

***System Application Products (SAP) Enterprise Resource Planning
(ERP) Implementation Constraints: Case of Ethiopian Electric
Utility Jimma District***

*A Thesis Submitted to the School of Graduate Studies of Jimma University in
Partial Fulfillment of the Requirements for the Award of the Degree of
Master of project management and financing (MA)*

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**JIMMA UNIVERSITY
COLLEGE OF BUSINESS & ECONOMICS
MA PROGRAM**

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JIMMA, ETHIOPIA

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Certification

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This is to certify that the thesis entitled, “*Implementation Constraints of System application product enterprise resource planning project a case of Ethiopian Electric utilities Jimma district*” was carried out by AliyiIldrisButa under the supervision of advisor GanfureTarekegn (PhD candidate) and Co-advisor AbebeShentaama, submitted for, partial fulfillment of Master of Project Management and financing complies with the regulations of the university and meets the accepted standards.

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DECLARATION

I hereby declare that this thesis entitled “*Implementation Constraints of System application product enterprise resource planning project: study on Ethiopian Electric utilities Jimma district*”, has been carried out by me under the guidance and supervision of Mr. GanfureTarekegn (PHD candidate) and Mr.AbebeShantema.

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions and all source used are properly acknowledged.

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Abstract

The study purpose is primarily to identify and analyze SAP ERP implementation constraints in case of EEU Jimma district. In order to reach the primary aim of the thesis, questionnaires, observation and interviews were made. All respondents were belongs to significant knowledge class in SAP ERP (CRM, EAM, and FICO) implementation. As result, the researcher was identified the implementation constraints by selecting organizational, technological, change management and individual challenges as independent variables and implementation constraints of SAP ERP performance as dependent variables and other related concepts. All of these four independent variables are making 62.6 % of the contributions for implementation constraints of SAP ERP performance in EEU. The study was followed, descriptive research method by descriptive statistics and regression method analysis. Additionally, it was applied both qualitative and quantitative approaches. Accordingly, questionnaires, interview and document analysis to be used as data collection instruments. The data obtained through questionnaire were analyzed quantitatively using descriptive statistics: frequency, percentage, mean and standard deviation through SPSS version 25.00 software. Also, the analysis, such that data validity & reliability analysis, normality, regression result analysis was studied. The study also damped across linear regression study model. Additionally, the data obtained using interviews were analyzed qualitatively. Total population used to collect data were managers, junior and senior engineer, ICT and automation worker and finance staff who are the team members of the project those who covers a total of 90. The sampling design was followed total population purposive sampling and navigates through questionnaires and interview type of data collection techniques. The findings of the research were revealing really the major effects of the implementation of SAP ERP on the EEU Jimma district. The findings of the study revealed that the major challenges that face the implementation of ERP system grouped in four variables called OC, TC, IC and CMC. Where CMC has inverse relation with the SAP ERP IC and other three variables has positive relationship. The researcher recommended that the EEU should work on the OC variable which has more effect on the SAP ERP IC.

Keyword: *SAP ERP, challenges, linear regression and Ethiopian electric utilities.*

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LIST OF ACRONYMS

SAP- System Application product

ERP- enterprise resource management

CRM-customer relation management

EEU- Ethiopian electric utilities

EAM- enterprise asset management

FICO-Financial and controlling,

SPSS- Statistical package for social science software

SAP ERP IC- system application product enterprise resource planning implementation constraints

OC- Organizational challenges

TC- Technological challenges

INC- Individual challenges

CMC- change management challenges

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The EEU works in a highly complex environment and serves customers in cities across all eleven regional states. It exposes by challenges in delivering services efficiently while also maintaining full visibility and accountability across all its systems. SAP ERP better than Oracle ERP was selected by EEU to streamline processes and provide real time visibility. As per this new technology leads EEU to quickly identify any issues and resolve them promptly, to ensure top class customer support.

Abdellatif(2014) identified challenges and risks involved when implementing ERP in developing countries like poor organizational infrastructure, resistance by employees to use system, low organizational IT maturity, high costs involved in ERP implementation and inadequate internal communication between management and end user. Other challenges reported by Xue et al. (2005) which are likely to be applicable to developing countries include: lack of end- user preparedness, resistance to change, lack of user education and training, high turnover of key personnel, lack of communication and support documentation, the layer of consultants in addition to pure technological problems such as software bugs and configuration difficulties.

In the EEU, the officials go live of the SAP system, heralded a new era of efficiency and accountability in the EEU's billing and reporting capability. It was further step in the ongoing commitment of the Ethiopian government to improve the overall economics and service of the electricity supply industry. The company has been reviewing its operations across the board to identify opportunities to bring increment in areas such billing and collections, private investment in generation, capacity building and tariff management.

SAP ERP is stands well for helping companies run better,” said Pedro Guerreiro, Managing Director for SAP Central Africa. “By smartly leveraging technology, EEU is taking steps to

become an intelligent enterprise, able to thrive in the digital age and able to offer its valued customers an enhanced customer experience.

The ERP systems are one of such technologies used by various organizations to achieve a strategic advantage in the competitive market. The ERP systems are computer-based systems designed to process an organization's transactions. It facilitates integrated and real-time planning, production, and customer response (Arens et al., 2006). The implementation of ERP systems requires organizational business process reengineering. This implies new ways for designing tasks, jobs, communications within the organization and leads to new work structures and procedures.

(Kallinikos, 2004). ERP systems are cross-functional integrated systems consisting of software modules supporting operational activities such as accounting, control and human resources (Shehab et al., 2004). ERP systems are considered to be the most important and substantial Information Technology (IT) infrastructure that interacts with the accounting functions in the last 15 years (Kanellou and Spathis, 2013). The SAP ERP Implementation is one of the most interested functions in the IT infrastructure and its impact on the internal control system; therefore it has been affected by ERP systems implementation.

Also Madani (2009) stated that ERP systems while providing influential technologies that are capable of integrating, analyzing and reporting information from all of the company's functions (technical, operational, and financial), they expose user organizations to various kinds of risks and possible in also be directed to identify these new risks of pressure and how countering these risks and threats has impacted tactically on the role and functions in ERP system based organizations.

From EEU perspective, ERP systems created new opportunities as well as new challenges. On the other hand, the use of the system increases transparency in business processes and, it eliminates the need for controls assuring data consistency and accuracy when data move from one system to the next. With a single data entry point, need for entering the data associated with a transaction separately into different applications is eliminated; and therefore the controls to enforce data validity, data accuracy, and data privacy constraints need to be implemented only once.

As the system resides in one centrally controlled database, the risk of privacy violation can be identified more easily and the steps necessary to satisfy privacy constraints can be implemented more readily.

If a new government regulation requires the organization to institute a new internal control, it has to be incorporated only once into an integrated system (Musaji, 2002). On the other hand, the complexity of an ERP system creates additional risks during both the implementation and the operational stages (Bierstaker et al., 2001). During the implementation, the organization faces risks due to possible poor project planning and control, dependence on external consultants and integrators, resistance to organizational change, and lack of specialized skills needed to customize the system and populate it with organizational data (Saharia et al., 2008).

