an organization.

**Team Composition and teamwork**

According to Magnusson, et al., (2004), team composition and teamwork is very important for successful ERP implementation. An ERP project involves all the functional departments in an

enterprise. It needs the cooperation of technical, business experts and external consultants as well as the involvement of end-users in different project phases.

**Project Scope management**

Project management consists of the following CSF: good project scope management, formalized project plan/schedule, definition of scope and goals, risk management, "alignment of people, process and technology" and agree on different project steps (Bhatti,2005).

**Business Process Reengineering**

ERP systems are built on best practices for the specific industry, and to successfully install ERP, all the processes in a company must conform to the ERP model (Patel and Picard,2007). There are two approaches to implementing ERP systems in an organization: reengineering business processes and ERP customization (Shehab, et al, 2004). Business process reengineering creates deep changes in organizational processes in order to fit them to ERP functions. On the other hand, when an organization wishes to maintain its existing processes using an ERP system, it can customize ERP functions.

**Change management and communication**

For many companies the hardest challenge in implementing ERP is change management (Hoffman, 2007). There are different change management strategies which are necessary to change the attitudes of potential users and to inform them about the benefits of ERP (Aladwani, 2001).The way people do their jobs needs change, change management is essential for preparing a company for the introduction of an ERP (Ross, 1999). This CSF consists of communication, interdepartmental co-operation, interdepartmental communication and effective communication.

**ERP Software selection**

Ferratt et al. (2006) verified that software selection efforts can be one of the factors affecting ERP implementation success. Umble (2002) also mentioned the importance of software capabilities. They concluded that if the software capabilities and needs are mismatched with a company's business processes, this can lead the ERP implementation to failure (Umble, 2002).

**Training and knowledge transfer**

As per Gargeya (2005),some companies preserve on assigning a fixed cost or percentage to the training effort, regardless of need or variable conditions. This mistake has surely been the cause of many failed implementation efforts. Fortunately, it has also been a source for others to learn from such experiences and avoid repeating the mistake (Gargeya, 2005).

**Capability of consultants and implementers**

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

## 2.2. Empirical Reviews

Somers (2001) pronounced the importance of CSF across the stages of ERP implementations using the responses from 86 organizations implementing ERP. From their broad list of 22 CSF for ERP implementation, the most important are: top management support; project team competence; interdepartmental cooperation; clear goals and objectives; project management; and interdepartmental communication.

Al-Mashari(2003) presented taxonomy of ERP critical factors where 12 factors were divided into three dimensions related to the stages of ERP project, which are: setting-up, deployment and evaluation. The taxonomy presented emphasizes that a clear vision and business director is fundamental for the success of ERP system implementation. On the other hand, Chen (2001)analyzed several critical planning issues prior to the ERP adoption decision, including needs assessment and choosing a right ERP system, matching business process with ERP system, understanding the organizational requirements, and economic and strategic justification. He reported that competitive strategy, targeted market segments, customer requirements, manufacturing environment, characteristics of the manufacturing process, supply chain strategy and available resources all enter the decision of ERP adoption. Accordingly, below list of CSFs (critical success factors) were identified

a) Top Management Support

b) Project Management

c) Business process reengineering

d) Project team competence

e) Change management

f) Interdepartmental communication

Nah et al. (2001) identified 11 factors that were critical to ERP implementation success. The eleven factors noted by them are:

1. ERP teamwork and composition;

2. Change management program and culture;

3. Top management support;

4. Business plan and vision;

5. Business process re-engineering and minimum customization;

6. Effective communication;

7. Project management;

8. Software development, testing, and troubleshooting;

9. Monitoring and evaluation of performance;

10. Project champion; and

11. Appropriate business and information technology legacy systems.

Gargeya and Brady (2005) by using a content analysis model and searching more than 100 articles and books propose following critical success factors for implementing ERP:

- Worked with functionality / Maintained Scope

- Project Team / Management Support / Consultants

- Internal Readiness / Training

- Deal with Organizational Diversity

- Planning / Development / Budgeting

- Adequate testing

Umble et al. (2003) identified 9 factors for implementing ERP.

1. Clear understanding of strategic goals
2. Commitment by top management
3. Excellent project management
4. Organizational change management
5. A great implementation teams
6. Data accuracy
7. Extensive education and training
8. Focused performance measures
9. Multi-site issues

Huange (2010) review of the work published in various journals and special conferences on topic of Critical Success Factors (CSF) of Enterprise Resource Planning (ERP) system implementation between 1998 and 2007. The total of 524 articles was reviewed, which includes 32 CSF literatures. This Research intends to serve three goals. First, it is useful to the researchers who are interested in studying ERP CSF field. Second, it is advantageous resource to find ERP CSF research topics. Third, it serves as a broad bibliography of the ERP CSF articles published during this 10-year period. The literature is analyzed under two categories and time periods. The data collection phase of the literature review has involved an extensive search of many prominent MIS journals.

The researcher found some important findings. First, the trend of CSF article published during the last 10 years is not the same as ERP articles. When CSF publication reached its peak time in 1999 and 2006, ERP publication comparatively was at lower points. During 1999-2000, the number of CSF articles    decrease while ERP articles increase dramatically. Contrast to this, from 2004, ERP articles decreased gradually, whereas CSF articles increased again. This may reveal the fact of increased attention on ERP implementation critical success factor by academic world.

Second, the top 10 CSFs for 10-year period are: Top Manager Commitment; Teamwork and Composition; Education and Training; Project Management; Definition of Scope and Goals; Business Process Redesign; Change Management Program and Culture; Champion; Open and Honest Communication; and Choose the Right Vendor Right Package. However, the researcher

also found that Open and honest communication and End user involvement play a vital role in ERP implementation.

Third, the researchers paid more attention to human factor than technical factors in ERP implementation more articles after 2003 put end-user's training or involvement as a CSF instead of technical skills or IT infrastructure. With the development of ERP software, it becomes more mature and needs less attention on technical parts. The paper follows eight category coding steps proposed by Carley (1993) and utilizes only ERP implementation case studies to identify a distinct set of critical success factors. In this paper case studies are used and provide a reasonable sample from different countries and contexts. The researcher followed two methodologies one for the literature review process and the other for the analysis and synthesis.

As per Aamir (2014) the aim of the study was to explore critical success factor (CSFs) implementation, pre-implementation and post-implementation phases of ERP system. The study employed case study approach guidelines of (Yin, 2009). The case study approach is a famous qualitative research strategy for the in-depth analysis of a case. The researcher interviewed fifteen face to face interviews of end users and consultants have been conducted. Different semi structured, and sometimes unstructured questions asked to respondents. A convenient sampling technique used to dig out the realities after the in-depth analysis. ERP end users and some of the member of ERP consultant team participated for the interviews. From the study 20 percent from contractual consultant, 40 percent from middle level management, 20 percent from lower level management, and 20 percent from top level management are the respondents. The researcher analyzes his study by using in-depth analysis of the company where ERP system has been implemented.

By Using NVivo 10 software and different technical mechanisms like coding & thematic analysis, word tag clouds, word tree and tree map. The researcher identified Business Process Reengineering, change management, effective communication, effective training, infrastructure, inter-team cooperation leadership, management involvement, rewards and recognitions, standardized implementation sequence, team composition and top management commitment as the CSFs during the phase of ERP system implementation. Different CSFs have been identified

in post-implementation stage such as end user satisfaction, employee motivation, organizational productivity, software reliability, professional development services and support & maintenance.

Emad (2015) study explored the major key success factors (KSFs) that will turn the implementation process to a success. The study utilized 60 responses from managers and executives of local Jordanian firms and the researcher used questionnaires for the data collection instrument; also, the researcher raised 2 critical questions for his study What are the major factors that define the success of ERP systems and how they are ranked by Jordanian firms and experts?  The instrument used included some demographic data related to the respondent and the firm of respondents. The survey included 22 KSFs utilizing a 7-point Likert scale.

The scale included a statement that rates each factor as least important to the success of ERP implementation. This study explored different factors that will secure the success of ERP implementation. The researcher projected all factors in the literature and lists in a survey and distributed to executives and managers in the local Jordanian market and the results indicated an important role for top management support, user training on software, interdepartmental communication and cooperation, and project team competence.

On the other hand, more controversial factors were listed at the bottom of the rank list as marginal influence on the ERP system implementation and they are: partnership with vendor, architecture choices and use of consultant. This study is the first in the Jordanian environment that utilizes a sample from the local market and addresses the perceptions of managers and executives. In this regard, a larger sample would increase the validity of this research and its findings. Also, more research in this area would enhance the instrument used and improve our understanding of the top factors influencing ERP success. Finally, results emphasize the importance of top management support and involvement in the implementation process of this complex system. The study found that the top factors influencing ERP success are top management support, user training on software, interdepartmental communication and cooperation, and project team competence.

AL-Sabaawi (2015) was tried to describe critical success factors for ERP implementation  by focusing on checklist and group of interviews to specific data collection form sample in Cihan University. The studies raised two main questions;

1. What are the critical factors for ERP implementation success in a Cihan university?

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

The researcher had set questionnaire which contained a total of 24 questions and categorized the questionnaire according to their functions and goals. The questionnaire also used for data collection and include   scales to measure ERP success. The researcher used descriptive statistics for his analysis. The researcher identified eight CSF in relation to ERP implementation in higher institution sector in developing countries. Those are Project management, Technological infrastructure, Communication, Departments (Stakeholder) participation, Change Management, Business Plan and Vision, Commitment and support of top management, User training and education out of this the most important success factors were ERP implementation success are Project management, Technological infrastructure and Commitment and support of top management. This 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 these eight aspects are important to be known and managed to ensure the success of ERP initiatives in developing countries.

In Pre-implementation stage of ERP System study found different CSFs such as Clear objectives and scope, complete awareness, organizational analysis, right product selection, study of organizational culture and team composition (Severin, 2011).   In this study the researcher uses interviews, survey and archival data sources and the researcher conduct four interview sessions: (1) the Director of Financial Services and the Business Analyst; (2) the Systems Analyst and the Information Technology Services (ITS) manager; (3) the Consultant; and (4) the Internal Auditor.

Finally, the researcher found that BPR; the project team members 'skills and knowledge; the consultant's involvement; post implementation review; internal auditor's involvement; formulation of the steering committee; managerial "people" skills; and training sessions were

vital to minimize risks. The results of this research provide support for the proposition that the success of an ERP system implementation is dependent, in the first instance, on identifying the major business risks and the controls that need to be put in place to minimize those risks. Objective to understand the ways in which organizations can minimize the business risks involved. The study was motivated by the significance, for both the research and practice communities, of understanding the risks and controls critical for the successful implementation of ERP systems. based on a review of the ERP literature, the researcher list five major business risks associated with the implementation of ERP systems: the lack of alignment of the new information system and business processes; the possible loss of control due to decentralization of decision making; risks associated with project complexity; the potential lack of in-house skills; and users' resistance.

