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FACTORS AFFECTING IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING IN THE CASE OF INDUSTRIAL PARKS DEVELOPMENT CORPORATION

BY MELASH TSEGAYE

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FACTORS AFFECTING IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION IN INDUSTRIAL PARKS DEVELOPMENT CORPORATION

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DECLARATION

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

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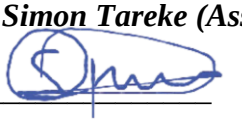
Date: _____

ENDORSEMENT

I confirm that this thesis has been produced as per the standards of higher institutions and submitted to St. Mary's University for examination approvable as a university advisor.

Advisor: Simon Tareke (Asst. Professor)

Signature:  _____

Date: _____

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Acronyms

ERP- Enterprise Resource Planning

IT- Information Technology

IPDC-Industrial Parks Development Corporation

SPSS- Statistical Package for Social Science

MC- Top Management Commitment

TE- User Training and education

ICT- Information Communication Technology

ABSTRACT

The main objective of this study was to assess the factors affecting successful implementation of Enterprise Resource Planning in the case of Industrial Parks Development Corporation. as a result, the researcher has investigated the factor affecting implementation by selecting Management Commitment, Internet Infrastructure, Training and Education, and implementation. the study follows qualitative approach and were used descriptive and explanatory research design. It is concerned with describing, analyzing, and interpreting conditions that exists at present in order to analyze and interpreted the collected empirical data. to achieve this objective random and stratified sampling were used to select the appropriate samples of the study and to collect data for the study questionnaire were distributed to 142 end users and interview were conducted for 12 supper users and ICT teams of IPDC; regression analysis was conducted based on 108 response form 142 questionnaire... The finding of the study showed that all the independent variable named management commitment, training and education, cost of implementation and Internet Infrastructure have a positive and significant correlation with the dependent variable which is ERP implementation. in the model summary the test result showed that the value of R and R2 was statistically significant and the multiple regression analysis output confirmed that from the independent variables have statistically significant relationship to predict ERP implementation. Hence the researcher recommended that Industrial Parks Development Corporation has to give emphasis for these independent factors in order to maintain the successful implementation of ERP in order to reduce the possibility of their phase II ERP implementation.

Key Words: Enterprise Resource planning, Industrial Parks Development Corporation, management commitment, training and educations, Internet Infrastructure, Allocated cost.

CHAPTER ONE

1. INTRODUCTION

The first chapter of the proposal will be a mainly of on background of the study, statement of the problem, objective of the study, significance of the study, scop of the study, limitation of the study and structure(organization) of the thesis.

1.1 Background of the study

In the current world information technology and information system are becoming relevant part of our personal and business daily activity. This technology revolution changes the business atmosphere in more advanced way. Over the last ten years many organizations have been shifting from traditional business operation to licensing and installing large commercial off-the-shelf software known as enterprise resource planning (ERP) systems to run their large-scale daily business function effectively and efficiently. ERP systems are fully integrated, enterprise-wide business application with a complete set of different subject areas like accounting, budgeting, human resource management, manufacturing, supply chain management, data warehouse, and customer relationship management (Andrejs& Merkuryev, 2009).

The enterprise resource planning (ERP) system is an information technology platform that is being installed to assist companies in better disturbing and managing enterprise-wide Operational data to managers and decision makers throughout the organization. It was in the beginning of the 1990s when the enterprise resource planning (ERP) system was first introduced. From the perspective of the business field, it was a great product. But from the perspective of system developers, it was a challenge to implement (Khaled & Cristian Bach, 2014).

ERP history started with material requirements planning (MRP) systems in the 1960s, when J.I. Case, a manufacturer of tractor and construction machinery, worked with IBM to develop what is believed to be the first MRP system (lan MacCue). According to lan MacCue, by 1990, research firm Gartner coined the term “enterprise resource planning.” The new name recognized that many

businesses—not just manufacturing—were now using this technology to increase the efficiency of their entire operations. This is when ERP systems took on their current identity: a unified database for information from across the company. ERP systems brought in other business functions, like accounting, sales, engineering and human resources (HR), to serve as a single source of accurate data for all employees. ERP systems continued to evolve throughout the ’90s. One major breakthrough was the advent of cloud ERP, first offered by NetSuite in 1998. With cloud ERP, widely seen as an improvement over on-premises systems, businesses could access critical business data through the web from any device with an internet connection. Cloud solutions meant companies no longer needed to purchase and maintain hardware, reducing the need for IT staffers and leading to easier implementations. This cloud model made ERP systems, once limited to enterprises, accessible to smaller companies that lacked the capital to launch and support a resource-intensive on-premises solution. Small and midsize businesses across industries could enjoy the same benefits as their larger counterparts, including automated processes, improved data accuracy and greater efficiency. In 2000, Gartner introduced the idea of ERP II to refer to internet-enabled systems that could pull data from other sources, including front-office applications, like customer relationship management (CRM), ecommerce and marketing automation, and back-end applications like supply chain management (SCM) and human capital management (HCM).

Oracle Enterprise Resource Planning, or ERP, Cloud is a Software-as-a-Service (SaaS) platform known for its ability to scale with your business as it grows and expands. Since the software lives and operates in the cloud, state-of-the-art data security is a top priority. Its vertically integrated stack keeps data under control, while its deployment options are flexible and create a multilayer approach. Interconnectivity is a hallmark of Oracle ERP Cloud’s integrated suite of applications. Data is shared easily and securely between users, allowing for increased production and business process streamlining. As we mentioned, security is a priority; however, it’s one of many components included that are important to end users, such as analytics, automation tools, reporting, user experience and more (Trillium, n.d).

Even though there are benefits and major advantage provided by the enterprise resource planning system utilization, the implementation of ERP projects are highly complex and new to Ethiopian business sector and hence organizations who are in implementation of the ERP project are subjected to various challenges including lack of fund and trained human resource force to support

the initiative (Wright Sally, 2002) more over ERP solution are highly complicated, costly, and tough to maintain and manage even though it is risky to implement ERP solution, it is achievable and feasible for organizations that have good management style, well trained staff, good internet infrastructure and organization that have the access to fund from multilateral financial institutions and aid agencies.

In recent years Ethiopian based private and public sector organizations implement enterprise resource planning systems and also most organizations need and want to implement enterprise resource planning systems for their business operation. The Enterprise Resource planning (ERP) system is being implemented by Industrial Parks Development Corporation (IPDC), to improve the financial management, property management, human capital management; improving reporting, increase business efficiency and effectiveness, enhancing accountability and transparency within the corporation and to the government owned industrial parks that are based and functioned across the nation.

1.2 Statement of the problem

ERP solutions are an integrated set of software package developed to ease data sharing and business automation process and deployed in a given organization for efficient streamline functioning. In modern world ERP solutions are developed by compiling best industry practice of existing implementation experience and are delivered by major vendors across the globe like oracle, SAP, and Microsoft dynamics etc.

In reality, ERP implementation is costly. Although ERP software is expensive, an even more substantial amount of business cost is typically spent on consulting to overcome difficult software implementation. According to (Diamond, J. and Khemlani, 2005), the introduction of an Oracle cloud system should be regarded as a major project requiring a structured project management approach with in the given organization.

Unfortunately, not all implementers of ERP solution are getting successful implementation due to complexity nature of the project; from the previous studies conducted more than 80% of ERP implementation are delayed and required additional time and cost due to changes in various factors to the original plan (Wang and Chen, 2006).

Henock (2021) focused on the success factor of Enterprise Resource Planning system in the case of Development Bank of Ethiopia and Commercial Bank of Ethiopia. The thesis used a descriptive and explanatory research type. The study found that critical success factors were categorized in to three classes namely project plan and vision, top management support, system package selection, project management, team work and composition; user training and education, interorganizational communication have positive relation with ERP system implementation success.

Abebech (2019) studied the critical factors that affect successful implementation of Enterprise Resource Planning in Commercial Bank of Ethiopia. To achieve this objective quantitative research approach and explanatory research design were used. Purposive/judgmental sampling was used to select the appropriate samples of the study and to collect data for the study questionnaires were distributed to employees in Commercial Bank of Ethiopia at head office. Findings of the study showed that all the independent variables are top management support, project management, user training, business plan and vision, technological infrastructure, change management and cooperation and communication were positive and significant correlation with dependent variable which is successful implementation of ERP. Only one variable (cooperation and communication) is not statistically significant relationship to predict ERP implementation success. This research did not see from the project team member side rather to the user side and even if the researcher used explanatory research designs that is the study did not use survey sampling. In addition, the researcher did not address the project related factor and managerial factor such as team work and composition and system package selection.