From the few organizations in Ethiopia that adopted ERP systems, the commercial bank of Ethiopia (CBE) and Ethio telecom (ET) have implemented the ORACLE ERP system (Foziya, 2017). Both state-owned organizations play significant roles in the development of the country in terms of economically and technologically.

While there have been many studies of the risks in ERP system implementations, there is not much research on the SAP ERP systems implementation constraints. This paper's emphasis is to understand the constraints of SAP ERP system implementation and organizational performance.

1.2 Background of the Company and EEU Jimma district

EEU (Ethiopian electric utilities) has more than 2.7 million customers and plans to connect 100 percent of the country to the grid by 2025. It employs over 18,000 people, of which 21 percent are women.

Radical population growth in Ethiopia has pushed government efforts to expand access to electricity, especially in rural areas of the country. When the country's grid reaches 80% of the population, only 44 percent of urban and 31 percent of rural Ethiopians have access to electricity. The government developed a National Electrification Program in 2017 with the goal

of achieving universal access to electricity by 2025. Additionally, signed a Public Private Partnership Proclamation that allows private firms to invest in the energy sector, creating a more competitive market. upgrading Utilities' work with EEU will ensure women capitalize on increased investment in Ethiopia's energy sector as the industry and labor forces continue to grow.

A confusing web of contributing factors prevents women in Ethiopia from joining the formal workforce, particularly the male-dominated energy sector. Moreover, Ethiopia has made strong response toward gender equality, most notably through the country's election result the first female president, Sahle-Work Zewde, in the 2018 election. However, only 35 percent of university students are women, with only seven percent of those women pursuing degrees in traditionally male-dominated areas. As a result female participation in the labor force is relatively high (76 percent), only about 20% are employed in senior or middle management roles, and only five percent are top managers. Upgrading Utilities is supporting EEU to consider and respond to factors that reduce women's workforce participation by constructing all inclusive policies and practices that benefit men, women, and businesses in the energy sector.

Two years before it means before the last of 2010E.C the EEU jimma service as the central southwestern region head office. After the new reform done by the organization, it organized under oromia region jimma district. The EEU jimma has also organized under 14 customer service center and 170 satellites. The data from human resource indicates that current total employees of the EEU jimma district are 509. Technically it govern 1064 transformer, the network which cover 1725km Medium line voltage Line and 1864kmv low voltage lines. From the total 2.7millioncustomer owns by the company, more than 70,000 customers are handled under EEU jimma district.

1.3 Statement of problem

According to competitive business environment, companies are insisted at providing customers with goods and services faster and less expensively than their competition. To do that, often, the key is an efficient, integrated information system (Babaei et al, 2015). As per Deloitte (1998), an ERP system is a packaged business software system that allows a company to: automate and integrate the most of business processes, share common data and practices across the entire enterprise, and produce and access information in a real-time environment system.

As Conteh (2015), states that implementing an ERP system is extremely challenging because it requires redesign of business processes, change of perception in how people approach their jobs, and integration of many types of information systems. The other challenge is people element and training aspect of an ERP implementation has historically received the least amount of attention. The effect of this is that when this factor is ignored or downplayed, primarily because it do not come out with the largest benefit, expenses are greatly increased in the long run (Swaminathan, 2011). By helping resource training with little regard and financial support, it is easy to realize the reality of delay, confusion and financial ruin that may result.

(Gargeya and Brady, 2005) states that, some companies following on assigning a fixed cost or percentage to the training effort, regardless of need or variable conditions. This problem has exactly been the root cause of many failed implementation attempts.

Regarding researches on SAP ERP system implementation in Ethiopian context, Abiot and Jorge (2012) tried to assess Ms-Dynamics ERP implementation in Mesfin Industrial Engineering, Sintayehu (2014) reviewed success factors for implementation of Enterprise Resource Planning system at Ethiopian Airlines, Derese (2013) has conducted a study on Oracle ERP system at Ethio-Telecom, Kibework (2015) has conducted research on the challenges and current status of ERP implementation at Mughher and Derba Cement industries.

Institutional theory (DiMaggio and Powell, 1991) suggests several routes by which institutional change leads to shifts in organizational structure. Once in place, the new institution, such as ERP systems, can change work roles and activities, which require substantial modifications of the function's existing technological base (Barley, 1990). In addition, institutional theory offers theoretical perspectives to analyze goals, values and prescriptions that legitimate behaviors of

groups (Powell and DiMaggio, 1991) such as internal auditors. New technologies first alter tasks and skills then these changes generate opportunities and pressures for changing organizational structure (Barley, 1990). The paper argues that ERP systems have embedded institutional logics which are significant catalysts for the evolution of the internal audit function.

Various organizations have different working practices that depend on their culture and nature of business (Kibebework, 2015). The organizational culture of banking industries differs from the culture of other organizations. Even though, there have been numerous studies about the challenges and critical success factors for ERP implementation in the other sector, ERP has been studied to a few extents, from the perspective of Ethiopian company.

An Ethiopian Electric utility is currently implemented “SAP” application of ERP system project. When implementing the project, there will be some practical challenges that will be expected and reported on the final report of the project data cleansing and readiness, problems in user’s adaptability, system performance, communication, consultant knowledge, user involvement and training, internal staff expertise, integration with other modules and problems of standardizing the platform. Thus, the study will bridge the gap to find out challenges facing the implementation of SAP ERP in Ethiopian electric utilities jimma district.

1.4 Research Questions

- Q1. What are the accessibility and technological difficulties faced by the targeted end user with SAP ERP implementation?
- Q2. How these accessibility and technological difficulties affect the ability of the targeted end user in integrating with SAP ERP?
- Q3. What is the status of the SAP ERP implementation at EEU Jimma?
- Q4. What are organizational challenges of SAP ERP implementation EEU Jimma?
- Q5. What are the employee individual related challenges in the implementation of SAP ERP at EEU Jimma?
- Q6. What measures can be taken by the company, staff members and district managers in a mainstream district SAP ERP to overcome those challenges?

1.4 Objectives of the Study

1.4.1 General objective

The main purpose of the study is to identify and analyze challenges facing SAP ERP implementation process in the EEU Jimma district.

1.4.2 Specific objectives

Specifically, the studies will find out:

1. To see the status of the sap implementation EEU Jimma district.
2. To investigate SAP ERP Implementation challenges at organizational level EEU Jimma district
3. To examine the individual related challenges in the implementation of SAP ERP at EEU Jimma
4. To analyze the technological challenges of SAP ERP implementation at EEU Jimma district
5. To analyze the measures taken to reduce the SAP ERP implementation constraints.

1.5 Study Hypotheses

Based on the review of theoretical and empirical studies made, the researcher has developed the following hypothesis. This study will empirically examine the implementation constraints of SAP ERP systems in Ethiopian electric utilities.