In Ethiopia, there very limited research conducted on ERP implementation. Since ERP implementation in Ethiopia is relativity recent and only few researches have done in the Enterprise Resource Planning area. Sentayehu (2014) tried to assess success factors for implementation of SAP ERP at Ethiopian Airlines. The researcher has conducted detail interview discussions, online survey questionnaire, observations and documents review and finally identified twenty critical success factors important for the success of ERP implementation. Success factors such as project planning and strategy, top management support and commitment, project management and leadership, training, documentation and knowledge transfer, clear user requirement and need assessment, capability of consultants and implementers, change management and communication, team composition and retention and organizational culture and readiness are high ranking findings of this study as to be critical for ERP. According to the study, he has also identified relatively new contextual success factors such as establishing ERP support team, quality control and feedback, basic IT capability of users and team members and incentives and celebration of milestones.

Saron (2017) conducted assessment on ERP implementation especially in Microsoft Navision in Heineken Breweries SC and found that the 6 critical factors; top management support, Project team competency, User training and education, interdepartmental communication, business process re-engineering and ERP consultants are the important success factors of implementing

ERP. The study showed that ERP system has been implemented successfully with relative weight of 91.9 percent.

Hailemeskel (2016) has conducted study to assess and evaluate the overall effectiveness of ERP system implementation and to recommend possible solutions for the gap. The study has mainly focused on efficiency of the ERP implementation for Ethio-telecom while implementing. According to the study, lack of top management support, the rate of training, documentation and knowledge transfer, compatibility issues with ERP module were found major challenges in ERP implementation in Ethio-telecom. However, the priori criteria "stepwise implementation" was not considered as putting the challenge and constraint in the implementation of ERP in Ethio-telecom. The study also found that there are variables which are most important challenges of ERP implementation as per the analysis result are lack of top management support, the rate of training, documentation and knowledge transfer, compatibility issues with ERP module were found major challenges in ERP implementation in Ethio-telecom.

## 2.3.  Conceptual Framework

To make conceptual distinctions and organize ideas by using diagrams or charts and the like, researcher chose these variables since previous researchers which are discussed in the literature review section identified that these variables are the critical success factors that affect ERP implementation moreover these variables are the ones that captures the essence of the study. Accordingly, the researcher choses to see the relationship between independent variables Top management support and commitment, ERP software selection, Clear user requirement and need assessment, Capacity of consultants and Implementers, Project scope management, Training and knowledge transfer, Team composition and capacity,  Organizational culture and readiness, and dependent variables ERP implementation success.

*Figure 2.4 Conceptual Framework developed by the researcher*

| Independent Variables | Dependent variables |
|---|---|

| | |
|---|---|
| 1 | Top management support and commitment |
| 2 | ERP Software selection |
| 3 | Clear user requirement and need assessment |
| 4 | Capability of consultants and implementers |
| 5 | Project scope management |
| 6 | Training and knowledge transfer |
| 7 | Team composition and capacity |
| 8 | Organizational culture and readiness |

ERP Implementation
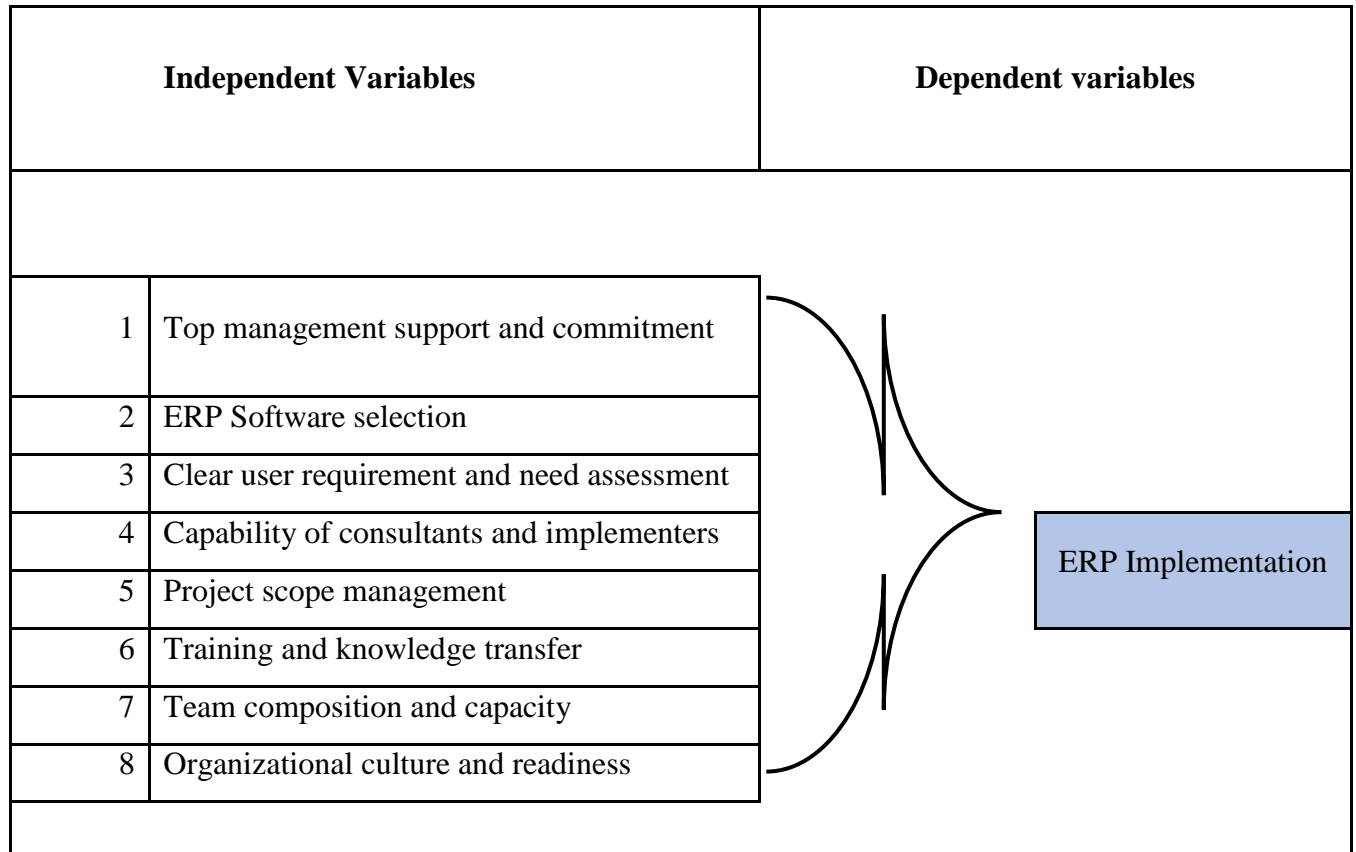
Source: Developed by the researcher January 2020

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

## 3.1.  Research Design

As the main objective of the study was to assess the critical factors affecting successful implementation of ERP in BGI Ethiopia, both descriptive and explanatory research designs were used. On the one hand, the descriptive research was used to assess the status of BGI before and after ERP implementation. On the other hand, explanatory research was used to examine the relationship of the selected CSF, and the dependent variable ERP implementation success.

## 3.2.  Sources of Data

Both primary and secondary sources of data were used for this study. The primary data were gathered through questionnaire. The secondary data were collected from the company's ERP project documents, training manuals and other documents which are linked with the ERP implementation and also from different literatures on the area.

## 3.3.  Types of Data

### 3.3.1.  Data measurement

For the proposed study, ordinal scales were used. Ordinal scale is a ranking or a rating data that normally uses integers in ascending or descending order. The numbers assigned to the important (1, 2, 3, 4, 5) do not indicate that the interval between scales are equal, nor do they indicate absolute quantities. For data scale the 5-point Likert scale will be used. The Liker scale assigned is presented as below table.

Table: 3.1 Liker scale

| Item | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|------|------|------|------|------|------|
| Likert Scale | 5 | 4 | 3 | 2 | 1 |

The numbers in the table indicates that the level to which the respondents agree with each statement mentioned in the questioner as below:

    1=>Strongly disagree with the statement

    2=>Disagree with the statement

    3=>Neutral answer with the statement

    4=> Agree with the statement

    5=>Shows that the respondent is strongly agree with statement

### 3.3.2. Data cleaning

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

## 3.4. Target Population

Since the purpose of the study is to assess the critical success factors of ERP implementation the target population involves all ERP users of BGI Ethiopia. The total number of ERP user in BGI is 60 employees as respondent (*Source: BGI Ethiopia ERP project report 2016*).

## 3.5. Sampling Design

All staff of BGI those involved in Enterprise Planning was represented by the sample. In the study the entire sample that is selected based on available population. Thus, an availability sampling technique was employed to select all ERP users in BGI Ethiopia PLC. The total number of ERP users which is 60, from three site and one corporate division (Saint George, Kombolcha and Hawassa brewery and BGI corporate team) consists of non-management, middle management and top management. As per Executive agreement of BGI Ethiopia ,the non-managements are staff with job grade less than 12, the middle managements are executive management member with job grade 12 and 13, the top managements are senior managers and directors with job grade 14 and 15 and are the decision maker during the project and based on the output after implementation. The questionnaires were distributed to all 60 users of ERP in BGI. Due to the workload of users of ERP in BGI and distant of the other two sites from Addis Ababa,

the researcher expected 20 percent  nonresponse rate of the 60 questioners distributed to respondents.

## 3.6.    Methods of Data Collection

For the study various techniques were used for the data collection. Techniques that were used in data collection include questionnaire and document review. Questioners were comprised with both open-ended and closed-ended questions. Open ended questions allowed the respondent to answer freely to the subject in their own words rather than being limited to choosing from a set of alternatives. Different documents related to ERP implementation were reviewed and used as secondary source of data for the paper. This includes the relevant information from published and unpublished documents including company's project blueprints, company's ERP status reports, minutes of meeting and publications related to ERP implementation, training manuals and different papers related to ERP were used.

## 3.7.    Methods of Data Analysis

The questionnaires were collected from the employees of BGI Ethiopia from all sites (Hawassa, Kombolcha and Addis Ababa). As there were multiple independent variables for critical success factor with one dependent variable (ERP implementation), the collected data were analyzed using descriptive statistics and multiple linear regression that utilize Statistical Package for Social Sciences (SPSS 20.0 version).

Linear multiple regressions were used to determine the relative importance of each factors in explaining the success of ERP implementation.

The collected data was changed and interpreted into meaningful information, figure and statement. So, it was analyzed, processed and interpreted according to the nature of data. SPSS software version 20 was employed to analyze and present the data through the statistical tools for this study: namely, descriptive analysis, correlation and multiple regression analysis.