The review of the literature in the area illustrated that there are numerous factors that can be used for analysis. This study focuses on one of the factors that is organizational as it is felt that this factor is one of the most detrimental factors (Zhang et.al., 2005) that has effect on ERP implementation success. According to Samuel et.al. (2012), to conduct research in the critical success factors of ERP implementation they proposed a theoretical framework, In the proposed framework, the following factors will be included from the organizational context: Sustained Management Support, Change Management, Project Management, Business Process Reengineering (BPR), User Involvement, Communication, Legacy systems, Training and Education, Team Composition, and Infrastructure. According to Shahin & Sulaiman (2011), Many

critical success factors were listed but the research manly focus on Top management support, User training and education and Enterprise-wide communication.

As stated in the above Henock (2021) and Abebech (2019), these two studies were focused on financial sectors (banking sectors) and public sector none of them were assessing the effect of allocated cost and Internet Infrastructure. Currently, head quarter and more than 12 industry parks are implemented Oracle cloud under the supervision of Head quarter. So, this study explores and analyzes factors affect in implementation of ERP and also assess Industry Parks Development Corporation which implemented ERP system. The findings of this paper help Industry Parks Development Corporation for its future plan of phase II implementation ERP through the remaining industrial parks and for the organizations who have plans to implement ERP. This research will seek to fill the existing gap by assessing the factor affecting implementation of ERP in the manufacturing sector of Ethiopia.

1.3 Research Questions

This paper has addressed the following questions:

1. What factor influence the implementation of ERP in Industrial Parks Development Corporation?
2. How do the management commitment influence in the implementation of ERP?
3. How do the user training and education and influence in the implementation of ERP?
4. How do the Internet Infrastructure influence the implementation of ERP?
5. How do the cost allocated of ERP and software (License fee) influence in the implementation.

1.4 Objectives of the study

1.4.1 General Objective

The General objective of the study is to assess factors affecting implementation of Enterprise Resource Planning in the case of Industrial Parks Development Corporation (IPDC).

1.4.2 Specific Objective

The study will achieve the following specific objectives:

I. To assess which factors, have effect on ERP Implementation in Industrial Parks

Development Corporation.

ii. To assess impact of training and education contribution to ERP implementation.

iii. To assess impact of management commitment in ERP implementation.

iv. To assess the impact of Internet Infrastructure on the ERP implementation.

v. To assess the impact of cost allocated to ERP implementation.

1.5 Significance of the study

The primary relevance of this study will be knowledge and experience exchange about the implementation of ERP systems across firms in Ethiopia, as well as the provision of pertinent information that will aid Industrial Development Park Corporation in its pursuit of ERP. The findings of this study can potentially be utilized as a guide for future research projects and to close the knowledge gap on ERP in the Ethiopian context.

Generally speaking, the thesis has the following significances

- The study enables IPDC to measure the effects of factors affecting their ERP phase I implementation and will be used as an input for corrective action for their phase II ERP implementation.
- Since Ethiopian ERP system technology mainly the manufacturing industry is still in its infancy, assessing the success elements for their implementation might have an impact on the system's effectiveness.

1.6 Scope of the study

The scope of this research is conducted using a single-case study to investigate the factors affecting Enterprise Resource Planning (ERP) implementation by considering the case of Oracle ERP project at Industrial Parks Development Corporation. Even though the results of the study could be extended and applied to other similar organizations and ERP projects, the focus of the study is the ERP modules. Based on many studies there are many organization factors which have influence on the implementation of ERP. So, this study assesses the four factors which are Management commitment, Training and education, Internet Infrastructure, and Implementation Cost.

1.7 Limitation of The Study

Based on the above scope, this study has the below limitations:

- No data was gathered information from all branch industrial parks which implement oracle fusion cloud ERP under the supervision of headquarter.
- Due to time constraints, this study only evaluates four factors management commitment, internet infrastructure, training and education, and cost allocated to ERP implementation.
- The data was collected through only primary sources; questionnaire and semi structured interview. No secondary source of data was used.

1.8 Organization of the Study

This study is organized into five main chapters. The chapter one of the study presents the general introduction of the study includes background of the study, statement of the problem with basic research question, objective of the study, significance of the study, scope of the study. The second chapter is dedicated to review of related literature. The third chapter presents a method of the study. It described the type and design of the research per sued, detail description of participants/sample/ of the study, data sources, data collection tools and procedures, methods of data analysis and the like.

The fourth chapter covered results and discussions about the research topic based on the result of third chapter. Here, the results/findings of the study summarized and discussed with the use of related literature review will be explained. Finally, the fifth chapter will explain the summary, conclusion and recommendation part of the study.

CHAPTER TWO

2. LITRATURE REVEIEW

This Chapter focus on literature related to the implementation of enterprise resource planning. The chapter contains the following sections. Definition of ERP, Benefits of ERP in financial performance of an organization, factors affecting implementation of enterprise resource planning, empirical review from previous implementation of ERP in different countries and organizations and finally conceptual framework about ERP implementation will be included.

2.1 Definition of ERP

Enterprise resource planning (ERP) refers to a type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, risk management and compliance, and supply chain operations. A complete ERP suite also includes enterprise performance management, software that helps plan, budget, predict, and report on an organization's financial results (Oracle, n.d).

Enterprise resource planning (ERP) system is a software that provides a computer system integration and support to all sections and functions across the organization in a single system, those eliminating or reducing the need for individual unit database or system (Andrew and Yuri 2009). It is used to plan, control, and monitor resources such as assets, equities, or inventory materials as well as business process of an organization efficiently and effectively. The entire organization is to be represented and all departments and sections are directly linked to each other. The intelligent system is a computer- or IT-based and also a web based or supported by central database administrations. ERP system has the capacity to process and store extra-large data amounts. There are many ERP system currently available in the market like, Oracle fusion cloud, oracle E-Business suit, SAP, ERP Next, Odoo, SAP R/3, Microsoft dynamics, etc. (Andrew and Yuri 2009).

Enterprise resource planning system are being widely used by huge and multinational corporations to integrate their complex business requirement and functions in to a single centralized database. ERP is designed to integrate various modules such as Human capital management, financials,

supply chain management, material requirement planning, sales, and customer relationship management. Now a days ERP solution provider companies are providing industry specific customized solutions to companies based on their business requirements. This opportunity creates high demand for implementation of ERP by different enterprises across the globe (Legar, 2002).

ERP systems tie together a multitude of business processes and enable the flow of data between them. By collecting an organization's shared transactional data from multiple sources, ERP systems eliminate data duplication and provide data integrity with a single source of truth (Oracle University, n.d).

Generally, ERP is automation of a given organizations business process using software application to by integrating different departments and business functions workflow.

2.2.1 Access to Real time Information

One of the main importance of implementing ERP solution is ability to provide real time information regarding business operation of an enterprise. Real time data from property management department, financial performance, bank transactions balance and other transaction will be available at real time. In addition to transactional data ERP helps enterprises to have real time reporting output.

2.2.2 Standardized/Centralized Data

Much of the value of ERP can be traced back to the fact that all information from different departments is stored in one place. Without such a system, data is often spread far and wide across an organization in various applications and spreadsheets, making it harder for staff to track down whatever it is they need. Additionally, this approach often results in duplicate data in inconsistent formats, posing more challenges.

An ERP system can help with that, too, by standardizing all your critical data. Since it's all in one system, everything will be in the same format so you don't run into issues when running reports or analytics. Standardized information allows you to get all the insights you need to make more informed decisions that help the business save as much time and money as possible (lan MacCue, 2022).

2.2.3 Cost Saving

According lan MacCue 2022, For business owners and leaders, the most convincing reason to buy an ERP system is that it lowers overall costs, often in a big way. The automation we've already discussed can reduce or even wipe out many administrative and operational costs. Manual data entry or processes that require long paper trails, for instance, are often eliminated with this software. All the insights this software can provide mean ample opportunity for other cost savings. The ability to monitor the pulse of your organization in one place means you can quickly identify the source of higher expenses, which makes it much easier to reduce costs. Additionally, the improvements to planning that an ERP system enables should prevent rush orders, over-production or over-ordering, all of which can drive up costs. There are countless ways an ERP system can reduce your costs, which is why these solutions often have a fast ROI.

2.2.4 Improve Transparency and Accountability

Accountability is the process whereby public sector entities, and the individuals within them, are responsible for their decisions and actions, including their stewardship of public funds and all aspects of performance, and submit themselves to appropriate external scrutiny. Accountability is the ability the ability of an integrated financial system to be able to give first payment services, record keeping and storage of transactions that can be reconciled quickly and reports generated by the user department (Bonface et.al., 2016). The introduction of ERP in industrial parks development corporation offers objectivity, transparency, accountability, and traceability of transactions and events in the financial management system (Tariku, 2018).