H1: OC (organizational challenges) under EEU environment positively influence on implementation of SAP ERP performance level.

H2: TC (Technological challenges) under EEU environment positively influence on implementation of SAP ERP performance level

H3: IC (Individual challenges) under EEU environment positively influence implementation of SAP ERP performance level.

H4: CMC (Change management challenges) EEU environment positively influences on implementation of SAP ERP performance level

1.6 Significance of the study

This study would provide a general overview of theoretical knowledge related to SAP ERP implementation process, which has been done in the theoretical part. Critical implementation challenging factors have been identified and discussed in the theoretical part followed by analysis and discussion of both qualitative and quantitative research findings. Also, it would contribute to knowledge and literature because it would focus on how key critical challenging factors of the implementation SAP system used to overcome those challenges which would enable management to develop a broader understanding of the system and risk management of its failures. The study again would bring to light employees' understanding and appreciation about the system.

1.7 Scope of the Study

EEU company was chosen for this study because it is the company owned by the state and it is also the governmental monopoly company having the largest number of customers and service delivery system) which launched the SAP ERP system go live. The EEU Jimma district was chosen for the study because it is among one of which covers the largest number of customers and the SAP system is on the process of implementation. Again it was the south western region sector head office for more than last 10 years.

1.8 Limitation of the Study

The researcher finds that the methodology followed may not fully achieve the research problems' aim. On the other hand, time span within which to complete this work may not be enough to allow for a comprehensive study of the research area. Moreover, the study was challenging because of the researcher's inability to access some information he considers important for the study. Most of the staff and senior managers at EEU were most of the time busy with attending their regular works which delayed information required from them.

1.9 Organization of the Study

The study belongs to five chapters. Chapter one enumerates about the general introduction to the study, background of study, background of company, statement of the problem, research questions, the objective of the study, significance of the study, scope of the study, limitations, and organization of the study.

In chapter two, the works of some authors pertaining to the concept of SAP ERP are reviewed, bearing in mind the objective of the study. Planning system and related empirical reviews in relation to the company's actual situation..

Chapter three provides information on the methodology for the study. It looks at the study design, the study implementation techniques, and the sampling techniques used. Additionally information on the data collection methodology and analysis procedures were provided.

The fourth chapter briefly discusses the result and analysis part of the study. It includes descriptive statistics of the study variable, age of respondents, education level, gender of the respondents and their relationship with the study variable, the regression analysis result interpretation and answering of the hypothesis are mainly addressed. In addition the chapter also discusses the regression analysis of the dependent and independent variables, means, frequency, standard deviation, correlation and other analysis were done

Chapter five of the paper was go through the conclusion and further study recommendation about the research variable

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The study focuses on the implementation constraints of SAP ERP from four different perspectives such as: technology selection; managing of change, knowledge management and emerging technologies.

2.1 Theoretical approach review

One of the plausible explanations of the high ERP implementation failure rates relates to the fact that many organizations lack the necessary understanding to undertake an ERP implementation and, consequently, are likely to confront a number of organizational, cultural, technological and political challenges throughout the implementation cycle (Momoh et al.,).

Implementation challenges are described as the primary problems organizations encounter during their ERP implementations (Momoh et al., 2010). Primary problems can include existing organizational challenges. Subsequently, in order to better understand the ERP implementation process, these challenges should, first and foremost, be given due consideration and be addressed, promptly and effectively, to ensure a successful implementation outcome (Bingi et al., 1999).

In effect, Kumar et al. (2003) state that once the ERP implementation challenges are identified, the primary aim for organizations should be to address these challenges in order to increase the likelihood of achieving a successful ERP implementation outcome. Therefore, organizations are required to understand the pertinent implementation challenges they face and ought to find adequate means of addressing the challenges in order to ensure a smooth roll-out and a successful project implementation (Bingi et al., 1999).

Despite ERP increased growth from the late 1990s to-date, there are several challenges that businesses and organizations encounter when implementing ERP. Research indicates that a large number of ERP implementations have failed to achieve the desired organization target. Most of these failures are not caused by the ERP software but the complexity and massive changes

caused by ERP in an organization (Maditinoset *et al.*, 2011). According to Heloet *et al.* (2008), the major impediments to successful ERP implementations are not technologically related issues such as compatibility, technological complexity, and standardization, but most are organization and human related issues including as resistance to change, organizational culture and business processes.

Huang *et al.* (2004) presented the risks that cause ERP implementation failures like: lack of management commitment, insufficient training with users, ineffective communication with users, inadequate support from the executive, lack of effective project management methodology,

2.1.1 Change management challenges in ERP implementation

Hurt (2011) Relates to several established management and information systems concepts. Also addresses how resistance to change affects ERP Implementation and how to mitigate these challenges. The concepts and change management skills identified need to be applied to other organizations.

Al-Shamlanand Al-Mudimigh (2011) Change management strategies should be applied in all three phases for achieving better ERP results. Case study presented in which change management factors and strategies used in implementation, and its impact on employees are described. More research required for evaluating the impact of change management on various stakeholders.

Madapusi and D'Souza (2012) A literature-based and theory-driven model developed to examine the relationship between ERP system implementation status and operational performance at various level. Future research is required considering the use of longitudinal designs to capture and tease out the time delayed effects between ERP system fine-tuning.

Adams and Martin (2011) state that, OCM strategy for effective implementation of the new ERP system. It should involve, communications, collaboration/participation, business process reengineering, and training. The concept needs to be applied in other implementations. Tools and methodologies required for assessing the readiness for change and also post implementation realization.

Kwak et al. (2012) Conceptualizes an ERP acceptance model which incorporates the best practices of ERP system implementation projects into the extended technology acceptance model (TAM). Further research required in the manufacturing sectors to offer valuable managerial insights that enable them to appreciate and improve end-users' ERP system acceptance

2.1.2 Knowledge management challenges:

In SAP ERP implementation simultaneous implementation of ERP and knowledge management systems in organizations implies some sort of challenges. While ERP systems are meant to increase the organizational efficiency by enhancing the information processing capability of the enterprise knowledge management initiatives aim at mobilizing the knowledge through organized knowledge repositories of explicit knowledge and communities of practice as a means of sharing and creating tacit knowledge, having their overall focus on improving innovation capabilities by increasing flexibility.

Zakari and Ahmad (2012) identified two major areas of concern regarding the management of knowledge in this specific type of project: managing tacit knowledge and issues regarding the process based nature of organizational knowledge viewed through the lens of organizational memory. The three dimensions of knowledge to be considered are project management, business and technical knowledge. Future work through case study to establish the concept.