### 3.7.1 Descriptive analysis

The descriptive statistical results were presented by tables, frequency distributions and percentages to give a condensed picture of the data through summary of statistics, which includes the means and standard deviations values which are computed for each variable in this study.

### 3.7.2 Pearson correlation analysis

In this study Pearson's correlation coefficient was used to determine the relationship between ERP implementation and the mentioned factors (Kothari, 2004).

### 3.7.3 Regression function

The equation of multiple regressions on this study was generally built around two sets of variable, namely dependent and independent variables. The basic objective of using regression equation is to make the researcher more effective at describing, understanding, and predicting and the stated variables. Regress ERP implementation on the SCF (Kothari, 2004).

### 3.7.4 Model Specification

So as to know which variable has direct relationship with *EEI* and to infer that the mentioned variables are critical factors a model specification is designed.

$Y=\beta 1*X1 + \beta 2*X2 + \beta 3*X3 + \beta 4X4 + \beta 5X5 + \beta 6X6 + \beta 7*X7 + \beta 8*X8$

Where:

Y=EEI = ERP Implementation

X1= Top management support and commitment

X2 =ERP Software selection

X3 =Clear user requirement and need assessment

X4 =Capability of consultants and implementers

X5 =Project scope management

X6 =Training and knowledge transfer

X7 =Team composition and capacity

X8 =Organizational culture

## 3.8. Codifications of Variables

Table 3.2 Codification of variables developed by researcher

| Variables | Code |
|---|---|
| Top management support and commitment | TMS |
| ERP Software selection | ESS |
| Clear user requirement and need assessment | CUN |
| Capability of consultants and implementers | CCI |
| Project scope management | PSM |
| Training and knowledge transfer | TKR |
| Team composition and capacity | TCC |
| Organizational culture and readiness | OCR |
| Evaluation of ERP | EEI |

## 3.9. Reliability and Validity

Table 3.3 Reliability statistics

| Cronbach's Alpha | No of Items |
|---|---|
| | Cronbach's Alpha for each Item |
| Top management support and commitment | 0.810 |
| ERP Software selection | 0.763 |
| Clear user requirement and need assessment | 0.822 |
| Capability of consultants and implementers | 0.844 |
| Project scope management | 0.806 |
| Training and knowledge transfer | 0.775 |
| Team composition and capacity | 0.767 |
| Organizational culture | 0.809 |

Source: Field surveys, Jan.-2020

**Reliability**

Reliability test was conducted to examine the properties of measurement scales and the items in order to obtain the overall index of internal consistency of the scales. Cronbach's alpha is the most common measure of internal consistency ("reliability"). According to table 4.3, it was calculated Cronbach's alpha for each field of the questionnaire. This table shows the values of Cronbach's alpha for each of the questionnaire, the values of Cronbach's alpha obtained is from 0.763 to 0.844. This reliability statistics is above the minimum required threshold (0.7). Hence, the instrument is reliable.

**Validity**

Validity is the extent to which it gives the correct answer (Kirk and Miller, 1986). It indicates the degree to which an instrument measures what it is supposed to measure. Questionnaire papers were modified according to literatures within the specific topic and were reviewed by professionals and academicians.

## 3.10. Ethical Consideration

Ethical conduct states that it is the responsibility of the researcher to assess carefully the possibility of harm to research participants, and to the extent that it is possible, the possibility of harm should be minimized (Bryman and Bell, 2007). During the data collection and interpretation processes, the researcher convinced the participants that any confidential information they disclosed was kept confidential and convinced them the importance of the study. The respondents were also told that, their response will be used only for academic purposes and that confidentially will be assured, and no one would fall a victim because of any adverse findings in connection with their professional duties. This was to be done in order to motivate them to give their responses without reservation. Every questionnaire attached to a cover letter which clearly explained the purpose of the survey. The questionnaire didn't require the names of the respondents; this was to protect their identity and remain anonymous. As a result, the employees were aware from the beginning what the researcher was doing, why and where the information was going and why it was being gathered.

## 3.11. Operational Definitions

**Critical Success Factors (CSFs):** The factors those have significant positive impacts on the successful implementation ERP:

**Microsoft Dynamics AX**: Is a software acquired and being used by BGI Ethiopia PLC

**Successful Implementation**: To describe that ERP functionality of ERP in BGI Ethiopia

# CHAPTER FOUR

# DATA ANALYIS, RESULTS AND DISCUSSIONS

## 4.1 Introduction

This chapter presents findings from the study about the critical success factors of ERP implementation of BGI Ethiopia. In this section the results of empirical analysis are presented. The researcher collected data from office records    and questionnaires that were filled by employees. The questionnaires were distributed as shown in the below. SPSS version 20 of the software was used for analysis of the study data for 60 respondents. Out of a total of 60 respondents, 49 (81.7 %) filled and return the questionnaires. This shows the non-response rate is 18.30 percent, which is above the expected response rate mentioned above chapter three. Hence, it can be concluded that the majority of the respondents returned the questionnaire with answers. Therefore, the researcher used all the questionnaires returned.

## 4.2 Demographic Characteristics

The demographic section of the questionnaire shows the information about the educational level, age, work experience, position and currently working region with resulting conclusion for the research. Table 4.1 presents the age, educational qualification and current position information of the respondents.

Table 4.1 Demographic presentation of the respondents

| Category | Item | Frequency | Percent |
|---|---|---|---|
| Age | Less than 5 years | 17 | 34.7 |
| | 6-10 Years | 17 | 34.7 |
| | 11-15 Years | 10 | 20.4 |
| | 16-20 Years | 4 | 8.2 |
| | More than 20 Years | 1 | 2 |
| | **Total** | **49** | **100** |
| Educational Qualification | College Diploma | 4 | 8.2 |
| | Undergraduate Degree | 34 | 69.4 |
| | Masters' Degree and Above | 11 | 22.4 |
| | **Total** | **49** | **100** |
| Current Position | Non-Management | 38 | 77.6 |
| | Middle Management | 10 | 20.4 |
| | Top Management | 1 | 2 |
| | **Total** | **49** | **100** |

Source: Field survey, Jan -2020

Table 4.1 is about the age distributions of the respondents. It is evident from this age frequency distribution table that majority of the respondents were between the age of 31 and 40 years (69.4 %). The study noted that, majority of respondents involved for this study is young employees. So that the respondents are familiar with and has interest using technology including ERP and are flexible to accept the change management.

The respondent's work experience in BGI Ethiopia. The result indicates that the majority of them were in the category of 6 to 15years experience represented by 55.1 percent of the total respondents. It was realized that most of the respondents have been working for 6 to 15 years. This indicates the respondents has sufficient experience in using ERP.

The respondent's education qualification in BGI Ethiopia. The result indicates the majority of the respondents were in the category of first degree and master's degree level. The study noted that, BGI Ethiopia has competent and qualified employees, who can easily train, understand and apply the required technical knowledge. The respondent's current position in the BGI Ethiopia. The

result indicates the majority of the research participant which is more than 77 percent is in the category of non-managerial position.

The non-management staff is defined as staff with job grade less than 12. Whereas middle managements are managers (section heads or subdivision heads) with job grade 12 and 13. The top managers involve departmental directors including managing directors with job grade 14 and 15. The non-management staff are very familiar with using ERP for their daily data encoding and reporting. This indicate they have good technical skill and knowledge of using ERP.

## 4.2. Results of Descriptive Analysis

In this section the descriptive analysis part is presented, the researcher used frequency, percentage, mean and standard deviation to show the result obtained from the primary data sources.

### 4.3.1. Summary of assessment of management support and commitment

The level of agreement regarding their opinion about the existing management support and its commitment with its summary of the findings are discussed below:

Table 4.2 Assessment result of management support and commitment

| | Descriptive Statistics | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
| | f | % | f | % | f | % | f | % | F | % | | |
| Top management has understood the objective of ERP | 0 | 0 | 3 | 6.1 | 9 | 18.4 | 24 | 49 | 13 | 26.5 | 3.96 | 0.841 |
| Top management had great commitment to support ERP implementation project. | 1 | 2 | 5 | 10.2 | 16 | 32.7 | 14 | 28.6 | 13 | 26.5 | 3.67 | 1.049 |
| Top management had allocated all the required resource (time, budget and labor) for ERP implementation project. | 5 | 10.2 | 7 | 14.3 | 10 | 20.4 | 14 | 28.6 | 13 | 26.5 | 3.47 | 1.309 |
| Top management had good knowledge of ERP | 5 | 10.2 | 8 | 16.3 | 15 | 30.6 | 9 | 18.4 | 11 | 22.4 | 3.27 | 1.284 |
| Top management has given necessary attention to the ERP implementation project. | 0 | 0 | 3 | 6.1 | 20 | 40.8 | 17 | 34.7 | 9 | 18.4 | 3.65 | 0.855 |

From the above table 4.2 it is possible to see the summary based on the result presented on each questionnaire. Accordingly, regarding the question about the level to which the top management has understood the objective of ERP, the respondents' opinion shows that the majority of the respondents (75.5 percent of them) agree that top management has understood the objective of ERP. Concerning the statement of "Top management had great commitment to support ERP implementation project," the majority of the respondents (55.1 percent) agreed that Top management had great commitment to support ERP implementation project. Moreover, regarding to the statement of "Top management had allocated all the required resource (time, budget and labor) for ERP implementation project," the majority of the respondents which constitutes 55.1 percent agreed that top management had allocated all the required resource (time, budget, and labor) for ERP implementation project. Likewise, regarding to the statement, "top management has given necessary attention to the ERP implementation project," more than 52 percent of the respondents agree that top management has given necessary attention to the ERP implementation project. The finding from the above table shows that, the respondents have better understanding, and commitment and better attention has been given to the successful implementation of the ERP project. This can be considered as major strengths of the top management but there is lack of regular programs to transfer knowledge of ERP as there were more than 26 percent respondents that disagree Top management had good knowledge of ERP .Thus, the concerned body has to take this gap into consideration so as to take the necessary measure to fill the mentioned gap.