2.3 Factor Affecting Implementation of ERP

Study conducted in Kenya, it shows Management commitment, and staff resistance to change, and system complexity and infrastructure are factors that affects successful implementation of ERP in a given enterprise. Management support has been emphasized, as a crucial factor in successful ERP implementation, management support, plays a significant role in the ERP implementation success because ERP are normally large-scale and require extensive resources (ShahinDezdar and SulaimanAinin, 2011). The members of top management in any organization are the decision makers. And in order to make the ERP project work, it needs full support from management (Khaled & Cristian, 2014). Staffs of an enterprise may hinder in the implementation of ERP due to training and skill capacity, resistance to new solutions and even fear of losing their job. In

addition to those factors complexity of the system and lack of adequate internet infrastructures may hinder the implantation of the solution too; by default, most ERP systems are complex when it comes to Ethiopian business operations, to avoid the complexity, it will be customized to Ethiopian business process.

2.3.1 Management Commitment

According to Bethlehem 2021, Management support plays s crucial role in the successful implementation of enterprise resource planning because ERP are normally large scale and requires extensive resource (Shahin Dezdar and Sulaiman Ainin, 2011). The members of management in any organization are the decision makers. And in order to make the ERP project work, it needs full support from top management (Khaled & Cristian, 2014). Managers should legitimize new goals and objectives. A shared vision of the organization and the role of the new system and structures should be communicated to employees. New organizational structures, roles and responsibilities should be established and approved. Policies should be set by top management to establish new systems in the company. In times of conflict, managers should mediate between parties (Fiona and Janet, 2001).

2.3.2 User Training and Education

ERP is not an easy solution and then requires adequate training and education of users to use the system efficiently and effectively. Proper training and education would be beneficial since it enhances the user's level of skill and knowledge, thus increasing the level of performance of individuals and then organizations performance. Well trained user can increase the probability of ERP implementation success, while the lack of proper training can negatively impact success of ERP implementation. A well-trained staff have a positive attitude towards changes and it helps organizations to build positive feelings towards the newly system. It necessary to reduce the change resistance behavior of users through continuous training and education.

User training and education refers to process of providing management and employees with the logic and overall concepts of ERP. The people can have a better understanding of how their jobs are related to other functional areas withe company. The user is the person who should be held accountable for making the system perform as per expectations (Parijat et.al., 2011). Training, reskilling and professional development of the IT workforce is critical. User training should be emphasized, with heavy investment in training and reskilling of developers in software design and

methodology (Fiona, and Janet, 2001), Employees need training to understand how the system will change business processes. There should be extra training and on-site support for staff as well as managers during implementation. A support organization (e.g., help desk, online user manual) is also critical to meet users' needs after installation.

2.3.3 Internet Infrastructure

An Internet is a global wide area network that connect computer system across the world. It is a system of Interconnected computer network that uses Internet Protocol suite (TCP/IP) to communicate between devices (Jagroopofficial, 2020).

Use of Internet in ERP brings about numerous business opportunities for an organizations and companies etc. These include overcoming Geographical Boundary and Cost Barriers to new market, Services for customers are improved, Access to worldwide communication etc. (Jagroopofficial, 2020).

Oracle Cloud ERP solution are a web-based solution that can be functioned through internet only. So thus, enterprises that wants to implement ERP have to experience a good internet connection to success in their implementation of the project. Low internet availability would cause delay in the implementation of system and it will cost organizations. With the help of Internet, the major problem i.e., geographical Dependencies will be easily removed (Jagroopofficial, 2020).

2.3.4 Cost

Setting a budget for ERP implementation requires planning and forethought along with a thorough understanding of what your particular business needs (ERP Focus). Even if you already have a greenlight to invest/purchase ERP system organizations need to set their budget and justify costs accordingly. The most tangible cost of ERP includes software licensing fees, additional servers and networks fees, data conversion and data migration fees, customization, testing, training, and implementor vendor fees etc.

Organizations with a low planned budget may be incompatible to purchase a highly secured and global ERP solutions for their business solutions to effectively process and to get out of ERP solutions for their data security and reporting to decision making.

2.4 Empirical Review

Many researchers have conducted different studies to identify and asses the factors that affect the implementation of enterprise resource planning system in an organization. (Shahin and Sulaiman ,2011), have conducted research on the influence of organizational factors on successful ERP implementation. The study showed that there is a positive relationship between top management support, enterprise-wide communication, and ERP training and education with ERP implementation success. The researchers have used Survey questionnaire and analysis examines the factors that influence ERP implementation success, 17 using structural equation modeling (SEM). It is a mixed methodology, which consists of confirmatory factor analysis, regression, and path analysis (Bethlehem 2021).

The results indicate that the companies‟ top management must provide full support and commitment to the project if the system is to be successful. In addition, management must also ensure the plans are communicated and understood by the entire company. Finally, it is also illustrated that adequate training and education pertaining to the systems must be given to all users to ensure that they are able to use the system effectively and efficiently thus contributing to their satisfaction which will subsequently influence the implementation success.

Bethlehem (2021) has conducted a study on effects of organizational factors on Enterprise Resource Planning implementation in ministry of finance (MOF). To achieve this objective the researcher uses qualitative, descriptive and exploratory research methods. Random and Stratified sampling was used to select the appropriate sample of the study and to collect data for the study questionnaires were distributed to 248 employees in federal public bodies and interview was conducted to 14 employees in the given public bodies. Finding of the study showed that the independent variables are top management support, user training and education, and change management commitment were positive and significant correlation with dependent variable which is successful implementation of ERP. In the studies model summery the test result showed that, the value of R and R2 was statistically significant. And the multiple regression analysis confirmed that from the independent variables have statistically significant relationship to predict ERP implementation success. This research did not see from the internet infrastructure side rather to the user side and even if the researcher uses exploratory research designs that is the study did not use

survey sampling. In addition, the researcher didn't 't address the Internet Infrastructure factors such as internet.

In research by Leyh in 2010 about Critical Success Factors for ERP System Selection, Implementation and Post-Implementation, the aim of the study was to gain insight into the research of critical success factors of ERP implementation projects. Research on ERP implementation and critical success factors can be seen as a valuable step toward increasing chances of implementation success. the study reveals that there are several papers – case studies, surveys, and literature reviews –focusing on critical success factors. All in all, the study identified 185 relevant papers. From the existing studies the researcher derived 31 different critical success factors. The research result identified the following top five CSFs: top management support and involvement, project management, user training, change management and Balanced Project Team.

Mercy.M (2013) has conducted a research on ERP implementation in Europ assistant company USA. The general objective of this study was to evaluate the implementation of the ERP system at the Europ Assistance Company USA. The study was conducted using Survey Research Design. The target population was Europ assistance, USA that adopted ERP systems in the delivery of services. The accessible population of this study was 30 participants. Data was collected through the use of questionnaires administered in the field to the sampled respondents.The study concluded that ERP allows different departments with diverse needs to communicate with each other by sharing the same information in a single system. ERP thus increases cooperation and interaction between all business units in an organization on this basis.

Although, various empirical studies have been conducted to assess the implementation challenges and critical success factors for ERP implementation in different countries of the world, there is a dearth of empirical study that examines on ERP implementation success factors particularly in Ethiopia. Therefore, this study attempted to bridge this gap and assess the critical success factors for ERP implementation in the manufacturing industry from the project team member 's side in Industrial Parks Development Corporation of Ethiopia.

2.5 Conceptual Framework

As discussed in chapter one the main objective this thesis is to assess factors affecting implementation of Enterprise Resource Planning (ERP) system in Industrial Parks Development Corporation including management commitment, user training and education, and Internet Infrastructure. In literature review part various concepts and features about ERP implementation have been addressed. Creswell (2009) suggests that after summarizing and assembling the literature review, structuring it thematically or organizing it by important concepts to end the literature review is commendable.

As it is clearly showed in the below conceptual framework those factors listed in the above topic have a direct impact on the implementation of ERP in an enterprise. by giving high focus and reducing those factors, and enterprise can win over the tackle and successfully implement ERP.