Sedera and Gable (2010) Conceptualises, operationalises and validates the concept of knowledge management competence as a four-phase multidimensional formative index. The study results demonstrate a large, significant, positive relationship between knowledge management competence and enterprise systems success. Further research is warranted, focusing on identification of potential theory to explain the strong positive relationship observed. Further testing in multiple industry sectors having ERP System suggested

Oztemel et al. (2011) Automated knowledge management systems proposed including agent based approaches such as SERM together with active knowledge management models such as EKMM as well respective supporting systems in order to be intelligent enough in own

operations. More research requires to be done to develop a set of criteria for the assessment revising the existing sub-criteria.

Neto and Morais (2013) A new approach to support the transference of the knowledge related to the software process to workers that need it. The research work can be adapted for any other phase of the software process and also during ERP realization phase pertaining to developments.

2.1.3 Technological challenges of ERP implementation

In ERP implementation, existing legacy systems have to be carefully defined and evaluated to determine the nature and scale of problems that an organization may encounter during implementation (Holland, 1999). If organizational legacy systems are very complex (with multiple platforms and a variety of procedures to manage processes), the amount of technical and organizational changes required is likely to be high, and vice versa.

Indeed, the problem of legacy systems centers on the fact that in most companies, data are not kept in a single repository, but rather spread across dozens or even hundreds of separate computer systems, each housed in an individual function, business unit, region, factory, or office. Each of these legacy systems may provide valuable support for a particular business task. However, when they are considered in combination, they represent one of the heaviest hindrances on business productivity and performance (Davenport, 1998).

It is important, therefore, that an organization approaches the transition of legacy system carefully and with a comprehensive plan. Gargeya & Brady (2005) state that studies, mostly conducted in developed countries, show that organizations often run into costly and sometimes fatal difficulties with implementation and subsequent maintenance of ERP systems.

Akkermans & van Helden (16) and Monk & Wagner (10) observe that a typical ERP implementation initiative takes anywhere between one and three years and typical budgets are in tens to hundreds of millions of dollars.

System complexity is another challenge of ERP implementation. ERP systems are the most complex and comprehensive of business information systems. Most large organizations still

require use of large scale, main frame legacy systems. Managers find it very challenging to manage the technological complexity of different platforms and to harness the technological power of new enterprise technology. While emphasizing the complexity of ERP systems, Bingi *et al.* (2002) noted that: An ERP package is so complex and vast that it takes several years and millions of dollars. ERP implementation is so complex that it has proven to be too difficult for many organizations. A study by Rogers (1983) shows that organizations that perceive ERP to be a complex business solution are likely to diffuse it slowly and in limited capacity, and may end up not realizing its full benefit.

One of the complexities associated with ERP implementation is related to the cross-module integration nature of the system (Soh *et al.*, 2000). According to Berente *et al.* (2009), ERP creates many interconnections among various business processes and data flows to ensure that any other unit of the organization can obtain information in one part of the business. Information that was previously maintained by different departments must be integrated and made available to the company as a whole.

Though there are middleware technologies that can be used to integrate software applications from several vendors to the ERP backbone, they are not available for all ERP systems (Bingi *et al.*, 1999). Moreover, middleware vendors often tend to focus on the technical aspects of application inter-operability rather than linking business processes together, and, in many times, organizations have to develop their own interfaces for commercial software applications. Even maintaining the integration mix requires an excessive and ongoing expenditure of resources (Bingi *et al.*, 1999). When it comes to maintaining the system, IS personnel are faced with the challenge of managing and keeping it integrated with other organizational systems.

Configuring an ERP system is largely a matter of making compromises; of balancing the way the organization want to work with the way the system lets them work (Davenport, 1998). When implementing an ERP system the organizations have to decide which modules they want.

Technological infrastructure is the other challenge of ERP implementation. The government often operates national communications directly, largely because the private sector is often

incapable of operating such an infrastructure (ITU, 1994). Although there has been a move towards deregulation and privatization of telecommunications in many countries, the process is still slow, often being opposed by government telecommunication ministries and national security forces (Chowdary, 1992). System performance and network interruption problem is the major challenges of ERP implementation.

2.1.4 Individual challenges of ERP implementation

Inadequate training has been one of the significant reasons of many ERP systems failure (Gupta, 2000). In ERP implementation projects, despite millions of dollars and hundreds of deployment hours, many projects fail because of the lack of adequate training (Kelley et al., 1999). Lack of skills and knowledge is other factor for ERP implementation. Identified knowledge impediments include configuration and assimilation knowledge (Robey& Ross, 2002). User resistance is described as the opposition of users to perceive change related to a new IS implementation (Markus, 1983).

Although ERP systems are implemented successfully from a technical perspective, eventual success cannot be guaranteed and may be inhibited by users' reluctance to use the delivered system (Kim et al., 2005). Yusuf et al. (2004) cites resistance to change as a major risk factor as the ERP implementation of Rolls-Royce progressed. The project implementation team anticipated reluctance to accept new work practices, despite improved processes and functionalities. According to Markus (1983), classified as either functional or dysfunctional, user resistance is a critical implementation challenge. Functional resistance indicates the problems inherent to the ERP solution, whereas dysfunctional resistance relates to resistant behavior of users that, ultimately, obstructs the adoption of the solution which could have been beneficial to the organization. In the latter case, resistance is regarded as destructive as it leads to organizational disruption. Regardless of whether resistance is functional or dysfunctional, it must be addressed by the organization.

Another challenge organization face refers to the decision on the extent of users' involvement during the implementation process. Barker and Frolick (2003) discuss the need for organizations to assess their workforce, select key employees and understand their desire to be involved to ensure a satisfying outcome. Ensuring the involvement of users throughout the implementation process is a crucial step towards breaking down communication barriers and removing power blockages (Barker, 2003).

Use of consultant to implement ERP application is common practice in most of the organizations. Consultants experience in specific industries, comprehensive knowledge about certain modules, and their technical and interpersonal skill are important for successful implementation (Bingi, 1999). ERP consultants play a critical role in ERP implementation. Consultants can be essential knowledge resources for ERP's hardware, software, and personnel. They also can help staff, have responsibility for project management, and audit the project. On the other hand, in order to be successful system maintenance after post-implementation, knowledge transfer from consultants is crucial for the organization.

2.2 Empirical (quantitative) approach review

Pacheco-Comer and Gonzalez-Castolo (2012) Empirical study showed relation between size of the company and investment ERP project. Multi agent system architecture was modeled for evaluation. More scope for research in application of computational intelligence techniques.

Asl et al. (2012) Combined approach in identifying and ranking the effective factors using Delphi method and Shannon Entropy technique. Generalization of selection process needs to be done considering different type and size of organization. Rouyendegh and Erkan (2011) A comprehensive framework for selecting ERP system based on an AHP-based decision analysis process. Addresses only the software related selection criteria should address vendor related too.

Ozturkoglu and Esendmir (2014) Combined grey relational analysis (GRA) with an intuitionistic fuzzy set multi-criteria method (IFS). Onut and Efendigil (2012), Future scope of study the increase in the efficiency of decision making procedure for the decision makers. A hierarchical framework is proposed for ERP selection that meets the customer's requirements with respect to cost and quality constraints, as a MCDM tool AHP and its fuzzy extension is used. More scope

to researchers to widen the scope over and above cost and quality and take into consideration all aspects and develop a comprehensive frame work for wider applicability.