### 4.3.2. Summary of assessment of ERP selection

The levels of agreement regarding their opinion about the existing    ERP selection with its summary of the findings are discussed below:

Table 4.3. The level of agreement on their opinion about the existing ERP selection

| | Descriptive Statistics | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
| | F | % | F | % | F | % | F | % | F | % | | |
| BGI has selected the proper ERP software for implementation | 0 | 0 | 3 | 6.1 | 9 | 18.4 | 24 | 49 | 13 | 26.5 | 3.96 | 0.41 |
| The ERP software implemented for BGI Ethiopia is easily customized to the company's way of working | 1 | 2 | 5 | 10.2 | 16 | 32.7 | 14 | 28.6 | 13 | 26.5 | 3.67 | 1.049 |
| The company should select another ERP software instead of Dynamix AX | 5 | 10.2 | 7 | 14.3 | 10 | 20.4 | 14 | 28.6 | 13 | 26.5 | 3.47 | 1.309 |
| The ERP selected and implemented for BGI has already been used by another company in Ethiopia | 5 | 10.2 | 8 | 16.3 | 15 | 30.6 | 9 | 18.4 | 11 | 22.4 | 3.27 | 1.284 |
| BGI can easily get consultant or ERP support locally in Ethiopia. | 0 | 0 | 3 | 6.1 | 20 | 40.8 | 17 | 34.7 | 9 | 18.4 | 3.65 | 0.855 |

**Source**: Analysis of survey data, Jan.2020

As shown in the above table 4.3 for the assessment of ERP selection, five questions were designed and asked. In view of that, regarding the question about "BGI has selected the proper ERP software for implementation", the response shows that the vast majority of the respondents (75.5prcent of the respondents) agree that BGI has selected the proper ERP. With regard to the

statement of "the ERP software implemented for BGI Ethiopia is easily customized to the company's way of working.", more than halve of the respondents of 55.1 percent agreed that the ERP software implemented for BGI is easily customized to company's way of working. But still about 42.9 percent of the respondents disagreed with the statement . This indicates that there is gap on customization of ERP software to company's way of working. Moreover, regarding the statement of "the company should select ERP software instead of Dynamix AX.", the majority the respondents of 55.1 percent recommended that company should select another ERP instead of the entire ERP. This result also shows that there is a gap on the necessity of the selection of the ERP which fits the company's way of working and matches with its business operation.

Regarding the question if BGI could easily get consultant or ERP support locally in Ethiopia, though the majority of the respondents agree with statement, about 40.8 percent of the respondents are neutral with statement, this indicates that as ERP issues is very recent in Ethiopia, even users have no sufficient information about the source of the consultants and moreover in reality most of ERP consultants in Ethiopia came from abroad.

### 4.3.3. Summary of assessment of clear user requirement and need assessment

The level of agreement regarding their opinion about the clear user requirement and need assessment with its summary of the findings are discussed below:

Table 4.4 The level of agreement regarding clear user requirement and need assessment

| | Descriptive Statistics | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
| During implementation requirement analysis was done by implementers /consultants. | 0 | 0 | 3 | 6.1 | 9 | 18.4 | 24 | 49 | 13 | 26.5 | 3.96 | 0.841 |
| There was detail analysis and discussion with ERP users/key users during requirement | 1 | 2 | 5 | 10.2 | 16 | 32.7 | 14 | 28.6 | 13 | 26.5 | 3.67 | 1.049 |
| Need assessment was conducted by consultants before starting the ERP | 5 | 10.2 | 7 | 14.3 | 10 | 20.4 | 14 | 28.6 | 13 | 26.5 | 3.47 | 1.309 |
| Concerned departments were involved during ERP need | 6 | 12.2 | 8 | 16.3 | 15 | 30.6 | 9 | 18.4 | 11 | 22.4 | 3.22 | 1.31 |
| Employees were aware of the ERP requirement analysis and gave their inputs during the process. | 7 | 14.3 | 9 | 18.4 | 15 | 30.6 | 10 | 20.4 | | 16.3 | 3.06 | 1.281 |

**Source**: Analysis of survey data, Jan. 2020

From the above table 4.4 which presents about the assessment of ERP selection, 5 questions are designed and asked. Accordingly, on the subject of " During implementation requirement analysis was done by implementers/consultants." The response shows that the majority of the respondents (75.5 percent of the respondents) agreed that the requirement analysis was done by implementers. Regarding the statement of "There was detail analysis and discussion with ERP users or key users during requirement analysis," and "Need assessment was conducted by consultants before starting the ERP implementation." The majority of the respondents of 55.1 percent agreed that the detail analysis and discussion with ERP team users or key users during

the requirement analysis and need assessment was conducted by consultants before starting the ERP implementation. In addition, regarding the statement of "Concerned departments were involved during ERP need assessment." 40.8 percent of the respondents agreed that concerned were involved during ERP need assessment. This indicates that there is a gap on involving the concerned department during ERP need assessment. This may result in that all departments may not have similar understanding to buy in the project and to support the implementation.

Regarding the statement '"Employees were aware of the ERP requirement analysis and gave their inputs during the process,", about 36.7 percent of the respondents agreed with statement, but 32.7 percent of the respondents disagreed with statement, this indicates there is gap on employee's awareness on ERP implementation. This may have affected accepting the change on ERP implementation.

### 4.3.4. Capacity of consultants and implementers

The level of agreement regarding their opinion about the capacity of consultants and implementers with its summary of the findings is discussed below:

Table 4.5 Level of agreement regarding the capacity of consultants and implementers

| Capacity of consultants and implementers | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
| Consultants and implementers had multiple skills covering functional, technical, business knowledge. | 0 | 0 | 9 | 18.4 | 9 | 18.4 | 22 | 44.9 | 9 | 18.4 | 3.63 | 0.994 |
| Consultants had in-depth knowledge of software. | 2 | 4.1 | 4 | 8.2 | 23 | 46.9 | 12 | 24.5 | | 16.3 | 3.41 | 0.998 |
| Consultant had given immediate response when error arose during and after go-live | 4 | 8.2 | 6 | 12.2 | 10 | 20.4 | 20 | 40.8 | 9 | 18.4 | 3.49 | 1.175 |
| Consultant were able to quickly respond for any problem and are available when we required for support. | 5 | 10.2 | 7 | 14.3 | 19 | 38.8 | 7 | 14.3 | 11 | 22.4 | 3.24 | 1.251 |
| Consultants had relevant experience to support the ERP implementation project. | 7 | 14.3 | 6 | 12.2 | 11 | 22.4 | 8 | 16.3 | 16 | 32.7 | 3.42 | 1.442 |
| Consultants had capable to deliver the service as per the contract. | 10 | 20.4 | 9 | 18.4 | 7 | 14.3 | 15 | 30.6 | 7 | 14.3 | 3.00 | 1.399 |

As shown in the above table 4.5 that offers about the assessment of capacity of consultants and implementers, 6 questions are designed and asked. Accordingly, "consultants and implementers had multiple skills covering functional, technical, and business knowledge," the response shows that the majority of the respondents (63.3 percent of the respondents) agreed that the consultants and implementers had multiple skills covering functional, technical and business knowledge. Regarding the statement of "Consultants had in-depth knowledge of software," only 40.8 percent of the respondents agreed that that the consultants have in-depth knowledge of software. In addition, concerning the statement of "Consultant had given immediate response when error arose during and after go-live" about 59.2 percent of the respondents agreed that consultants had given immediate response when error arose during and after go-live. With regard to the statement "Consultant were able to quickly respond for any problem and are available when we required for support," only 36.7 percent of the respondents agreed with the statement. This indicates that there is a gap on availability of ERP consultants in Ethiopia to solve if any problem with ERP system. Furthermore, on the concern of "Consultants had relevant experience to support the ERP implementation project," only about 49 percent of respondents agreed with statements, this shows that there is gap on getting the right consultants with relevant experience to support the ERP. And only 44.9 percent of the respondents were agreed with the statement "Consultants had capable to deliver the service as per the contract." Similarly, as indicated in the response for the statement number 5 above, the result shows that there is still a gap on getting the capable consultants.

### 4.3.5. Project scope management

The level of agreement regarding their opinion about the *project scope management* with its summary of the findings is discussed below:

Table 4.6 the level of agreement regarding *project scope management*

| Project Scope Management | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| The ERP project had clear, written defined scope. | 0 | 0 | 5 | 10.2 | 15 | 30.6 | 20 | 40.8 | 9 | 18.4 | 3.67 | 0.899 |
| The ERP project had proper documented plan. | 4 | 8.2 | 7 | 14.3 | 18 | 36.7 | 14 | 28.6 | 6 | 12.2 | 3.22 | 1.104 |
| ERP project had well defined project organization. | 2 | 4.1 | 14 | 28.6 | 13 | 26.5 | 8 | 16.3 | 11 | 22.4 | 3.25 | 1.229 |
| There were project team formed to do the implementation | 5 | 10.2 | 8 | 16.3 | 15 | 30.6 | 9 | 18.4 | 11 | 22.4 | 3.31 | 1.294 |
| There was a blueprint which contains user's requirement for ERP implementation. | 4 | 8.2 | 11 | 22.4 | 14 | 28.6 | 9 | 18.4 | 11 | 22.4 | 3.24 | 1.267 |
| During ERP implementation there were clearly defined scope and deliverables for consultants and | 11 | 22.4 | 5 | 10.2 | 14 | 28.6 | 11 | 22.4 | 7 | 14.3 | 2.96 | 1.368 |

**Source**: Analysis of survey data, Jan.2020

The above table 4.6 presents about the assessment of project scope management. Six questions are designed and asked to check the level to which they agree on the project scope management. Accordingly, ''The ERP project had clear, written defined scope," the response shows that the majority of the respondents (59.2 percent of the respondents) agreed that the project had clear and written defined scope. On the issue of "The ERP project had proper documented plan," about 40.8 percent of the respondents agreed with the statement. And about 36.7 percent of the respondents are neutral with this statement. This implies that there is still a gap in a proper project planning and documentation. In addition, on the subject of "ERP project had well defined

project organization," no more than 38.7 percent of the respondents agreed the statement. This proves that there was a gap on project management during ERP implementation. This may affect the project completion time, quality and schedule mismanagement. Regarding the statement ''There were project team formed to do the implementation'' and ''There was a blueprint which contains user's requirement for ERP implementation.'', only 40.8 percent of the respondents agreed with the statement. And moreover, regarding the statement ''During ERP implementation there were clearly defined scope and deliverables for consultants and implementers'' only 36.7 percent of the respondents agreed with the statement. This indicates that there is still a gap on project team formation, clear project documentation and deliverables for consultants and implementers.