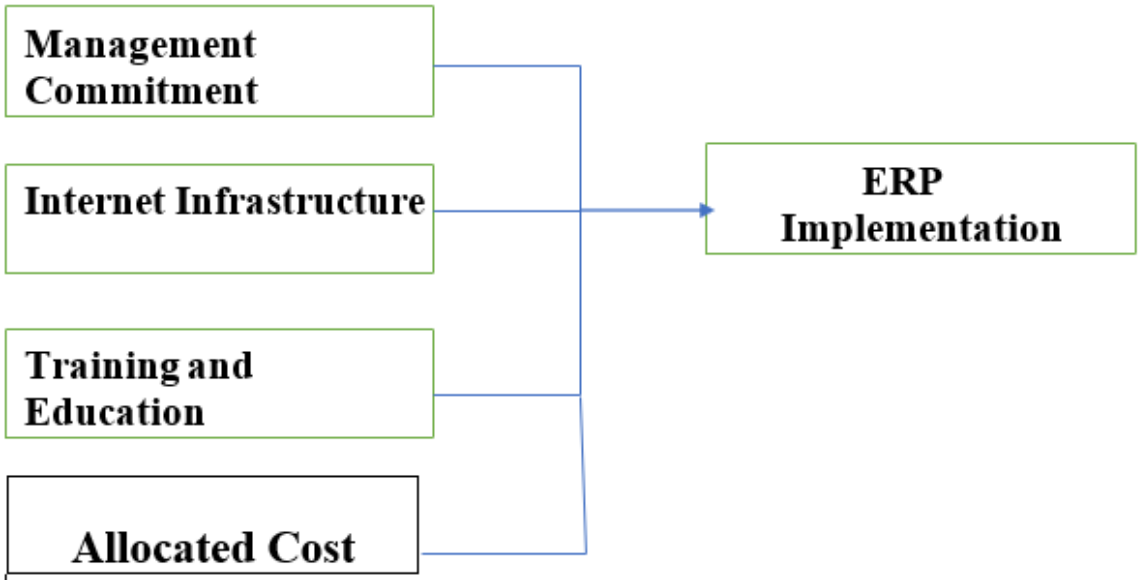

Figure 2.5-1 Conceptual Framework Source: Self constructed

CHAPTER THREE

3. RESEARCH DESIGN AND METHODS

The aim of this section is the overall research design and methodological considerations of the study. The section includes the research design, Research approach, the target population a sample size, data type and sources, data collection tools, which the paper relies on, research approach which shows the data collection approach and also data type and sources, validity and reliability, method of data analysis and ethical considerations.

3.1 Research Design

The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data (Labaree, 2009)

The aim of the study is to assess factors affecting on implementation of enterprise resource planning (ERP) in industrial parks development corporation. A descriptive and explanatory research design were adopted for this study because it will enable an in- depth inquiry and understanding of the phenomena at hand.

3.2 Research Approach

According to Creswell (2005) research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. There are three research approaches that are commonly implemented in research are quantitative, qualitative and mixed (Creswell, 2014). Where one of them is not better than the others, all of this depends on how the researcher wants to do research of study (Creswell, 2005 as cited by Abebech, 2019).

The study adopted descriptive and semi-explanatory research methods, it is concerned with describing, recording, analyzing and interpreting conditions that exists at present in order to analyses and interpret the collected empirical data to describe the factors affecting in implementation of enterprise resource planning in Industrial Parks Development Corporation and also to assess and describe the degree of each factors effect on the implementation of ERP.

3.3 Population

The target population will be ERP users of Head quarter and branch of the corporation which implement enterprise resource planning (ERP) by supervision of Head Quarter. Since the target population is large the researcher has used random and stratified sampling method to determine the sample size and to answer the problem statement then connect research objectives. Currently industrial Parks Development corporation is using the oracle fusion cloud ERP solution for the day-to-day business operations for head quarter and 13 branches. therefore, ERP users from each department were selected. The reason behind using simple random sampling is because in simple random sampling all individuals have an equal chance of being selected. From the headquarter and branch industrial parks. The selected departments are Finance, Procurement, Inventory and Property Management, Human Resource, ICT and Self-Service. The total target population comprises 252 employees.

Name of Department	Number of ERP Users
Finance	70
Procurement	40
Inventory and Property Management	36
Human Resource	31
Self-Service	30
Supper User	10
Management Team	15
ICT	20
Total	252

Table 3.3. Description of Target population

3.4 Sample size and sampling techniques

The population could be stratified in to groups based on the department. Based on selected departments the integrated financial management system then experts and administrative staffs from Finance department, Procurement Department, Human Resource Department, ICT Department, Property Admin and Inventory, Top Management offices, self-service and Super user will be selected from the target population who use the system and participate in the implementation. The responsibility of the group with respect to ERP are different which supports the study to come with fruitful findings. The research will use the stratified random sampling technique due to the reason that the sample size in each stratum varies according to the relative importance of the stratum in the population. Therefore, sample size for each stratum is used in to consideration due to the representation of the sample to the population under each stratum. Stratified random sampling method will be used to select a sample of ERP users. Stratified random sampling method was used to select sample of 154 ERP users.

$$n = \frac{N}{1 + (\mathrm{N} * \mathrm{e}2)}$$

Where N = population size, N = ERP users =252 e= tolerance at desired level of confidence that is 0.05 AT 95 percent of confidence level n=Sample size.

The formula is computed as follows

$$\mathrm{n} = \frac{252}{1+(252* 0.05^2)} = 154$$

Table 3.4: Sample taken from each department

No	Department Names	Target Population	Sample From Target Population
1	Finance Department	70	154(70/252) = 43
2	Procurement Department	40	154(40/252) = 25
3	Human Resource Department	31	154(31/252) = 19
4	ICT Department	20	154(20/252) = 12
5	Inventory and property Management	36	154(36/252) = 22
6	Management Office	15	154(15/252) = 9
7	Self-Service Users	30	154(30/252) = 18
8	Supper Users	10	154(10/252) = 6
Total		252	154

3.5 Data type and source

The study was based primary data. The primary data was gathered through a structured questionnaire and semi structure interview. The structured questionnaires were developed using the 5 –point Likert Scale due to the fact that each variable or topic comprises serious of questions which fit with the mere purpose of using rating scale. It allows respondents to express both the direction and strength of their opinions about a given topic, the use of questionnaire method ensures low cost even when the universe is large, respondents have adequate time to give well thought out answers and ensured privacy of the respondents and therefore recorded a high rate of response. The questionnaire used to collect data is shown in Appendix II. Another data collection conduct through semi structured interview, the question used for interview is attached as Appendix II. the secondary data for this research will be gathered from ERP implementation review reports.

3.6 Data collection tools

Data collection shall be depending on both the objectives of the study and the nature of the variable in the collected. In this study descriptive method is used in summarizing, describing and analyzing quantitative information in meaningful ways to describe the effects of factors in implementation of enterprise resource planning (ERP) in industrial Park development Corporation. Questionnaire and interviews used to collect data from the respondents. After the permission is grant from IPDC, a total of 142 questionnaire is distributed to ERP users of IPDC.

3.7 Validity and Reliability

Reliability analysis used to measure the consistency of a questionnaire. There are different methods of reliability test, for this study Cronbach's alpha is considered to be suitable. An alpha coefficient of 0.75 or higher indicated that the gathered data is reliable as it has a 24 relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population. Reliability analysis of the questionnaire is made through SPSS29. Five variables are included the Cronbach's alpha of the questionnaire is .838 that means 80.8 of respondents have similar way of understanding for the questionnaire that is filled by them.

3.8 Method of data analysis

The data that collected from the respondents were analyzed using the help of statistical software program: statistical package for social sciences (SPSS 29). The descriptive statistical results are going to be used by tables and percentages to give a summarized picture of the data. This was achieved through summary statistics, which includes the means, standard deviations values which are computed for each variable in this study. Finally, the results of both descriptive statics results were be displayed by appropriate figures and tables.

Model Specification

The study assesses factors affecting implementation of enterprise resource planning in the case of Industrial Parks Development Corporation. Based to the conceptual framework for chapter 2 in the above, the independent variables are Management commitment, Internet Infrastructure, Cost of implementation and training and education. So, this study will assess the effect of these variables on dependent variable which is ERP implementation.

Multiple regression analysis is a major statistical tool for predicting the unknown value of a

variable from the known value of variables. Besides it is about finding a relationship between variables and forming a model. The Model for this study was developed using similar model of (Fahmi, 2018); (Adane, 2017).

The general formula used in this model is:

$Y= \beta 0 + \beta 1MC + \beta 2ICT + \beta 3TE + \beta 4Cost + e$

Y= ERP Implementation

$\beta 0$ = Intercept of the equation

MC = Management Commitment

ICT = Internet Infrastructure

TE = Training and Education

e = Error term

Assumption 1 – Normality Distribution Test

Multiple regressions require the independent variables to be normally distributed. Skewness and kurtosis are statistical tools which can enable to check if the data is normally distributed or not. Skewness is a statistical number that tells us if a distribution is symmetric or not. A distribution is symmetric if the right side of the distribution is similar to the left side of the distribution. Kurtosis is a statistical number that tells us if a distribution is taller or shorter than a normal distribution Skewness is a measure of symmetry. A distribution or data set is symmetric if it looks the same to the left and right of the center point.

Assumption 2 – Multicollinearity Test

Multicollinearity refers to the situation in which the independent/predictor variables are highly correlated. When independent variables are multicollinear, there is "overlap" or sharing of predictive power. This may lead to the paradoxical effect, whereby the regression model fits the data well, but none of the predictor variables has a significant impact in predicting the dependent variable. This is because when the predictor variables are highly correlated, they share essentially the same information. Thus, together, they may explain a great deal of the dependent variable, but may not individually contribute significantly to the model. Existence of multicollinearity can be

checked using “Tolerance” and “VIF” values for each predictor variables. Tolerance values less than 0.10 and VIF (variance inflation factor) greater than 10 indicates existence of multicollinearity.