Heiskanen, Newman and Similä, (2000) suggest that ERP software, which incorporates best practices from the corporate business industry, is not appropriate for universities, since universities have unique structures and decision-making processes. Organizational culture heavily affects ERP implementation.

Tsichritzis (1999) indicates that today's universities have been forced to admit that "education is a business and students are the customers". ERP implementation encourages universities take a more business-like approach to education, resulting in cultural changes including "the use of managerial language and techniques" (Allen, Kern & Havenhand, 2002). There can be resistance to ERP implementation at universities because it involves not merely the adoption of a new information system, but a holistic change in organizational culture. While there are diverse forms of management hierarchy from university to university, Birnbaum & Edelson (1989) describes that there exist two sources of authorities within a university: administrative authority and academic authority.

ERP implementation is believed to reinforce administrative authority as a model of governance. For academics, this may lead to fear that use of a new system that results in increased transparency of their transactions would result in a loss of control. On the other hand, administrative staff may fear for their job security when redundant processes are eliminated work functions are automated across a university (Allen et al., 2002).

Moreover, Pollock and Cornford (2005) argue that ERP, as a "generic type of solution" from the corporate industry, could be a high-risk strategy for universities. Despite HEI's needs for unique business functions, ERP solutions limit their choices and encourage adopting a "generic solution". Since there have been few discussions and considerations regarding the challenges that universities might face from generic ERP system adoption, there is little assurance that the process will be successful. Also, as ERP systems are "large integrated packaged solutions" with dynamic complexity, it may cause difficulties with implementation for management and IT staff

in universities, even those who might have comprehensive understanding of their own organizations (Pollock & Cornford, 2005). This is because universities have expanded a range of systems many of which have sometimes competing functions whenever they had particular needs (Pollock & Cornford, 2005). In the worst case, universities do not always have management or IT staff who are well-versed in organizational functions. Standardization and integration, both of which are key features of ERP systems, limit flexibility in university systems. This loss of flexibility may lead staff to create 'workarounds' in which workers attempt to carry on their previous processes. This response to new ERP systems may ultimately increase staff workloads and create a data gaps between the system and reality.

Ehie and Madsen (2005) stated that ERP implementation involves more than changing software or hardware systems. Ideally, by reengineering business processes, ERP implementation can help an organization to benefit from higher levels of efficiency and improved performance. Therefore, ERP implementation may cause changes that lead to resistance among employees (Glover, Prawitt & Romney, 1999). Consequently, balancing conflicts between staff and technology and effectively managing employees in the change process are key elements for the successful ERP implementation (Ash & Burn, 2003)

Haislip et al (2016) have concerned with the analysis of the main determinants of the goal of good ERP system control is to ensure that organizations maximize the business value of their ERP system investments; however, this is getting more and more difficult. Much of the easy, low-hanging-fruit ERP system funds have been implemented. Maximize business value from ERP system investments today often requires changes to existing business processes or the development of entirely new business processes that are harmonized with information technology.

Several research studies have identified various important benefits the ERP systems bring to organizations Madani indicate that (2009), Even though many empirical studies were conducted globally to identify the factors that determine Enhancing the Relationship between the organization and ERP system control structures and processes provide mechanisms to link the use of ERP system to the overall strategies and goals of the organization. The relationship

between the organization and ERP system helps ensure limited resources are focused on doing the right things at the right time. Communication between ERP and the organization should be free flowing and informative, providing insight into what ERP system is delivering to assist in the achievement of organization goals, and the status of those efforts internal audit should review.

2.2 Enterprise resource planning (SAP ERP) in Ethiopia

ERP Systems have been successfully implemented in many enterprises in Ethiopia. After implementation, ERP Software provides tremendous benefits like quality improvements, optimum utilization of scarce resources and cost reduction in the organization. An ERP Suite plays a critical role in integrating and automating the business processes in an enterprise. ERP in Ethiopia has helped in exposing the Ethiopian enterprise to the best practices and processes adopted internationally and serve as a catalyst to enhance their productivity and efficiency as well. Increasingly Ethiopian enterprises are witnessing and realizing the tremendous benefits a versatile and powerful ERP System brings to an enterprise and the imperative need for them to start their own enterprise automation journey as well with the implementation of a suitable ERP Solution in their enterprise too.

2.3 Conceptual framework

Conceptual framework is defined as an interconnected set of ideas (theories) about how a particular phenomenon functions are/ is related to its parts. It is used to make conceptual distinctions and organize ideas by using diagrams or charts and the like. The conceptual model is a conceptualization in functional form of how the independent variables affect the dependent variable which is implementation challenges of SAP ERP system in Ethiopian electric utilities.