**4.3.6. Training and knowledge**

The level of agreement regarding the respondents' opinion about the *training and knowledge* with its summary of the findings is discussed below:

Table 4.7 The level of agreement regarding training and knowledge

| Training and Knowledge | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For ERP implementation training materials (manual) have been customized for each specific Jobs. | 5 | 10.2 | 7 | 14.3 | 10 | 20.4 | 14 | 28.6 | 13 | 26.5 | 3.47 | 1.309 |
| Detail training program has been placed and all employees were involved. | 5 | 10.2 | 8 | 16.3 | 15 | 30.6 | 9 | 18.4 | 11 | 22.4 | 3.27 | 1.284 |
| Training materials target the entire business task, not only the ERP screen and reports. | 0 | 0 | 3 | 6.1 | 20 | 40.8 | 17 | 34.7 | 9 | 18.4 | 3.65 | 0.855 |
| During ERP implementation training program was handled by highly qualified consultants and trainers. | 3 | 6.1 | 13 | 26.5 | 13 | 26.5 | 13 | 26.5 | 11 | 22.4 | 3.20 | 1.207 |
| Training material had been built by BGI functional Experts. | 15 | 30.6 | 7 | 14.3 | 8 | 16.3 | 12 | 24.5 | 7 | 14.3 | 2.78 | 1,476 |
| The ERP trainers did give BGI key users chance to manage the training session by themselves. | 0 | 0 | 3 | 6.1 | 21 | 42.9 | 17 | 34.7 | 8 | 16.3 | 3.61 | 0.837 |

**Source**: Analysis of survey data, Jan.2020

From the above table 4.7 that discusses about the assessment of training and knowledge, 6 questions are designed and asked. Consequently, regarding the question about "For ERP

implementation training materials (manual) have been customized for each specific Jobs," the response shows that the majority of the respondents (55.1 percent of the respondents) agreed that the training manuals were prepared and customized for specific jobs during ERP implementation. On the statement which focuses on "Detail training program has been placed and all employees were involved," about 40.8 percent of the respondents agreed with statement. Though the majority agreed with statement, there are still about 26.5 percent who did not agree and about 30.6 percent are remained neutral with the statement. This signifies that there is a gap on detail training that involves all concerned staff. Regarding the statement "Training materials target the entire business task, not only the ERP screen and reports,'' the majority of the respondents which is 53.1 percent agreed that the training materials target the entire business activity. In addition, regarding the statement of "During ERP implementation training program was handled by highly qualified consultants and trainers," about 48.9 percent of the respondents agreed with statement. However, about 32.6 percent of the respondents did not agree with statement. This indicates that there is still a gap on availability of qualified ERP consultants and trainers. Regarding the statement "Training material had been built by BGI functional Experts,'' only 38.8 percent of the respondents agreed. This indicates the ERP training material had not been built by BGI's functional expert; instead training materials were prepared by external experts.

Regarding the statement ''The ERP trainers gave chance to BGI key users in order to manage the training session by themselves, ''the majority of the respondents (about 51 percent) agreed with statement.

### 4.3.7. Team composition and capacity

The level of agreement regarding their opinion about the *team composition and capacity* with its summary of the findings is discussed below:

Table 4.8 The level of agreement regarding team composition and capacity

| Team composition and capacity | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| The ERP team members had a knowledge of the key issues relating to ERP implementation. | 0 | 0 | 2 | 4.1 | 13 | 26.5 | 28 | 57.1 | 6 | 12.2 | 3.78 | 0.715 |
| The project team had experienced in previous ERP implementations. | 3 | 6.1 | 8 | 16.3 | 22 | 44.9 | 10 | 20.4 | 6 | 12.2 | 3.16 | 1.048 |
| The team members had carefully been selected based on their knowledge and ability to accept | 4 | 8.2 | 10 | 20.4 | 14 | 28.6 | 11 | 22.4 | 10 | 20.4 | 3.27 | 1.238 |
| The team members had business and technical knowledge | 7 | 14.3 | 10 | 20.4 | 15 | 30.6 | 3 | 6.1 | 14 | 28.6 | 3.14 | 1.414 |
| The ERP implementation team members were skilled or qualified. | 7 | 14.3 | 9 | 18.4 | 16 | 32.7 | 3 | 6.1 | 14 | 28.6 | 3.16 | 1.405 |

**Source**: Analysis of survey data, Jan.2020

From the above table 4.8 that discusses about the assessment of ERP team composition, 5 questions are designed and asked. Accordingly, regarding the question about "The ERP team members had a knowledge of the key issues relating to ERP implementation," the response shows that the majority of the respondents (69.3 percent of the respondents) agreed that ERP team members had a knowledge of the key issues relating to ERP implementation. For the statement "the project team had experienced in previous ERP implementations", only 32.6 percent of the respondents agree with the statement. This indicates that the team had no ERP experience before implementation. This shows that ERP implementation is newly introduced to Ethiopia. On the statement "The team members had carefully been selected based on their knowledge and ability to accept change,'' about (42.8 percent of the respondents) agreed with statement. But 28.6 percent of the respondents did not agree with this statement. This indicates

that there is still a gap on careful selection of employees for ERP team members. For the statement "The team members had business and technical knowledge," the results of responses of the respondents agree and disagree are equal (34.7 percent each). And regarding the statement ''The ERP implementation team members were skilled or qualified.'' About 34.7 percent of the respondents agree with statement. But 32.7 percent of the respondents disagree and also the same percentage (32.7 percent of the respondents) were neutral with the statement. Finally, the overall result above shows there is a gap on ERP team composition.

### 4.3.8. Organizational culture and readiness

The level of agreement regarding their opinion about the Organizational culture and readiness with its summary of the findings is discussed below:

Table 4.9 the level of agreement regarding organizational culture and readiness

| Organizational culture and readiness | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Management attitudes and values concerning ERP system had positive impact ERP | 0 | 0 | 3 | 6.1 | 21 | 42.9 | 17 | 34.7 | 8 | 16.3 | 3.61 | 0.837 |
| The organizational culture of BGI had hinder ERP | 2 | 4.1 | 11 | 22.4 | 14 | 28.6 | 13 | 26.5 | 9 | 18.4 | 3.33 | 1.144 |
| The culture BGI related cross departmental group work had affected teamwork during ERP | 6 | 12.2 | 12 | 24.5 | 16 | 32.7 | 8 | 16.3 | 7 | 14.3 | 2.96 | 1.224 |
| BGI team had good attitudes towards accepting changes due | 0 | 0 | 2 | 4.1 | 13 | 26.5 | 28 | 57.1 | 6 | 12.2 | 3.78 | 0.715 |

**Source**: Analysis of survey data, Jan.2020

From the above table 4.9 that discusses about the assessment of organizational culture, 4 questions are designed and asked. Accordingly, on the matter about" Management attitudes and values concerning ERP system had positive impact ERP implementation", the response shows that the majority of the respondents (51 percent of the respondents) agreed that the management

attitudes and values concerning ERP system had positive impact on ERP implementation. With regard to the statement of "The organizational culture of BGI had hinder on ERP implementation", about 44.9 percent of the respondents agreed with statement. But 26.5 percent of the respondents did not agree with the statement. This indicates that there is still a gap on the organizational culture towards the ERP implementation. Regarding the statement "The culture BGI related cross departmental group work had affected teamwork during ERP implementation,'' (36.7 percent of the respondents do not agree with statement. This shows there is a big gap on culture of BGI regarding cross departmental group work and this culture may have affected team work on ERP implementation. Regarding the statement ''BGI team had good attitudes towards accepting changes due to ERP implementation,'' the majority (69.3 percent )of the respondents agreed with statement.

### 4.3.9. Evaluation of ERP implementation

The level of agreement regarding their opinion about the evaluation of ERP implementation with its summary of the findings is discussed below:

Table 4.10 The level of agreement regarding evaluation of ERP implementation

| Evaluation of ERP implementation | Strongly Disagree | | Disagree | | Neutral | | Agree | | Strongly Agree | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BGI productivity is improved after ERP implementation | 6 | 12.2 | 12 | 24.5 | 16 | 32.7 | 8 | 16.3 | 7 | 14.3 | 2.96 | 1.224 |
| Business operational efficiency has been improved after using ERP | 0 | 0 | 2 | 4.1 | 13 | 26.5 | 28 | 57.1 | 6 | 12.2 | 3.78 | 0.715 |
| After ERP implementation, inter-departmental communication has got improvement and increased | 3 | 6.1 | 8 | 16.3 | 23 | 46.9 | 10 | 20.4 | 5 | 10.2 | 3.12 | 1.013 |
| Overall ERP was successful in BGI Ethiopia. | 4 | 8.2 | 12 | 24.5 | 12 | 24.5 | 10 | 20.4 | 11 | 22.4 | 3.24 | 1.283 |
| Business information has been up to date after ERP implementation. | 6 | 12.2 | 11 | 22.4 | 15 | 30.6 | 4 | 8.2 | 13 | 26.5 | 3.14 | 1.369 |

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| ERP users are happy using ERP than the previous old system (Peachtree accounting) | 0 | 0 | 3 | 6.1 | 20 | 40.8 | 17 | 34.7 | 9 | 18.4 | 3.65 | 0.855 |

From the above table 4.10 that discusses about the assessment of evaluation of ERP implementation, 6 questions are designed and asked. Accordingly, regarding the question about" BGI productivity is improved after ERP implementation", the response shows that most of the respondents (36.7 percent ) disagreed with the statement. This indicates that the majority of the respondents are staff (not managers) so that the productivity of such a big project is evaluated by top management. Regarding the statement of "Business operational efficiency has been improved after using ERP", Majority of the respondents (44.9 percent ) agreed with the statement. And for the statement "After ERP implementation, inter-departmental communication has acquired improvement and increased efficiency,'' about 30.6 percent of the respondents agreed on the statement, but 22.4 percent of the respondents do not agree with the statement. This indicates that there is still a gap on inter-departmental communication. This can be explained by the fact that the production modules are not yet implemented. This result support that the fact that communication between production departments by using ERP module is not integrated. Apart from the above analysis, the overall results on evaluation of ERP implementation shows that ERP is functional for BGI Ethiopia and users are actively using the system for their day today real time encoding and use for different reporting.

## 4.3. Inferential Analysis Results

This chapter exhibits an extensive data analysis and the results of the statistical test. Inferential Data Analysis is conducted by correlation and regression analysis, by using statistical software known as SPSS. This chapter focuses on the results and discussion, based on the tables generated by SPSS. Based on this, the results are discussed below. This section discusses the outputs of the measurement assessment of correlation and regression.

### 4.3.1. Correlations

Correlation measures the degree to which the change in one variable follows the pattern of change in the other variable (Andy field, 2009). Pearson product-moment correlation coefficients

are computed to assess the relationship between independent and dependent variables that are measured quantitatively.