3.9 Ethical Consideration

The consideration of ethical issues is necessary for the purpose of ensuring privacy as well as the security of the participants. The objectives of the study were communicated and achieve the permission from ERP project office as well as the selected sites which implemented ERP to conduct the study. Study respondents‟ willingness to fill the questionnaires was respected and verbal consent was taken while distributing the questionnaire paper. The names of individuals were not mentioned in the report, and yet any information or data that can be found confidential as well as affecting the goodwill and reputation of the organization under study is not included in the report of the study.

CHAPTER FOUR

4. DATA PRESENATATION AND ANALAYSIS

4.1 Introduction

This thesis objectives assessing factors affecting implementation of enterprise resource planning in Industrial Parks Development Corporations. The chapter contains data presentation and analysis based on the data from the interview and questionnaire collected from the sample population and secondary data sourced from IPDC 2021/2022 ERP implementation review report. The data collected was analyzed using descriptive statistical method for each independent variable and the result and finding were presented in tabular summary and the indication were also discussed briefly.

4.2 Response Rate

The study targeted a sample population size of 154 respondents. From the total sample size questionnaire were distributed to 142 respondents and from which 108 questionnaire were filled and returned; which means the response rate is 76% (108/142). In addition to the questionnaire distributed, an interview was conducted to 12 ERP users and all of them were give feedback in the interview. This response rate is very good to make conclusion for this study.

4.3 Demographic Information

In order to determine whether the participants in a given study are a representative sample of the target population and to assess the suitability of the respondent's responses for generalization purposes, demographic data about research participants is required. The following key characteristics of respondents have been determined from the gathered and tabulated data. As a result, the researcher has included following demographic data on respondents' gender, age, level of education, work experience, and experience in using ERP system.

Variable Name	Class of Variable	Frequency of Variable	Percentage
Gender	Male	62	57%
	Female	46	43%
Age	18 - 25	22	20.37%
	26 - 40	79	73.14%
	41 - 55	7	6.3%
	Above 55	0	0%
Level of Education	Diploma	7	6.5%
	BA/BSC	73	68%
	Masters	27	25.5%
	PHD and above	0	0%
Work experience	Less than 5 Years	28	26%
	6 – 10 Years	59	55%
	11 – 20 Years	16	15%
	Above 20 Years	5	4%
ERP Experience	Less than 1 Years	10	9%
	1 – 2 Years	71	66.3%
	2 – 5 Years	18	16.7%
	Above 5 Years	9	8%

Table 4.3 Respondent Demographic characteristics

According to the findings, the majority of respondents 57% of whom were men and 43% of whom were women. This indicates that both genders were fairly represented in the study, and as a result, the findings did not exhibit any gender bias. Although there were 14% more male respondents than female respondents, this suggests that there was a gender balance in the projects' implementation.

According to the aforementioned data, the age range with the highest percentage of respondents 73.14% was that of respondents between the ages of 26 and 40. The results show that the respondents were of an age where they could offer trustworthy insights into the study. 20.37 of the respondents were under 25 years old, 6.3% were between the ages of 41 and 55 and no user were in the age region of above 55. This suggests that the age of the respondents during the study was fairly evenly dispersed. This suggests that the bulk of the responders were mature and capable of playing their duties responsibly.

According to the study's findings, 6.5% respondents said they held diploma certificates, 68% said they held degree certificates, and 25.5 said they held master's degrees. This suggests that the majority of respondents had a good education and were able to easily respond to research questions. The results show that the respondents have the capability, expertise, and managerial

acumen to support ERP performance across the corporation. These abilities might enable them to manage and interpret their particular services as well as any new concerns regarding the implementation and efficiency of the ERP to the best of their abilities.

According to the responses in the above table, 26% of the respondents have less than five years of experience, 55% have between six and ten years, 15% have between eleven and twenty years, and 4% have more than twenty years. This suggests that most respondents are familiar with how the industrial parks offices operate.

According to the study's findings, 9% respondents said they had less than a year of experience, 66.3% said they had between one and two years, 16.7% said they had between two and five years, and 8% said they had more than five years. This suggests that the majority of respondents have both job experience in government public enterprises and ERP experience. As a result, they were able to answer to inquiries about the selection of ERP as the key individual.

4.4 Descriptive Analysis

The outcomes of the descriptive statistical analyses of the data are presented in this part, along with their interpretations. The means, which are the simplest and most popular way to measure central tendency, are the descriptive statistics that are utilized (C.R. Kothari, 2004). The most frequently used indicator of a series' dispersion is the standard deviation. When deviations for the values of individual items in a series are derived from the arithmetic average, the standard deviation is defined as the square-root of the average of squares of deviations. This statistical measure is mostly used to interpret respondents' typical response rates for each factor. The respondents were to give their independent opinion on the organizational factors affecting the implementations of ERP in their organizations.

Strongly agree/agree scores have been used to present a variable with a mean score on the continuous Likert scale of 3.5 to 5 (3.5 S.E. 5). On the continuous Likert scale, the scores of "neutral" have been considered to indicate a variable with a mean score of 2.5 to 3.4 (2.5 M.E.3.4). The disagree/strongly disagree response was used to indicate a variable with a mean score on the continuous Likert scale of 0 to 2.5 (0 L.E2.5). the factors affecting implementation of ERP are the

focus of this study. As a result, the discussion section goes into detail and addresses each independent variable independently.

4.4.1 Management Commitment

In order to describe the effects of management commitment on the implementation of ERP in the corporation, the study intended to ascertain the amount to which respondents agreed or disagreed with the twelve questions listed below in table 4.4.1

MANAGEMENT TEAM COMMITMENT	SD	D	N	A	SA	Mean	StD
Management team don not take quick action when the employee faces challenge during implementation.	6.25	24.5	25	32.25	12	2.8704	1.0148
Management team of the organization do their best for the implementation of ERP. E.g., making the environment conducive for implementation.	4.1	35.4	37.5	14	9	3.5648	1.0072
Management team in your organization has awareness about the benefits of ERP.	42	26	12	13	7	3.6759	0.9937
Management team of your organization assists & encourages employee in ERP adoption.	33.5	22.5	18	20	6	3.5556	1.1219
Management team of your origination makes the working environment comfortable for knowledge transfer on ERP between employees.	21	17.5	40	14.5	7	3.0926	1.0189
Management team in your organization allocates enough financial resources to ERP implementation like overt time allowance, transportation availability etc.	33	22.7	18	12.2	14.1	3.2222	1.0619
The management team of your organization strongly needs the implementation of ERP	19	11	39	19	12	3.9815	0.8858
Management team of your organization follow up the progress of ERP implementation frequently	11.3	18.5	21	29.5	19.7	3.4352	0.9499
Management team of your organization have a good collaboration with IT department	9	14.4	30	32.6	14	3.0833	1.2084
There is general lack of interest in ERP among top management	4	44.6	20.4	16	15	2.5926	1.0681
Management is accountable, so they are keen on the use ERP	3.6	6	14.2	52.7	23.5	3.2593	0.941
After Head quarter took over implementer, the support you get from head quarter is satisfied.	32.2	2	4	47.8	14	3.0648	0.8676

Table 4.4.1 Management Team Commitment (%)

N = 108: SD = Strongly Agree: D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

It is evident from Table 4.4.1 that the respondents concur that top management does not act when an employee encounters difficulty during implementation, as indicated by the mean of 2.87; management team also does not make an effort to implement ERP in a conducive environment, as indicated by the mean of 3.56.

No lack of interest or a need for implementation is indicated by the mean responses 2.59, 3.95, and 3.67 respectively, to the questions posed to gauge management team awareness of the benefits of ERP; this indicates that managements are less aware of ERP system, have high interest in it, and are neutral regarding the need for implementation.

In addition to the above responses from the respondent regarding management team commitments to assist and support the end user regarding adopting of ERP system, and making enviroment ready and comfortable for ERP implementation and knowledge transfer between employees by the management team as shown by the mean 3.55 and 3.09 respectively: and management team of the corporation does not allocate enough financial allocation for ERP implementation as shown by mean of 3.22, this output shows transaction record may be delayed due employees are not working beyond their working hours due to financial resource are not allocated like overtime, and knowledge sharing is also an issue in the corporations that employees didn't get enough material from the support teams and they only shares among themselves. In addition, the respondent strongly disagrees that after the headquarter take control the support from the vendor, the support they got from the Headquarter is not satisfied with the mean value of 3.06.

As shown in the table management team are more accountable and they are keen on the ERP system usage with the mean of 3.25 and most of the respondent agreed that the management team of the corporation follow ups the progress and implementation of the ERP as shown by the mean 3.45, this indicates that after the ERP is implemented the management team strongly follow up the status of implementation. Though the management team has an excellent relationship with the IT department as evidenced by the mean 4.23, the project implementation is closely tied to information technology, the system itself, and the deployment environment.