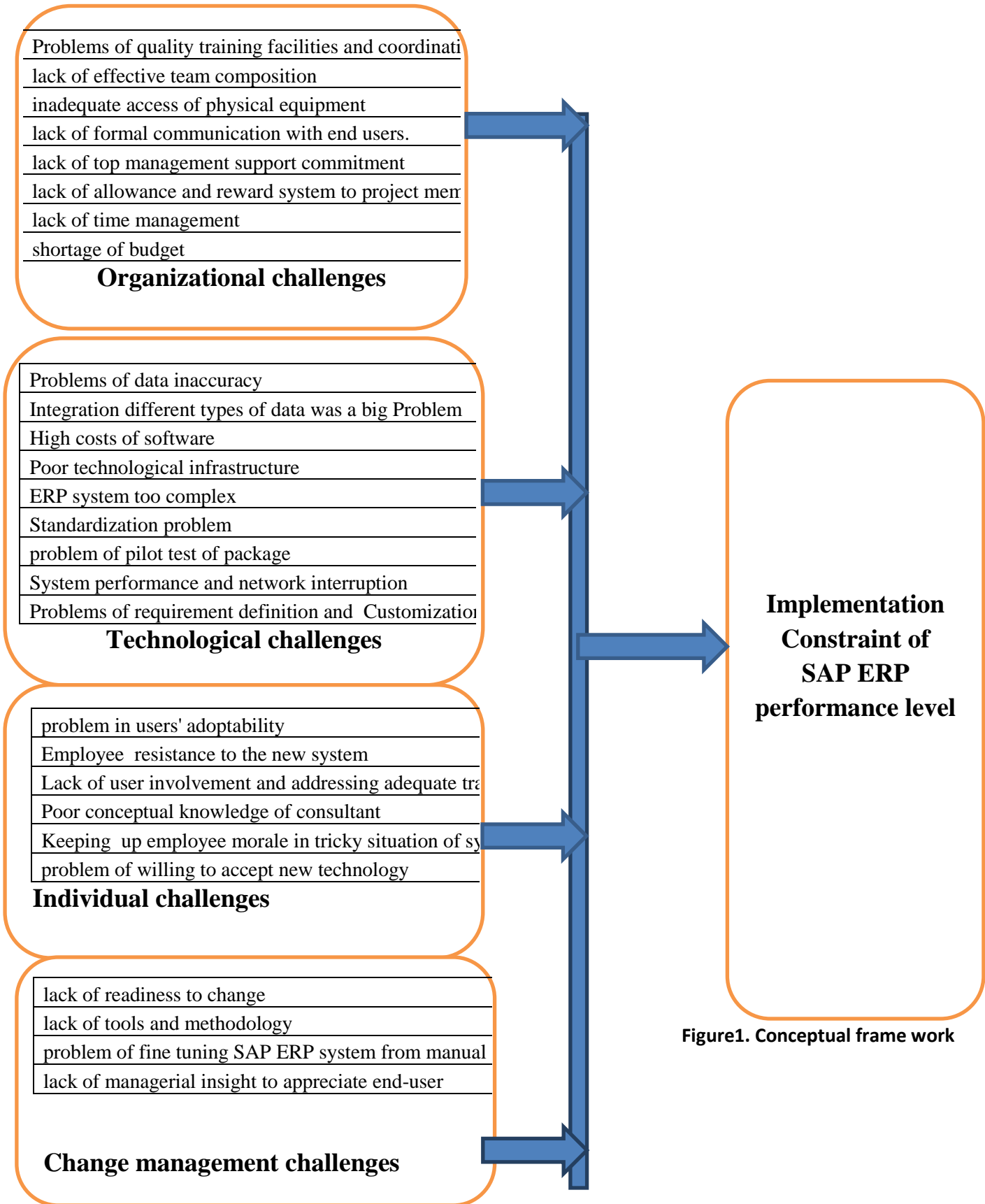


Figure 1 . Conceptual frame work of the study

Figure1. Conceptual frame work

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3. Overview of Research Methodology

The researcher employed a methodology to achieve the objective of the study based on both primary and secondary data from EEU staffs and documents. Moreover, the researcher looked at the population, sample size and sampling procedures, research instrument; distribution of questionnaire to the senior and junior staff targeting population using non-random sampling, specifically, convenience sampling.

The Data were collected via questionnaire for the primary data were collated and analyzed using the appropriate statistical techniques such as frequency, means and standard deviation analysis and distribution tables, which were culminated into bars via the Microsoft Excel Software. Furthermore, information such as specific comments and issues which will rise by respondents would be analyzed and summarized into tables.

3.1 Research design

The research mainly designed to examine the implementation challenges of SAP ERP system in the case of EEU. Therefore, in order to answer the general research question and the objective, the researcher used explanatory research design. The researcher also adopted the descriptive research design for answering the specific research questions. As the name suggests, this design refers to a set of methods and procedures that describe variables. Descriptive analysis aims at answering the variables by who, what, and how questions (Babbie, 2002).

According to Sekaran (2013), research design is the blue print for data collection, measurement and analysis; based on the research questions of the study. As a result of above description, the objective of the research is identifying implementation challenges of ERP at EEU Jimma district. Also, Descriptive researches are those studies which are concerned with describing the characteristics of a particular individual, or of group and it includes surveys and fact-findings enquire of different kinds (Sakaran, 2003)

Therefore the researcher pointed at both descriptive and explanatory research design to answer the research objectives.

3.2 Research approach

Basically, since the target of the study is to examine the implementation challenges of SAP ERP at EEU and test hypothesis, In order to achieve this goal of the study, the researcher navigate through quantitative research method. Inferential study design was also used to determine how the independent variables explain the dependent variables of the study.

both qualitative and quantitative (mixed) research approach is used. According to Creswell (2003) the use of both approaches is tandem so that the overall strength of the study is greater than either qualitative or quantitative research. According to Creswell (2009) qualitative research is a means for exploring and understanding the meaning of phenomenon from the view of participant.

3.3 Data source & Collection methods

3.3.1 Source of data

The primary data are those which are collected for the first time and thus happen to be original in character (Kothari, 2004). In this study, the primary data will collect through interview, questionnaires and observation prepared by the researcher. As per scholar definition, Secondary data are those that are already available, and refer to data that have already been collected and analyzed by someone else (Kothari, 2004). The researcher was used the primary data to accomplish the study. The questionnaires was adopted and modified from the prior authors and literatures review an approach which is recommended in methodological literature for studies of this nature (Bryman and Bell, 2007).

3.3.2 Data collection techniques/ instrument

The main data collection techniques used for this research was questionnaire and interview. The other techniques used here are observation and document review to supplement the results of questionnaire. For primary data collection, questionnaire will take as a preferable data-gathering tool for this research because of two reasons. It leads the researcher to collect information on facts and attitudes from a wide range of sources. Moreover, it is one of the most important tools to guide the respondent since it gives clear choices to check. Close ended types of questionnaires were designed in English language and distributed in a 5 point Likert scales to collect data from the sample respondents. It is taken Interview with EEU Jimma district director, Automation manager and billing and invoice manager as a means of getting additional information.

Also, the questionnaires are organized in to two parts; the first part comprises the demographic question regarding the respondents, and the second part contains issue related to the SAP ERP IC.

3.4 Target population & Sampling Methods

3.4.1 Target population

For this study, the researcher propose to consider top managers, medium level managers, respective customer service managers, team leaders, engineers, and team members of SAP ERP project as appropriate in the project area as a sampling unit and considered their SAP ERP Project experience as parameter of interest to define the study population. The targeted study population was 90 in number.

Table 2.1 Target population of the study

S/No	Population categories	Number of the respondents
1.	Management staff	36
2.	Junior and senior Engineers	29
3.	Finance worker staff (Cashier and retailers)	9
4.	Network Roll-Out (server equipment installation and testing)	6
5.	ICT and Automation staff	10
Total population		90

3.4.2 Sampling Methods

For this research, purposive sampling technique which is categorized under non probability sampling was used.

According to Creswell (2009), under purposive sampling respondents are chosen based on their convenience and availability. To determine the sample size, formula of Taro Yamane (1967); were used

$$n = \frac{N}{N + (e)^2}$$

Where,

n = the sample size

N = the population size,

e = the level of precision or sampling error = (0.05)

$$n = \frac{90}{1 + 90 (0.05)^2} = \frac{90}{1.225} = \underline{73}$$

Thus, sample size of 73 employees will be selected from the population of 90.

3.5 Reliability and Validity of research Instrument

To perform the validity of the study instrument the researcher consulted with the advisors, whether there was important relationship between the independent and dependent variables of the study. The questionnaires were taken from various journal articles and for its reliability the researcher conduct a pilot test by distributing 7 questionnaires in order to identify inconsistencies with the research instruments in regard to the research questions and research techniques which were then modified and adjusted. Based on the pilot test, improvements made and then after all it was found to be valid and reliable. The data were tested for its reliability using Cronbach's alpha.