Table: 4.11 Summary of the Correlations tests

| | | CUM. EEI | CUM. OCR | CUM. TCC | CUM. TRK | CUM.P SM | CUM.C UN | CUM. ESS | CUM. TMS | CUM. CCI |
|---|---|---|---|---|---|---|---|---|---|---|
| **Correlations** | | | | | | | | | | |
| Pearson Correlation | CUM.EEI | 1.000 | .734 | .834 | .416 | .489 | .445 | .846 | .473 | .306 |
| | CUM.OCR | .734 | 1.000 | .457 | .251 | .421 | .336 | .463 | .340 | .374 |
| | CUM.TCC | .834 | .457 | 1.000 | .563 | .468 | .405 | .962 | .438 | .345 |
| | CUM.TRK | .416 | .251 | .563 | 1.000 | .470 | .409 | .562 | .405 | .277 |
| | CUM.PSM | .489 | .421 | .468 | .470 | 1.000 | .497 | .504 | .512 | .459 |
| | CUM.CUN | .445 | .336 | .405 | .409 | .497 | 1.000 | .467 | .952 | .346 |
| | CUM.ESS | .846 | .463 | .962 | .562 | .504 | .467 | 1.000 | .473 | .357 |
| | CUM.TMS | .473 | .340 | .438 | .405 | .512 | .952 | .473 | 1.000 | .386 |
| | CUM.CCI | .306 | .374 | .345 | .277 | .459 | .346 | .357 | .386 | 1.000 |
| Sig. (1-tailed) | CUM.EEI | . | .000 | .000 | .001 | .000 | .001 | .000 | .000 | .016 |
| | CUM.OCR | .000 | . | .000 | .041 | .001 | .009 | .000 | .008 | .004 |
| | CUM.TCC | .000 | .000 | . | .000 | .000 | .002 | .000 | .001 | .008 |
| | CUM.TRK | .001 | .041 | .000 | . | .000 | .002 | .000 | .002 | .027 |
| | CUM.PSM | .000 | .001 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | CUM.CUN | .001 | .009 | .002 | .002 | .000 | . | .000 | .000 | .008 |
| | CUM.ESS | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .006 |
| | CUM.TMS | .000 | .008 | .001 | .002 | .000 | .000 | .000 | . | .003 |
| | CUM.CCI | .016 | .004 | .008 | .027 | .000 | .008 | .006 | .003 | . |
| N | CUM.EEI | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | CUM.OCR | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | CUM.TCC | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | CUM.TRK | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| | CUM.PSM | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |

*Table 4.11 depicts* the values of Pearson's correlation along with the associated significance value between the independent and dependent variables.

It shows the Pearson an r's, the significance of each *r*, and the sample size (*N*) for each *r*. Here each of the research objectives is to examine the critical success factors of implementing ERP in the case of BGI Ethiopia PLC. Therefore, it can be assumed that the value of the one variable is a linear function of the value of the other variable.

Correlation coefficients describe how well a straight line fits the data. The correlation coefficient or *r* provides a numerical measure of the strength of the relationship between two numeric variables. The rule of thumb for interpreting correlation coefficient is to divide the range of possible scores in five intervals: 0 to 0.20 corresponds to a very weak relationship; 0.21 to 0.40 corresponds to a weak relationship, 0.41 to 0.60 corresponds to a moderate relationship, 0.61 to 0.80 corresponds to a strong relationship, and 0.81 to 1.00 corresponds to a very strong relationship (Cohen, 2003). These rules apply whether the sign of the correlation coefficient is positive or negative.

Therefore, from the above table the *r* value of top management support and commitment 0.473 with *p*-value<0.05(0.000) and ERP Software selection r-value 0.846 with p-value<0.05(0.000). This shows that top management support and commitment as factor is positively, moderately correlated (since it lies between 0.41 to 0.60 corresponds to a moderate and positive relationship). Also, ERP software selection factors with *p*-value<0.05(0.000) is positively and very strongly correlated (since it lies between 0.81 to 1.00 corresponds to a very strong and positive relationship). Moreover, from the above table the *r* value of clear user requirement and need assessment as a factor is 0.455 with *p*-value<0.05(0.001).It is positively , and moderately correlated (since it lies between 0.41 to 0.60 corresponds to a moderate and positive relationship),capability of consultants and implementers factors *r*-value 0.306   with *p*-value<0.05(0.016), as factor  is positively, and weakly  correlated (since it lies between 0.21 to

0.40 corresponds to a weak and positive relationship). Project scope management $r$-value 0.489 with $p$-value<0.05(0.000) as factor is positively, and moderately correlated (since it lies between 0.41 to 0.60 corresponds to a moderate and positive relationship). Training and knowledge transfer factors $r$-value 0.416 with p-value<0.05(0.001) as factor is positively, and moderately correlated (since it lies between 0.41 to 0.60 corresponds to a moderate and positive relationship). Team composition and capacity factors $r$-value 0.834 with $p$-value<0.05(0.000) as a factor is positively, and very strongly correlated (since it lies between 0.81 to 1.00 corresponds to a very strong and positive relationship), organizational culture and readiness factors $r$-value 0.734with $p$-value<0.05(0.000) as a factor is positively, and strongly correlated (since it lies between 0.61 to 0.80 corresponds to a strong and positive relationship).

### 4.3.2. Multiple regression analysis

In this study multiple regressions were conducted in order to examine and a measure how much of the variability in the outcome (in this case ERP implementation) accounted by the above-mentioned predictors. In conducting the multiple regression analysis, several main assumptions were considered and examined in order to ensure that the multiple regression analysis was appropriate.  The assumptions to be examined are as follow:′  (1) outliers,′  (2) normality linearity and homoscedasticity, and′  (3) multicollinearity.

In order to see outliers, it is needed to check the data whether there are any potential outliers existing in the analysis. Multiple regressions are very sensitive to outliers (i.e. very high or low score)" Thus, outliers should be removed before running the regression analysis. Multivariate outliers can be detected by using statistical methods such as case wise diagnostics. While conducting multiple regression and collinearity diagnostics, eight outliers were detected and removed.

The tolerance for a variable is 1 - $R$-squared for the regression of that variable on all the other independents, ignoring the dependent. When tolerance is close to 0 there is high multicollinearity of that variable with other independents and the $B$ and Beta coefficients will be unstable. But in this case tolerance is much higher than 0 which is (0.166 to 0.717) - coefficient table below (Table1.14). Hence, multicollinearity is not a threat to the substantive conclusions of this study and the $B$ and Beta coefficients are stable. VIF (Variance Inflation Factor) is (1.394 to 6.010)

simply the reciprocal of tolerance. In this case, since VIF are less than 10 and greater than 1, thus multicollinearity is not a threat to the substantive conclusions of this study and the B and Beta coefficients are stable

One of the assumptions to be examined is normality linearity and homoscedasticity. In order to check normality a graph is plotted using SPSS regression graph. The below graph shows the assumption of normality is accepted; thus, the assumption of normality is met as the histogram shows the assuption of normality is met .

Figure 4.1 Regression assumption
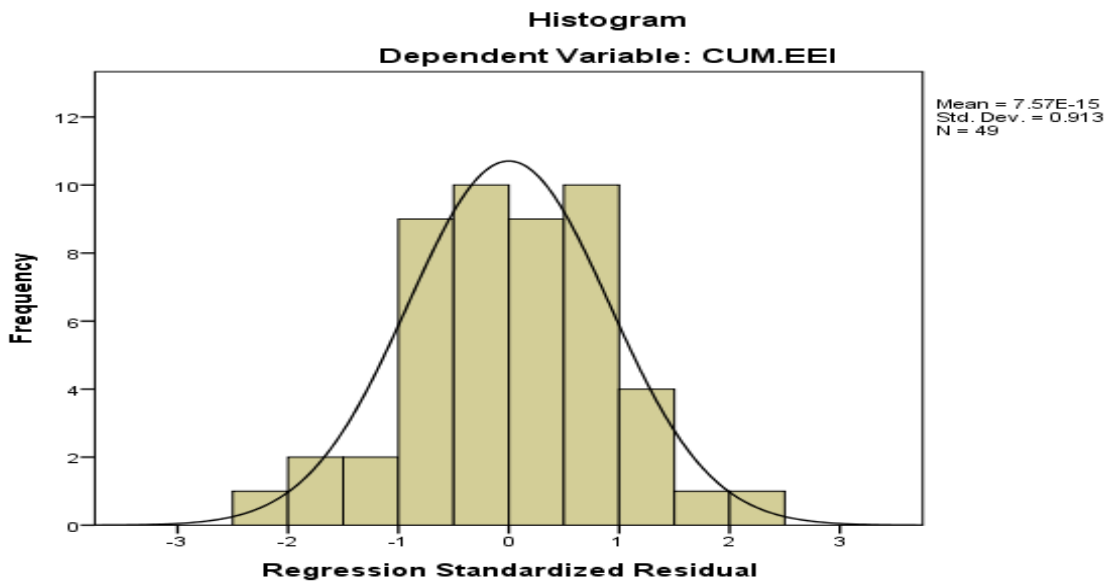


**Source**: Analysis of survey data, Jan.2020

Moreover, to check linearity, a graph is plotted using SPSS regression graph. The below graph shows the assumption of linearity is met.

Figure 4.2 Normal P-P Plot of regression standardized residual dependent variable



**Normal P-P Plot of Regression Standardized Residual**
**Dependent Variable: CUM.EEI**

**Source**: Analysis of survey data, Jan.2020

So as to check assumption of homoscedasticity or homogeneity, residual data is plotted using SPSS regression graph and the graph shows most of the data scattered are compacted in one area in homogenized pattern.

Figure 4.3 Scatterplot dependent Variable

**Scatterplot**
**Dependent Variable: CUM.EEI**
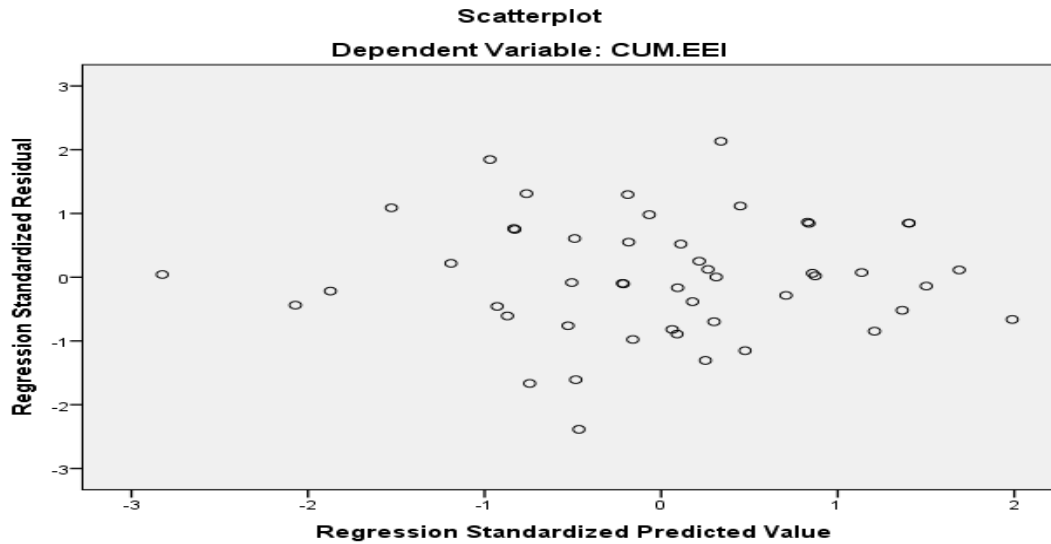
**Source**: Analysis of survey data, Jan.2020

The above graph shows the assumption of linearity, normality and homoscedasticity is valid and distributed normally.