4.4.2 Training and Education

The study also examined respondents' opinions on ERP training and how their educational backgrounds related to effective implementation of the system. Below, in Table 4.4.2, are the pertinent findings.

TRAINING AND EDUCATION	SD	D	N	A	SA	Mean	StD
IPDC lacks proper training program to use ERP	12.5	31.25	18.75	25	12.5	3.41	1.28
The IPDC relies heavily on experts to run the system	6.25	18.75	22.5	40	12.5	3.61	0.97
The users are not well trained to handle ERP	12.5	36.75	12.5	13.25	25	3.23	1.44
The training you took is related to your educational background	6.25	12.5	37.5	25	18.75	3.44	1.02
Most users lack accounting background which is essential in the use of the system	12.5	25.25	12.75	37	12.5	3.15	1.16
Most users have enough knowledge on how to use computers	15	18.75	6.25	41.25	18.75	3.17	1.45
The training you took at IPDC makes you develop your skills on the system	5.56	5.56	22.22	50	16.67	3.68	1.02
On job training makes you develop your skills on the system	0	19	18.5	18.75	43.75	3.92	1.28
Most users can understand the English terms on the system	6.25	27.5	25	22.5	18.75	3.30	1.31
The phase roll out is to blame for fragmented training in the use of the system	6.25	31.25	31.25	18.75	12.5	3.12	1.16
The system is resisted due to lack of knowledge on how to use it.	13.75	17.5	21.25	22.5	25	2.66	1.38
Employees are changing resistance.	18.75	18.75	31.25	18.75	12.5	2.77	1.18
The training makes you able to use the system with little on job support	0	12.5	31.25	37.5	18.75	4.00	0.63
When you face challenges on ERP can you able to solve it by yourself even if you have to refer the documents or videos provided on the training program	6.25	12.5	18.75	43.75	18.75	3.54	0.99

Table 4.4.2: Training and Education (%)

It was determined that respondents disagreed that IPDC lacks an appropriate training program for using ERP, as indicated by a mean of 3.41, and that users are not adequately taught to handle ERP, as indicated by a mean of 3.23. the result shows IPDC has proper training program and users are

well trained on how to use and run the system effectively. the respondent has agreed that IPDC has been relies heavily on experts to run(operate) the system as shown by the mean 3.61. this result confirmed that IPDC has given the responsibility to functional department users to operate and run the system even though environments are not safe and conducive.

The response from the end users regarding the question of end users' educational knowledge and computer literacy replied as neutral the training they got and took is neither related to their education background as shown by the mean 3.44 and 3.17 respectively: and most end users are responding agreed on the most of the user lacks proper accounting background which is essential to run the system with the mean of 3.15; this output shows us some ERP users in IPDC are forced to work on the system which is not related to their education background since the system is designed mainly focused on financial solution: as an example self-service users in the corporation has the responsibility to request and process purchase requisition and move order request, while they are doing those operations entering chart of account distribution is a mandatory step (Natural account, program, and source of fund) those values are coded and designed from the budget department and self-service users may have no knowledge regarding those terms.

As evidenced by a mean of 3.68 and 4.0, respectively, for the questions posed to assess the training they took at IPDC makes them develop their skill on the system and able utilize the system without much on-the-job assistance. Additionally, as indicated by a mean of 4.0, the majority of end users concur that on-the-job training helps them advance their system abilities. The outcome showed that while the IPDC training gave them some capabilities, they were unable to function independently. As a result, they largely relied on desk support, which helped them develop their capacity. Additionally, most respondents were disagreeing on most users have enough knowledge on how to use computer machines a shown a mean of 3.17; respondents disagree on the most users understand English terms on the system as shown by the mean of 3.3.

For the question rose to assess users' attitude towards changes, majority of them were neutral on the employees are change resistance with the mean of 2.77; the respondent replied strongly agree on the system is facing resistance due to lack of knowledge on how to utilize it with the mean of 2.66.

Majority of the respondent are neutral about the phase implementation is to blame for fragmented training in the use of system as shown by the mean 3.12; respondent agrees on when they face challenge on ERP, they can able to solve it by themselves as sown by the mean 3.54, this output shows IPDC has distributing enough training manuals and materials and videos on how to operate and solve problems in the system when end users are facing challenge.

4.4.3 Cost Allocated and Internet Infrastructure

The purpose of the study was to determine the degree to which respondents agreed or disagreed with seven questions in the below table 4.4 that relating to Cost and Internet Infrastructure factor to describe the effect of it on the implementation of ERP in IPDC. The total of 108 respondents' responses are presented and analyzed in the table 4.4.3 below.

INTERNET INFRASTRUCTURE	SD	D	N	A	SA	Mean	StD
IPDC Has a good internet availability to operate the system effectively	11.11	11.11	16.67	38.89	22.22	4.08	0.91
ERP user get quick support from ICT department	5.56	27.78	22.22	33.33	11.11	3.43	1.07
End users are using their email to get support from ICT department	11.11	22.22	11.11	38.89	16.67	3.51	1.20
Users are able to solve and get support via google meet (virtual support)	11.11	11.11	22.22	44.44	11.11	3.44	1.19
The ICT phobia is still an issue for ERP to effective use	11.11	27.78	33.333	27.78	0	2.74	0.96

Table 4.4.3 Internet Infrastructure (%)

N = 108 SA = strongly agree; A = Agree; N = Neutral; D = Disagree, SD = strongly disagree

Table 4.4.4 Cost Allocated (%)

Cost Allocated	SD	D	N	A	SA	Mean	StD
Annual Subscription fee is expensive for IPDC	5.56	5.56	38.89	27.78	22.22	3.40	1.28
Implementation cost for ERP solution is too costly.	5.56	5.56	33.33	38.89	16.67	3.86	1.01

N = 108 SA = strongly agree; A = Agree; N = Neutral; D = Disagree, SD = strongly disagree

From the finding of table 4.4.3 above, IPDC has a good internet access to operate the system effectively with the mean of 4.08, and respondents were neutral on ICT phobia is still an issue for ERP to effective with the mean of 2.74; respondents were agreed on the ERP user get quick support

from the ICT department as shown by the mean 3.43, this output shows that IPDC has a good internet connection to implement ERP solution smoothly and in the case of internet destruction ICT department of the corporation is delivering of quick support. Additionally, respondents are agreed on the end users are using their email to get email from the ICT department and end users are able to solve and get functional virtual support with the mean of 3.51 and 3.44 respectively.

Majority of the respondents were neutral on annual subscription fee is expensive for IPDC and agreed on the implementation cost of ERP is costly for IPDC with the mean of 3.4 and 3.86 respectively. This reveals that implementation cost that paid to Vendor by IPDC is costly and it impacts the successful implementation of ERP by IPDC.

4.5 Correlation Analysis

Data are correlated to show the connection between dependent and independent factors. The link between variables in a set of data is visualized using Pearson's correlation matrix.

Table 4.5.1: Measure of Association and Descriptive Adjectives

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

Source: (MacEachron, 1982)

The below tabular form presents the result of correlation analysis of ERP implementation with management commitment, training and education, Internet Infrastructure, and cost.

Table 4.5.2: Correlation matrix between dependent and independent variable

Correlations						
		ERP	MC	TE	ICT	Cost
ERP	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	108				
MC	Pearson Correlation	0.001	1			
	Sig. (2-tailed)	0.993				
	N	108	108			
TE	Pearson Correlation	0.188	.539**	1		
	Sig. (2-tailed)	0.051	0.000			
	N	108	108	108		
ICT	Pearson Correlation	0.142	0.140	0.110	1	
	Sig. (2-tailed)	0.142	0.148	0.256		
	N	108	108	108	108	
Cost	Pearson Correlation	.336**	0.173	0.137	.400**	1
	Sig. (2-tailed)	0.000	0.073	0.157	0.000	
	N	108	108	108	108	108
****. Correlation is significant at the 0.01 level (2-tailed).**						

4.6 Assumption Testing

While analyzing data collected from the study, multiple regression analysis was conducted to determine the effect of management commitment, training and education, Internet Infrastructure, and cost of ERP effect on implementation of ERP in Industrial Parks Development Corporation. Basic model assumption checks have been run by the researcher before performing multiple regression analysis. These tests include those for multicollinearity, normality of the distribution, and linearity of the relationship between the independent and dependent variables. These tests are described below:

4.6.1 Normality Distribution Test

The results of the tests for skewness and kurtosis show that the data is normally distributed because they fall within the permitted range of -1.0 to +1.0.