3.6 Method of Data Analysis & Presentation

Data analyses were conducted through a descriptive statistics to provide details regarding the demographic question. After the raw data were collected, particularly with the quantitative data presented via the questionnaire, a descriptive statistical analysis method was applied. The proposed close ended questions were collected and inserted in to SPSS version 25 software in order to make a descriptive analysis of the data, which enabled to present quantitatively using frequency and percentage.

3.7 Methodology and research model

To evaluate the effects of various variables on the implementation of SAP ERP the correlation analysis were used. And also, the Statistical Package for Social Sciences (SPSS) version 25 and Excel were used for the data analysis. Furthermore, to check the reliability and consistency of the instrument, the Cronbach's Alpha (α) analysis was conducted. Moreover, to determine the relationship among the variables and test the hypothesis correlation and regression analysis methods were used by meeting the multiple regression assumptions of the linear regression model. The model were designed to be expressed in the following regression formula

$$Y(t) = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) - \beta_4(X_4)$$

where, α is constant and $\beta_1, \beta_2, \beta_3$ & β_4 are coefficient of dependent variable (X_1, X_2, X_3 & X_4) respectively and $Y(t)$ is Dependent variable.

3.8. Operational definition of variables

The operational definitions of variables describe the independent and dependent variables as well as their sub-variables as measurable indicators of the study as shown in the table below:

Table 2.2 Variable definition

Independent variable	Sub-variables
Organizational challenges	• effective team composition-proper composing of team.
	• inadequate access of physical equipment-not enough
	• Problems of data inaccuracy-data cleansing

Technological challenges	• Integration different types of data was a big Problem
	• High costs of software- initial cost
	• Poor technological infrastructure-not mature infrastructure
User Individual related challenges	• Employee resistance to the new system- weak in accepting
	• Poor conceptual knowledge of consultant
	• problem in users' adoptability-weak adopting system
	• problem of willing to accept new technology
Change management	• lack of readiness to change- not ready to accept change
	• lack of managerial insight to appreciate end-user
	• problem of fine tuning SAP ERP system from manual
	• lack of tools and methodology- not have proper roadmap
Dependent variable • SAP ERP Implementation constraints	• Weakness of effective communication
	• Problem of software customization
	• Not enough ERP champion user
	• Appropriate business and IT legacy systems

3.9 Ethical rules

More than all, the research were in line with the organizations policy in relation to any intellectual property rights of the organization. The good will principle of voluntary participation was adhered to respondents into participating in the research. Regarding privacy of the respondents, their responses are strictly confidential and only used for academic purposes. It cannot be ethical to access some confidential documents of the organization. So, the organization’s code of ethics taken in to account, without significantly compromising the finding of the study, Concerning references, all the materials and sources are properly acknowledged.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

The chapter deals with four parts. The first part deals with the demographic characteristics of respondents secondly, organization challenges of ERP system implementation analysis third, technological challenges of ERP system implementation analysis and finally individual challenges of ERP system implementation analysis. Then the data was analyzed by using statistical instruments called descriptive statistics with the help of SPSS application version 25. In order to make the data analysis, data was collected using questionnaire and interview designed and prepared in English language. A total of 95 questionnaires were distributed and from 95 questionnaires, 73 were properly filled and usable for further analysis.

4.1 Descriptive statistics result

4.1.1 Demographic characteristics of respondents

Table 4.1 general Statistics

		Gender of the respondents	Age of respondents	Education al status of the respondents	SAP ERP implementat ion challenges at EEU	Organiz ational challen ges	Techno logical challen ges	Individu al challeng es	Change management Challenges
N	Valid	73	73	73	73	73	73	73	73
	Missi ng	0	0	0	0	0	0	0	0

Source: SPSS Survey, 2025 output

There are no missing values and total 73 respondents are actively answered for the questionnaires.

Table 4. 2 gender of respondents

Gender of the respondents

Classification	Frequency	Percent	Valid Percent	Cumulative Percent
Male	53	72.6	72.6	72.6
Female	20	27.4	27.4	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

The respondent's gender profile indicates, as shown in the table one above, the majority of the respondents are male which represents 72.6% of the sample respondents whereas female respondents account for 27.4% of the sample respondents. This indicates that a, the overall staffing composition of the EEU Jimma district company is highly dominated by male employees.

Table 4.3 Ages of Respondents

Age of respondents

Classification	Frequency	Percent	Valid Percent	Cumulative Percent
Age of 20 - 30	32	43.8	43.8	43.8
Age of 31 - 40	30	41.1	41.1	84.9
Age of 41 and Above	11	15.1	15.1	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

On behalf of age status, 43.8% of the employees are between the age 20 and 30, and the other 41.1% are between 31 and 40. Furthermore, 15.1% of the employees are at the age of 41 or above. This indicates that the company is staffed with young and energetic employees. In other words, most of the employees are belonging in the productive age group.