### 4.3.3. Multiple regression model summary

Table 4.12 Model summary of critical factors with the dependent variable –EEI

| Model Summary | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change | Durbin-Watson |
| 1 | .943ᵃ | .889 | .867 | .22744 | .889 | 40.004 | 8 | 40 | .000 | 1.977 |

a. Predictors: (Constant), CUM.CCI, CUM.TRK, CUM.OCR, CUM.CUN, CUM.PSM, CUM.TCC, CUM.TMS, CUM.ESS

b. Dependent Variable: CUM.EEI

**Source**: Analysis of survey data, Jan.2020

From the above table 4.12, it is also possible to find out that $R^2$ is a measure of how much of the Variability in the outcome (in this case ERP Implementation) is accounted for by the above-mentioned predictors (factors). As shown in table 4.11, $R^2$ value is 0.889, which means that all the mentioned factors account for 88.9 percent of the variation in the successful implementation of ERP. The remaining 11.1 percent of the variance is explained by other variables not included in this study.

Table 4.13 ANOVA table summary of critical factors with the dependent variable –EEI

**ANOVAa**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 16.556 | 8 | 2.069 | 40.004 | .000b |
| | Residual | 2.069 | 40 | .052 | | |
| | Total | 18.625 | 48 | | | |

a. Dependent Variable: CUM.EEI

b. Predictors: (Constant), CUM.CCI, CUM.TRK, CUM.OCR, CUM.CUN, CUM.PSM, CUM.TCC, CUM.TMS, CUM.ESS

Source: Survey (2020), SPSS20 from primary data analysis

The above ANOVA table 4.13 result shows sig. value= 0.000. This suggests that the model is quite significant in explaining the variances. The significance result at $p < 0.05 (0.000)$ provides support for the significant relationship.

### 4.3.4. Regression coefficients

*Table 4.14* depicts the coefficients of multiple regressions.

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| (Constant) | .034 | .268 | | .125 | .901 | | | | | |
| CUM.OCR | .455 | .063 | .452 | 7.166 | .000 | .734 | .750 | .378 | .698 | 1.433 |
| CUM.TCC | .139 | .167 | .172 | .830 | .412 | .834 | .130 | .044 | .180 | 5.564 |
| CUM.TRK | .078 | .061 | .087 | 1.288 | .032 | .416 | -.200 | -.068 | .605 | 1.654 |
| CUM.PSM | .014 | .060 | .017 | .238 | .813 | .489 | .038 | .013 | .552 | 1.813 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CUM.CUN | .171 | .162 | .196 | 1.056 | .297 | .445 | -.165 | -.056 | .412 | 2.422 |
| CUM.ESS | .475 | .190 | .527 | 2.497 | .017 | .846 | .367 | .132 | .166 | 6.010 |
| CUM.TMS | .255 | .184 | .256 | 1.383 | .043 | .473 | .214 | .073 | .423 | 2.366 |
| CUM.CCI | .109 | .054 | .125 | 2.010 | .031 | .306 | -.303 | -.106 | .717 | 1.394 |

**Source**: Analysis of survey data, Jan.2020

*The above Table 4.14* depicts the coefficients of multiple regressions. It shows in detail the beta (standardized and unstandardized) value of various independent variables and its associated significance value.

The following points discuss the interpretation of the *table 4.14.*
Column B shows the constant values for the regression for predicting the dependent variable from the independent variable. Beta is measured in units of standard deviation.  Table 4.14 above displays the estimates of the multiple regression of *EEI* against its independent variables. The above table also shows that, all the explanatory variables included in this study can significantly explain at 99 percent confidence level to the variation on the dependent variable.

The Un-standardized Coefficients of determination under the column B in, table 4.14, were used to substitute the unknown beta values of the regression model. The beta values indicated the direction of the relationship. A positive or negative sign indicates the nature of the relationship. The significant values (*p*-value) under sig. column indicate the statistical significance of the relationship or the probability of the model giving a wrong prediction. A *p*-value of less than 0.05 is recommended as it signifies a high degree of confidence. In this case, the predictor variables with *p*>0.05 are *TCC* **factors** (*p*= 0.412), *PSM* **factors** (0.813), *CUN* **factors** (0.297).

The predictor variables produced statistically significant results *p*< 0.05 *OCR* (*p*=0.000), *TRK* (*p*= 0.032), ESS (p=0.0173), *TMS* (*p*= 0.043) and *CCI* (*p*= 0.031). From the results, it can be seen that a p-value of the above-mentioned   factors scores are less than 0.05. These variables have direct relationship with *EEI* and can be inferred that the mentioned variables are critical

factors that have major contribution for the successful implementation of *ERP*. On the other hand, *TCC*, *PSM*, and *CUN* have insignificant relationship with *EEI* and can be inferred also that the mentioned variables are not critical factors and thus do not have major contribution for the successful implementation of *ERP*.

Thus, *EEI* =0.034 +0.455*OCR + 0.078*TRK + 0.475 *ESS +0.255*TMS+ 0.109*CCI

Where:

EEI = ERP Implementation

OCR =Organizational culture and readiness factor

TRK =Training and Knowledge transfer factor

ESS =ERP Software Selection factor

TMS = Top management support and commitment

CCI= Capability of consultants and implementers

It is known the summary of the findings shows and supports the fact that these five factors are significant factor which affects the ERP implementation. The study also shows that, all of the dimensions account for 88.9 percent of the variation in ERP implementation. This shows that all of the dimensions were found to be the strong statistical predictor of ERP implementation successfully .It is known that the study is dedicated to answer the following basic research questions: "What are the factors that led BGI Ethiopia to implement ERP?", based on this the research have identified eight   important factors for the successful implementation of ERP . This finding has answered the first research question . Moreover, the research has also answered the other research question that is, "What are the critical factors affect ERP implementation?" as the result shows that out of the eight identified important critical factors, five critical factors most significant factors that directly affects the successful implementation of ERP.

It is known that the following Hypothesis were proposed.

i.    H1: Top management support and commitment is positively correlated with ERP implementation

ii.    H2: ERP Software selection is positively correlated with ERP implementation.

iii.    H3: Clear user requirement and need assessment is positively correlated with ERP implementation.

iv. H4: Capability of consultants and implementers is positively correlated with ERP implementation.

v. H5: Project scope management is positively correlated with ERP implementation.

vi. H6: Training and knowledge transfer is positively correlated with ERP implementation

vii. H7: Team composition and capacity is positively correlated with ERP implementation

viii. H8: Organizational culture and readiness is positively correlated with ERP implementation.

Based on this, each of the Hypotheses will be tested using the regression coefficient table. Thus, the following hypothesis:

The hypothesis, "Top management support and commitment is positively correlated with ERP implementation", is accepted.

The hypothesis, "ERP Software selection is positively correlated with ERP implementation", is accepted.

The hypothesis, "Clear user requirement and need assessment is positively correlated with ERP implementation", is rejected.

The hypothesis, "Capability of consultants and implementers is positively correlated with ERP implementation", is accepted.

The hypothesis, "Project scope management is positively correlated with ERP implementation", is rejected.

The hypothesis, "Training and knowledge transfer is positively correlated with ERP implementation", is accepted.

The hypothesis, "Team composition and capacity is positively correlated with ERP implementation", is rejected.

The hypothesis, "Organizational culture and readiness is positively correlated with ERP implementation", is accepted.

## 4.4. Summary of Major Findings

As indicated in the introduction of this study and as shown in the statement of problem and literature review, though there many research studies on the area of ERP in the world, there very few research studies on ERP critical factors specific to Dynamics AX in Ethiopia. Hence this study was conducted to fill this gap. Moreover, all the research questions were answered, and hypothesis were tested and validated using the required model. Through a case study, more than (65 percent of the respondents) agreed with business operation efficiency of BGI Ethiopia has been improved after ERP implementation. This indicated that ERP system implementation has significant positive impact for the company. Furthermore, as the p-value of the above-mentioned selected factors scores are less than 0.05. These variables have direct relationship with ERP implementation and can be inferred that the mentioned variables are critical factors that have major contribution for the successful implementation of *ERP*. On the other hand, the remaining three have insignificant relationship with ERP implementation and can be inferred also that the mentioned variables are not critical factors and thus do not have major contribution for the successful implementation of *ERP*.

The summary of descriptive analysis also shows that, there was better understanding, commitment and better attention has been given to the successful implementation of the ERP project this can be considered as major strengths of the top management but there was lack of regular programs for transfer of knowledge of ERP as there were more than 26 percent respondents that disagreed on top management had good knowledge of ERP .Thus ,the concerned body has to take this gap into consideration so as to take the necessary measure to fill the mentioned gap. As ERP issue is very recent in Ethiopia, even users have no sufficient information about the source of the consultants and moreover in reality most of ERP consultants in Ethiopia came from abroad. ''Consultants were capable to deliver the service as per the contract.'' Similarly, as indicated in the response for the statement above, the result showed that there was still gap on getting the capable consultants. "During ERP implementation there were clearly defined scope and deliverables for consultants and implementers'' only 36.7 percent of the respondents agreed with the statement. This indicated that there was a gap on project team

formation, clear project documentation and deliverables for consultants and implementers. The following factors were identified as critical:

- ➢ Organizational culture and readiness
- ➢ Training and Knowledge transfer
- ➢ ERP Software Selection
- ➢ Top management support and commitment
- ➢ Capability of consultants and implementers

And the other three factors were

- ➢ Team composition and capacity
- ➢ Project Scope Management
- ➢ Clear user requirement and need assessment

It is known that the study is dedicated to answer the following basic research questions: "What are the critical factors ERP implementation in BGI Ethiopia?", based on this the research have identified eight critical that are important factors for the successful implementation of ERP. This finding has answered the first research question. Moreover, the research has also answered the other research question that is, "What are the benefits BGI obtained from implementation of ERP? as the result shows that the operational efficiency of the company increased, after implementation of ERP inter-departmental communication has improved, business information is up-to-date the users are happy using ERP that when they were suing Peachtree accounting software.

# CHAPTER FIVE

# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Conclusions

The main objective of the study was to identify the critical success factors of ERP implementation of BGI Ethiopia. The study targeted a total of 60 respondents. However, only 49 respondents responded and returned their questionnaires contributing to (81.7 percent) response rate. The data was collected using structured questionnaires and analyzed into frequency distribution, percentages, Pearson's correlations, and linear regression using the Statistical Package for Social Sciences (SPSS). The data was presented using tables and charts. Respondent from different age group, educational background, and year of experience were represented in the data collected.