Table 4.6.1: Normality Distribution Test

Descriptive Statistics							
	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Management Commitment	108	2.87	1.015	0.046	0.233	-1.226	0.461
Training and Education	108	3.41	1.275	-0.230	0.233	-1.154	0.461
Internet Infrastructure	108	4.08	0.908	-0.930	0.233	0.949	0.461
Cost Allocated	108	3.86	1.009	-1.273	0.233	1.933	0.461
ERP Implementation	108	3.56	1.007	-1.159	0.233	0.845	0.461
Valid N (listwise)	108						

4.6.2 Multicollinearity Test

When there are more than two independent variables present, multicollinearity occurs. The estimates of the coefficients in the regression model become unstable as the degree of multicollinearity rises, and the standard errors for the coefficients may become greatly inflated. The findings of the collinearity diagnostics must have a tolerance value greater than 0.10 and a variance inflation factor (VIF) less than 10 to prevent the possibility of multicollinearity. Low tolerance values suggest strong multiple correlations with other variables. To test the presence of such association, pair-wise correlation, variance inflation factor (VIF) value, and tolerance level have been estimated and presented in the below table (Table 4.6.2). As shown from the findings for this research multicollinearity is not a concern.

Table 4.6.2 Multicollinearity Test

Coefficients[a]		
Model	Collinearity Statistics	
	Tolerance	VIF
1 Management Commitment	0.697	1.435
Training and education	0.707	1.415
Internet Infrastructure	0.834	1.199
Cost Allocated	0.824	1.213

a=Dependent Variable: ERP

4.6.3 Beta Coefficient

Standardized coefficients

The standardized coefficients are the coefficients which can explain the relative importance of explanatory variables. These coefficients are obtained from regression analysis after all the explanatory variables are standardized. As shown from table 4.6.3, the standardized coefficient of top management commitment is the largest value followed by education and training and change management commitment. The larger the standardized coefficient, the higher is the relative effect of the factors to successful implementation of ERP. The significance tests of the three explanatory variables indicate that all of the explanatory variables are significant with p-value P>0.01 for predicting successful implementation of ERP.

Table 4.6-3 Unstandardized and standardized beta coefficients

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std.Error	Beta		
1 (Constant)	4.411	0.562		7.842	0.000
MC1	0.110	0.101	0.111	1.093	0.277
TE	0.220	0.080	0.279	2.767	0.007
ICT	0.355	0.103	0.321	3.454	0.001
Cost	0.483	0.093	0.483	5.179	0.000

a. Dependent Variable: ERP

Unstandardized Beta Coefficients(β)

As it is defined in chapter three, the unstandardized coefficients (***β***1 up to ***β***4) are the coefficients of the estimated regression model. Hence, by including the error term (e), the model for internal supply chain performance can be written as;

$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon$

From table 4.6.3, the values assumed for β0 (constant) is 4.411, and slopes for the

independent variables are; β1=0.110, β2=0.220 β3=0.355 and 0.483, Thus, the regression equation for this test is;

$Y = -4.411 + 0.110\ X1 + 0.220\ X2 + 0.355X3 + 0.483X4$

The intercept (***β***0) is the point on the vertical axis where the regression line crosses the Y

axis. The value of ***β***0 is 4.411 which means the expected value of ERP implementation is 4.411 when all the three variables assume zero value. The study concludes that; a unit

increase in top management support, results to a 0.110 unit increase in successful

implementation of ERP, a unit increase in user training and education results to a 0.220 unit increase in successful implementation of ERP and a unit increase in change management

commitment results to a 0.078 127 unit increase in successful implementation of ERP.

4.7 Regression Analysis

4.7.1 Model Summary

In the model summary table below, the multiple correlation coefficients R, indicates there is a positive relationship (R=0.610) between the dependent variable (ERP implementation) and the independent variables, management team commitment, Education and training and

Internet Infrastructure and Cost. The value of R Square (R2=0.632) indicates that 63% of successful implementation of ERP could be explained by the independent variables of the study which encompasses of management team support, training and education and Internet Infrastructure.

Table 4.7.1 Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.610[a]	0.560	0.632	0.883	2.594
a. Predictors: (Constant), Cost, Training and Education, Internet Infrastructure, Management Commitment					
b. Dependent Variable: ERP					

4.7.2 ANOVA Model Fit

The regression model overall fit can be examined with the help of ANOVA. Based on the table below (table 4.7.2) this study shows that the value of R and R^2 found from the model summary is statistically significant at (F=49.061., (P<0.001) and it can be said that there is a relationship between the predictor's independent variables and successful implementation of ERP.

Table 4.7.2: Analysis of Variance

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	28.255	4	7.064	49.061	<.001[b]
Residual	80.292	103	0.780		
Total	108.546	107			
a. Dependent Variable: ERP					
b. Predictors: (Constant), Cost, TE, ICT, MC					

Source: Questionnaire result, 2023

As shown in the above table, the sig value of the ANOVA is less than the significance level of 0.05 which is 0.001 which indicates that each of the critical success factor used on this study do have a significance influence on ERP implementation successfulness. It is the at the best fit of the model to predict the ERP implementation success in Industrial Parks Development Corporation.

4.8 Interview Results

Interview questions were sent to super users, including the project coordinator of Oracle Cloud ERP at IPDC, to learn more about the variables influencing the implementation of ERP in the Industrial Parks Development Corporation. In light of this, the interviewee's answers to the questions are succinctly described as follows. The majority of interview responses, however, are given and examined as supportive responses in the questionnaire analysis section.

According to the interview responses, the corporation's IT department management teams' meetings were the first opportunity for employees to learn about the deployment. In the session, their duties to prepare the necessary data and infrastructure readiness were clearly outlined. As a result, the majority of the time, employees, particularly those from other managements, respond that they were unable to provide the necessary data (mainly finance and inventory department) and cite a variety of justifications, each of which varies depending on the business unit. Even though data collection may be their panic area, some users especially from finance department they were happy regarding the newly coming system, because they were expecting the system will solve headache areas in reporting, approval and data management.

According to the interviewee's response, their corporation faces a variety of difficulties as they implement ERP, including issues with their infrastructure, Data, employee turnover, training and education, lack of knowledge about the system and the staff's ability to use it, among other things.

According to the respondent, it is hard to create guidelines for better ERP implementation for other newly incorporated branches unless the necessary steps are taken to address these challenges. For instance, it was difficult to get financial and asset data that can be used as an input for the system; this affects negatively on the application of ERP inside the corporation.

One of the main obstacles to the adoption of ERP, according to the interviewee, is the corporation's inadequate capacity and experiences for system implementation at the enterprise level. As a result, they concur that the issue of Corporation's human resource development needs to be given top priority, the training system needs to be adjusted to meet the needs of the corporation in terms of information and communication technologies (ICT), and the business units in particular needs to attract and retain the optimal number of ICT skills that are available. And even if the project office (Head office level) provided end users with training for the system, they disagreed that the training would also cover the new legal and regulatory framework, the new codes and classifications, and the new business procedures implemented (IFRS Accounting), in addition to instruction on how to use ERP for the appropriate operations and functions. Because Users who are reassured that there would be some constants amidst the change will gain confidence from a well-defined training program, which will also help to increase capacity. Given the nature of corporation, capacity building is a never-ending process, according to the management point of view. It must be ongoing process due to this they decided that the implementation of ERP in the corporation has divided in to two phase: phase one (financial, asset, procurement etc.) which already implemented and phase two (Expense, Full human capital management and project costing).

According to the interviewee, IPDC ERP project office has played a vital role in ERP system implementation starting from the initiation of the project to successful delivering of the solution to functional departments. The project office has got experience from different organization both within and out of the country. Some organization which they have conducted survey and get experience are ministry of finance, Ethiopian Airlines and Bank of Abyssinia are amongst top priorities. The project office has developed training plan and implementation plan with the vendor company, develop strong quality assurance tool, evaluate system against the bid document, collect and explain detail requirements, following up class-room piloting, user acceptance test before move to main production instances, and any other measurement plans through the planning, initiation and final implementation of the product.

According to the response from the interviewee, there are various factors that affect the implementation of ERP in Industrial parks development corporation, among the factor includes implementation cost, use training and education, management team commitment, network issue, legacy system financial data, and staff attitude and turnover are some of the headaches for successful system implementation in the corporation.

According to the interviewee's response, the Oracle Cloud ERP project office currently lacks any strategic plans. According to their schedule, the phase II ERP implementation was supposed to be completed within the current year, but numerous obstacles, including political replacement of the corporation CEO to a change in the management team and additional scope requirements, caused the phase to be extended by another year. Because of this, they were unable to carry out the first plan. Currently, their primary goal is to sustain the phase I implementation they have already used for their business operation. Then, they will decide how to move forward with their main strategic plan to implement phase II ERP throughout headquarter and each branch industrial parks and establish a standardization process for all industrial parks.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATION

Examining how management team commitment, education, training, and Internet Infrastructure, and Cost affect the effective deployment of ERP was the goal of this study. This chapter summarizes the major results, conclusions, and suggestions based on the study's findings.

5.1 Summary of Major Findings

- The study was conducted with the total sample size of 154, for 142 respondent's questionnaires were distributed and for 16 respondents' interview were conducted; out of which 108 questionnaires were returned with the response rate of 76% and among all the interviewee, all respondent were responded to the interview.
- From the total respondent's information, the demographic characteristics is as follows 57% of the respondent were male and the remaining 43% were female respondent: the majority of respondent 73.14% were aged between 26-41% followed by 20.37% who's aged is between 18-25, the remaining 6.3% is aged between 41-55 years. Among the participant's 68% have BA/BSC degree, followed by 25.5% who are master's holder and the remaining 6.5 % are diploma holder. Regarding work experience majority of the respondent were between 6-10 years.
- Regarding management commitment, majority of the respondent believed that management commitment is not satisfied in terms of providing quick response for users when they face challenges and overall respondents are neutral regarding weather management team of the corporation is strongly committed to the implementation of ERP solution in the corporation.
- Training and education were another factor affecting for the implementation of ERP. The study found that, majority of the respondent believed that end users are not well trained to use the ERP solution effectively. the corporation has proper training programs to use ERP system, and they agreed too that the training they got enable them to use the system properly if they got the training according to the program and the plan.

- The correlation matrix, based on the survey results, shows a positive and statistically significant correlation between important parameters and the successful implementation of ERP. The results of the SPSS statistical program also demonstrated that there is a positive and substantial connection between the independent variables.
- Additionally, the model summary's multiple correlation coefficients R show that the dependent variable (implementation of ERP) and the independent variables, factors affecting, have a very high positive link (R=0.610).
- The value of R Square (R^2= 0.56) indicates that 56% of implementation of ERP could be explained by the independent variables of the study. Correspondingly based on ANOVA model fit the value of R and R2 found from the model summary is statistically significant at (F=49.061), (P<0.001) and it can be said that there is a relationship between the predictor's independent variables and implementation of ERP.

5.2 Conclusion

This study's primary goal was to assess how factors affected the Industrial Parks Development Corporation ability to successfully adopt ERP. The following conclusions are reached in light of the research results displayed in the preceding section:

- Based on the finding the presented independent variables which are management commitment, Training and education, Internet Infrastructure, and cost has significant contribution on the implementation of ERP.
- Based on the conducted descriptive analysis, the determinant variables have effect on implementation of ERP. Based on the assessment from the questionnaire, management team of the corporation have not awareness about benefit of ERP, due to this management team are not committed in the in assisting and encouraging employees in the adoption of ERP. According to the result due to lack of awareness about ERP benefit, management teams are not supportive in allocating enough financial support to fasten ERP implementation.
- Even though management team at IPDC has no enough awareness regarding benefit of ERP, they have high interest in the implementation of ERP and they are keen on using the system. Result showed up the support from head quarter to branch industry park is adequate and constructive.

- Regarding the presentation of training and education IPDC has proper training programs, and users are well trained to handle the system. The training users got from IPDC and on job training help the to use the system effectively and to develop their skill. However, most users are not understanding the English term in the system this impacts the effective implementation of the ERP since users are asking support frequently, and this affects the knowledge building and further implementation.
- In the case of Internet Infrastructure, the IPDC has a good network infrastructure to run the system and users are getting quick support from ICT department via email and google meet to get answer for their requests.
- On the analysis of cost, Implementation cost of ERP is very high and expensive and this causes IPDC to implement the ERP in two phases.

5.3 Recommendations

Based on the above conclusions and summary findings, the following remedy actions/recommendations are suggested to IPDC in order to improve or resolve issues presented as obstacle for successful implementation of ERP in the corporation mainly focused on phase II implementation.

- the first thing the researcher recommend is create a high awareness campaign regarding benefit of ERP in the corporation for management teams will be a gain for successful implementation and running of the ERP system.
- When providing end user training for ERP users, it would be advantageous to include system terms to avoid ambiguity while users are using the system and it will reduce resistance due to lack of knowledge.
- Recruit consultants to reduce the costly implementation cost by the vendor, since IPDC can subscribe to the offering and can implement the system through the recruited consultants.

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St. Marry University

MBA in Accounting and Finance-PROGRAM

Questionnaire filled by ERP users

Dear Respondent,

I am an MBA in Accounting and Finance student at Saint Marry University. I wish to conduct research entitled "FACTORS AFFECTING IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING (ERP) IN INDUSTRIAL PARKS DEVELOPMENT CORPORATION, ETHIOPIA". A questionnaire is designed and is used to gather relevant information to address the research objectives of the study. This is to kindly request you to grant me permission to correct information on this important subject from randomly selected members of staff.

Please note that the study will be conducted as academic research and the information provided will be treated in strict confidence. Strict ethical principles will be observed to ensure confidentiality and the study outcomes and reports will not include reference to any individuals.

Part I: GENERAL INFORMATION

1. Gender: ☐ Female ☐

Male ☐ 26-40 ☐ 41-55 ☐ Above 55 ☐

2. Age 18-25

3.Highest level of education:

Diploma ☐ BA/BSC ☐ Master's ☐ PHD & above ☐

4. How many years have you worked with the Corporation?

Less than 5 Years ☐ 6 - 10 Years ☐ 11 - 20 Years ☐ Above 20years ☐

For how long have you used ERP? ☐ 1-2 Years ☐ 2-5Years ☐ Above 5 Years ☐ Less than 1 year

PART II: Factors Affecting

This section aims at establishing the challenges faced by the Headquarter and branch industrial parks towards implementing ERP. Please indicate to what extent the statement applies using the Likert scale. (On the scale of 1-5, indicate 1-Strongly Disagree; 2-Disagree; 3-Neutral; 4-Agree; 5-Strongly Agree)

MANAGEMENT TEAM COMMITMENT	**1**	**2**	**3**	**4**	**5**
1. Management team don not take quick action when the employee faces challenge during implementation.					
2. Management team of the organization do their best for the implementation of ERP. E.g., making the environment conducive for implementation.					
3. Management team in your organization has awareness about the benefits of ERP.					
4. Management team of your organization assists & encourages employee in ERP adoption.					
5. Management team of your origination makes the working environment comfortable for knowledge transfer on ERP between employees.					
6. Management team in your organization allocates enough financial resources to ERP implementation like overt time allowance, transportation availability etc.					
7. The management team of your organization strongly needs the implementation of ERP					
8. Management team of your organization follow up the progress of ERP implementation frequently					
9. Management team of your organization have a good collaboration with IT department					
10. There is general lack of interest in ERP among top management					
11. Management is accountable, so they are keen on the use ERP					
12. After Head quarter took over implementer, the support you get from head quarter is satisfied.					

TRAINING AND EDUCATION	1	2	3	4	5
1. IPDC lacks proper training program to use ERP					
2. The IPDC relies heavily on experts to run the system					
3. The users are not well trained to handle ERP					
4. The training you took is related to your educational background					
5. Most users lack accounting background which is essential in the use of the system					
6. Most users have enough knowledge on how to use computers					
7. The training you took at IPDC makes you develop your skills on the system					
8. On job training makes you develop your skills on the system					
9. Most users can understand the English terms on the system					
10. The phase roll out is to blame for fragmented training in the use of the system					
11. The system is resisted due to lack of knowledge on how to use it.					
12. Employees are changing resistance.					
13. The training makes you able to use the system with little on job support					
14. When you face challenges on ERP can you able to solve it by yourself even if you have to refer the documents or videos provided on the training program					

INTERNET INFRASTRUCTURE	1	2	3	4	5
1. IPDC Has a good internet availability to operate the system effectively					
2. ERP user get quick support from ICT department					
3. End users are using their email to get support from ICT department					
4. users are able to solve and get support via google meet (virtual support)					

5. The ICT phobia is still an issue for ERP to effective use					
6. Annual Subscription fee is expensive for IPDC					
7. implementation cost for ERP solution is too costly.					

Appendix II:

Interview Checklist

Dear Interviewee,

I am an MBA in Accounting and Finance student at Saint Marry University. I wish to conduct research entitled "FACTORS AFFECTING IMPLEMENTATION OF ENTERPRISE RESOURCE PLANNING (ERP) IN INDUSTRIAL PARKS DEVELOPMENT CORPORATION, ETHIOPIA". This interview is to gather relevant information to address the research objectives of the study. This is to kindly request you to grant me permission to correct information on this important subject from randomly selected members of staff.

Please note that the study will be conducted as academic research and the information provided will be treated in strict confidence. Strict ethical principles will be observed to ensure confidentiality and the study outcomes and reports will not include reference to any individuals.

1. How did employees of IPDC react when they hear about ERP implementation?
2. Do you face any challenges while implementing ERP in the corporation?
3. Did IPDC Oracle ERP project office play important role in the planning, initiation, implementation and evaluation of the system?
4. What do you say about the factor affecting implementation of ERP solution in the corporation?
5. How does the corporations project office plan to impellent phase II ERP implementation regarding to handle those factors?