From the summary of the findings and based on the objectives of the study the researcher drew the following conclusion. The five variables; organizational culture and readiness, training and knowledge transfer, ERP software selection, top management support and commitment, capability of consultants and implementers were identified as critical success factors o and have significant impact on success of ERP implementation. Similarly, from empirical reviews this conclusion is supported by some of the previous researchers like management support and capacity of consultants were identified by Gargeya and Brady (2005), organizational culture by (Huang, 2010), document and knowledge transfer by (Sentayehu, 2014) and ERP software

selection by Ferratt et al. (2006). The other three variables; clear user requirement and need assessment, project scope management and team composition and capacity were found out as important factors, but they were not critical to the implementation of ERP system.

The present research finding supported the fact that these factors were significant factor which affects the implementation of ERP. This shows that, all the selected $r$ dimensions in the respective of groups account for 88.9 percent of the variation in success of ERP implementation. As showed in the summary of result, the five factors were found to be the strongest statistical predictor of ERP implementation. The remaining three factors are important but are not critical.

Also, the finding shows that BGI is benefiting from ERP implementation . Some of these benefits are improvement of business operation in terms getting company data in one single database, interdepartmental communication is improved, business information is up-to- date and using ERP is more suitable for users than that Peachtree accounting.

## 5.2 Recommendations

Enterprise resource planning plays an important role in today's enterprise data management system and is becoming a backbone of organizations. Moreover, in Ethiopia many organizations are demanding for ERP system. Based on the result of this study, the researcher recommends and suggests the following. Thus, it is recommended for information technology application or business process improvement department of BGI to conduct further assessment to concretize this finding so that it will have an evidence-based decision making to address related gaps. As this research found out also that the mentioned Critical Success Factors affects ERP implementation 88.9 % the time, this indicated that further research is recommended to explore the remaining contributing factors. This creates also a room for other researchers to study other factors that contribute for ERP implementation.

Hence, the researcher recommends the following points based on the results of each independent variable.

➢ BGI Ethiopia is planning to rollout the ERP implementation for Raya Brewery SC, Zebidar Brewery SC and Castel Winery PLC. Hence, the company can consider the successful factors identified in this research as an input.

- The ERP software selected should be the one which can easily be customized to company's ways working.
- All concerned departments should involve during ERP need assessment.
- Employees should be aware of and participate during ERP requirement analysis so that they can contribute their inputs.
- During ERP implementation, there should be a proper project documentation and plan and there should be a clear and defined project scope and deliverables.
- Detail training program has to be placed and all concerned employees should be involved during the ERP training. Moreover, the ERP training material should be built by the company's functional units instead of outsourcing to other.
- To improve organization culture towards ERP implementation, there should be change management system during the implementation.
- The management should give more emphasis to inter-departmental communication during ERP implementation.
- BGI Management team should see and implement the whole module of ERP to have efficient inter-departmental communication.

## 5.3 Future Research

The researcher also recommends below points for future research:-

- Manufacturing industry (specially breweries) can also consider the critical success factors as an input while implementation ERP system for their organization.
- The detailed case study of this research can be used by other researcher as literature for future study.

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# Appendix I: Questionnaire for BGI Ethiopia Employees

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING & FINANCE

MA in Project Management & Finance

Dear Respondent

The main purpose of this questionnaire is to gather information about critical success factors of ERP implementation in BGI Ethiopia for partial fulfillment of MA in Project Management and Finance. The outcome of this study is will be used for the academic purpose. Thank you for taking your treasured time to fill out the questionnaire. I appreciate your collaboration in advance.

Section One:  Demographic Questions.

1.1.    Department of Respondent:_____

1.2.    Job Position:_____

*Please mark with (X) in appropriate box for the Questions 1.3 to 1.8.*

1.3.    Site (Factory):

☐ St. George Brewery    ☐ Kombolcha Brewery    ☐ Hawassa Brewery

☐ Corporate

1.4.    Age (Years):

☐ Up to 25    ☐ 26 to 30    ☐ 31 to 35    ☐ 36 to 40    ☐ Greater than 40

1.5.    Gender:

☐ Female    ☐ Male

1.6.    Occupation:

☐ Non-Management Staff    ☐ Middle Management    ☐ Top Management

1.7.    Current Level of Education:

☐ College Diploma

☐ Undergraduate Degree    ☐ Master's Degree and above

1.8.    Work Experiences:

☐ Less than 5 years    ☐ 6 to 10 years    ☐ 11 to 15 years

☐ 16 to 20 years    ☐ More than 20 years

**Section 2: Questions:**

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

| **1.Top Management support & commitment** | | | | | | |
|---|---|---|---|---|---|---|
| To what extent do you agree on the following statements regarding top management support? | | | | | | |
| # | Statement | 1 | 2 | 3 | 4 | 5 |
| 1 | Top management has understood the objective of ERP. | | | | | |
| 2 | Top management had great commitment to support ERP implementation project. | | | | | |
| 3 | Top management had allocated all the required resource (Time, budget, labor) for ERP implementation project. | | | | | |
| 4 | Top management had good knowledge of ERP. | | | | | |
| 5 | Top management has given necessary attention to the ERP implementation project. | | | | | |

| 2.ERP software selection | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| To what extent do you agree on the following statements regarding ERP software selection? | | | | | | |
| # | Statement | 1 | 2 | 3 | 4 | 5 |
| 1 | BGI has selected the proper ERP software for implementation. | | | | | |
| 2 | The ERP software implemented for BGI Ethiopia is easily customized to the company's way of working. | | | | | |
| 3 | Do you think the company should select another ERP software instead of Dynamix AX? | | | | | |
| 4 | The ERP selected and implemented for BGI has already used by another company in Ethiopia. | | | | | |
| 5 | BGI can easily get consultant or ERP support locally in Ethiopia. | | | | | |
| 3.Clear User requirement and need assessment | | | | | | |
| To what extent do you agree on the following statements regarding ERP requirements? | | | | | | |
| # | Statement | 1 | 2 | 3 | 4 | 5 |
| 1 | During implementation requirement analysis was done by implementors/consultants. | | | | | |
| 2 | There was detail analysis and discussion with ERP users/key users during requirement analysis. | | | | | |
| 3 | Need assessment was conducted by consultants before starting the ERP implementation. | | | | | |

| 4 | Concerned departments were involved during ERP need assessment. | | | | | |
|---|---|---|---|---|---|---|
| 5 | Employees were aware of the ERP requirement analysis and gave their inputs during the process. | | | | | |


**4.Capacity of consultants and Implementers**

To what extent do you agree on the following statements regarding capacity of ERP consultants?

| # | Capacity of consultants and Implementers | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Consultants and implementers had multiple skills covering functional, technical, business knowledge. | | | | | |
| 2 | Consultants had in-depth knowledge of software. | | | | | |
| 3 | Consultant had given immediate response when error arose during and after go-live | | | | | |
| 4 | Consultant were able to quickly respond for any problem and are available when we required for support. | | | | | |
| 5 | Consultants had relevant experience to support the ERP implementation project. | | | | | |
| 6 | Consultants had capable to deliver the service as per the contract. | | | | | |

| 6.Project Scope Management | | | | | | |
|---|---|---|---|---|---|---|
| To what extent do you agree on the following statements regarding ERP project management? | | | | | | |
| # | Project Scope Management | 1 | 2 | 3 | 4 | 5 |
| 1 | The ERP project had clear, written defined scope | | | | | |
| 2 | The ERP project had proper documented plan. | | | | | |
| 3 | ERP project had well defined project organization. | | | | | |
| 4 | There were project team formed to do the implementation | | | | | |
| 5 | There was a blueprint which contains user's requirement for ERP implementation. | | | | | |
| 6 | During ERP implementation there were clearly defined scope and deliverables for consultants and implementers. | | | | | |

| **6. Training and Knowledge** | | | | | | |
|---|---|---|---|---|---|---|
| To what extent do you agree on the following statements regarding training knowledge transfer? | | | | | | |
| # | Training and Knowledge | 1 | 2 | 3 | 4 | 5 |
| 1 | For ERP implementation training materials (manual) have been customized for each specific Jobs. | | | | | |
| 2 | Detail training program has been placed and all employees were involved. | | | | | |
| 3 | Training materials target the entire business task, not only the ERP screen and reports. | | | | | |
| 4 | During ERP implementation training program was handled by highly qualified consultants and trainers. | | | | | |
| 5 | Training material had been built by BGI functional Experts. | | | | | |
| 6 | The ERP trainers did give BGI key users chance to manage the training session by themselves. | | | | | |

| 7.Team composition and capacity | | | | | | |
|---|---|---|---|---|---|---|
| To what extent do you agree on the following statements regarding ERP team competency? | | | | | | |
| # | Team composition and capacity | 1 | 2 | 3 | 4 | 5 |
| 1 | The ERP team members had a knowledge of the key issues relating to ERP implementation. | | | | | |
| 2 | The project team had experienced in previous ERP implementations. | | | | | |
| 3 | The team members had carefully been selected based on their knowledge and ability to accept change. | | | | | |
| 4 | The team members had business and technical knowledge | | | | | |
| 5 | The ERP implementation team members were skilled or qualified. | | | | | |

| 8.Organazational culture and readiness |
|---|
| |

| To what extent do you agree on the following statements regarding organization culture and readiness? | | | | | | |
|---|---|---|---|---|---|---|
| # | Organizational culture and readiness | 1 | 2 | 3 | 4 | 5 |
| 1 | Management attitudes and values concerning ERP system had positive impact ERP implementation | | | | | |
| 2 | The organizational culture of BGI had hinder ERP implementation. | | | | | |
| 3 | The culture BGI related cross departmental group work | | | | | |
| 4 | BGI team had good attitudes towards accepting changes due to ERP implementation. | | | | | |

**9.Evaluation of ERP implementation**

| To what extent do you agree on the following statements regarding BPR? | | | | | | |
|---|---|---|---|---|---|---|
| # | Evaluation of ERP implementation | 1 | 2 | 3 | 4 | 5 |
| 1 | BGI productivity is improved after ERP implementation | | | | | |
| 2 | Business operational efficiency has been improved after using ERP | | | | | |
| 3 | After ERP implementation, inter-departmental communication has got improvement and increased efficiency. | | | | | |
| 4 | Overall ERP was successful in BGI Ethiopia. | | | | | |
| 5 | Business information has been up to date after ERP implementation. | | | | | |
| 6 | ERP users are happy using ERP than the previous old system (Peachtree accounting) | | | | | |

The above questionnaire was adapted from questionnaires used by Snell & Dean (1992), Boselie et al. (2001), Singh (2004), Laka (2004), Qureshi et al. (2007).