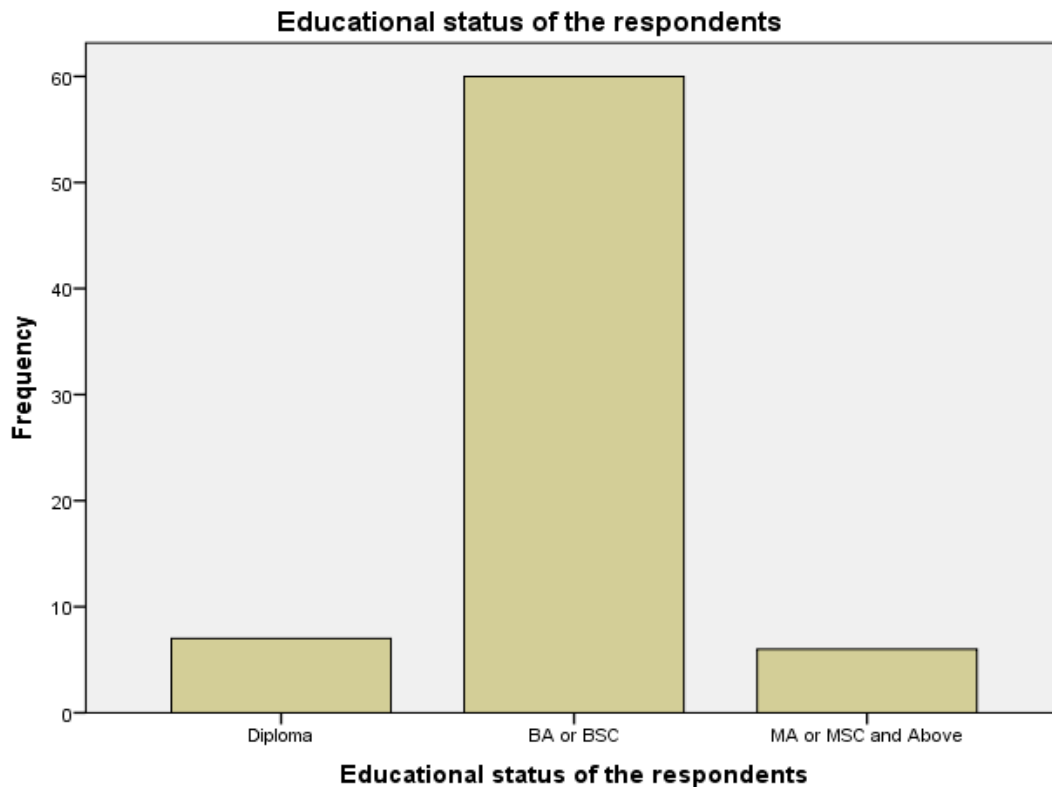


Figure 2 Educational statuses of the respondents

Table 4.4 Educational statuses of the respondents

Regarding educational level of employees of the company, 9.6% of the employees are Diploma holders. About 82.2% first degree holder and the other 8.2% of the employees have specialization at a master’s degree level and above. Therefore, majority of the Jimma EEU employees fall under all range, but the highest range fall under first degree and we can say that human resource profile of the company in terms of educational background is in a good status.

4.1.2 Organizational challenges of ERP system implementation

A total of 8 questions on organizational challenges of ERP were asked to indicate the extent to which each respondent agrees to corresponding closed ended statements rated on a five-point

Likert type scales ranging from „1“ “Strongly Disagree” to „5“ “Strongly Agree”. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.5 Statistical Summary on organizational challenges of ERP system implementation

Organizational challenges	Number of respondents	Mean	Std. Deviation	Combined average mean
Problems of quality training facilities and co-ordination	73	3.6164	1.19757	3.06875
lack of effective team composition	73	3.6027	.95364	
inadequate access of physical equipment	73	3.5342	1.02851	
Lack of formal communication with end users.	73	3.5890	1.07801	
lack of top management support commitment	73	3.7945	1.14211	
lack of allowance and reward system to project members	73	3.4658	1.13140	
lack of time management	73	3.5479	1.10606	
shortage of budget	73	2.9726	1.20153	

Source: SPSS Survey, 2025 output

As per table 4.5 shows above, the consolidated statistical results on the variables under organization challenges including, the mean and standard deviation of the data points indicated. The mean tried to tell the average where the data points fall for each specific variable were the standard deviation column showed the variability of the data points for each variable under consideration. The major organizational challenges highly stated by the respondents are lack of top management support commitment, Problems of quality training facilities and co-ordination, lack of effective team composition, lack of formal communication with end users, lack of time management, inadequate access of physical equipment, lack of allowance and reward system to project members with mean value of 3.79, 3.61, 3.60, 3.58, 3.54, 3.53 and 3.4 respectively in

descending order . On the other hand, shortage of budget with the mean value of 2.9is not stated by the respondents as organizational challenges.

4.1.2.1 Problems of quality training facilities and co-ordination

Table 4.6 Problems of quality training facilities and co-ordination

Problems of quality training facilities and co-ordination	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	6.8	6.8	6.8
Disagree	9	12.3	12.3	19.2
Neutral	14	19.2	19.2	38.4
Agree	26	35.6	35.6	74.0
Strongly Agree	19	26.0	26.0	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Regarding the statement above table 4.6, 61.6% of the respondents agreed that the company has a problem of quality training facility and coordination. On the other hand 19.1% of the respondents disagree and the remaining 19.2% of them were neither agree nor disagree. As per table 4.5 above the standard deviation was 1.19757 which implied that the data points tended to be close to the mean i.e. 3.6164 and there was general consensus by the respondents for this specific variable under consideration. Therefore, majority of the respondents assures that quality training facility and coordination is challenge of SAP ERP system implementation at EEU and the company should consider this variable.

4.1.2.2. Lack of top management support and commitment

Table 4.7 Lack of top management support and commitment

lack of top management support commitment		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	5.5	5.5	5.5
	Disagree	6	8.2	8.2	13.7
	Neutral	13	17.8	17.8	31.5
	Agree	29	39.7	39.7	71.2
	Strongly Agree	20	27.4	27.4	98.6
	Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

As per Table 4.7 above shows most of the respondents (67.1%) were agree the question related with lack of top management support and commitment in the implementation of the project. On the other hand, 13.7% of the respondents argued that there is no lack of top management support and commitment. The remaining 19.2% of the respondents goes to those who belong to (neutral) neither agree nor disagree, For the variable lack of top management challenges in implementation of sap Erp at Jimma EEU. As per 4.5 above the mean value 3.7945 and the standard deviation is 1.14211. This implies that majority of the respondents agree the statement meaning top management was not highly committed and there is a gap insupporting implementation of SAP ERP project and it is visible challenge for implementing the project. So the company should also focus on this particular variable.

4.1.2.3. Inadequate access of physical equipment

Table 4.8 Inadequate access of physical equipment

Inadequate access of physical equipment		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.4	1.4	1.4
	Disagree	13	17.8	17.8	19.2
	Neutral	18	24.7	24.7	43.8
	Agree	28	38.4	38.4	82.2
	Strongly Agree	13	17.8	17.8	100.0
	Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

As per the above table, the researcher asked for the respondents to show their view on in the matter of whether their company, i.e. Jimma District EEU have any physical equipment to support the project implementation. Among the respondents, 56.2% states that the company will not offer adequate access of physical equipment. On the other hand, 18.9% of the respondents argue that there was enough access of physical equipment to support the project implementation. The remaining 24.7% of the respondents have stated that they are neither of the two sides.

As indicates in table 4.5 above the mean value is 2.9726 and standard deviation is 1.03. This implies that the majority of the respondent agreed that there is problem of adequate physical equipment/hardware to run the implementation of the project and it is a challenge for implement the SAP ERP system.

4.1.2.4 Shortage of budget

Table 4.9 shortage of budget

shortage of budget	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	8	11.0	11.0	11.0
Disagree	22	30.1	30.1	41.1
Neutral	14	19.2	19.2	60.3
Agree	22	30.1	30.1	90.4
Strongly Agree	7	9.6	9.6	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

As per the above table 4.9, the researcher asked for the respondents to show their view on in the matter of whether their company, i.e. Jimma District EEU have any budget shortage in supporting the SAP ERP project implementation. Among the respondents,39.7% states that the company had shortage of budget, i.e. there is shortage of budget in implementation of SAP ERP project. On the other hand, 41.1% of the respondents argue that the company had enough budgets, i.e. there is no shortage of budget to support the project implementation. The remaining 19.2% of the respondents have stated that they are neither of the two sides.

As indicates in table 4.5 above the mean value is 3.53 and standard deviation is 1.20. This implies that the, majority of the respondent agreed that there is no problem of budget shortage to run the implementation of the project. As a result it is a key challenge for implement the SAP ERP system.

4.1.2.5 Lack of allowance and reward system to project members

lack of allowance and reward system to project members	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	2	2.7	2.7	2.7
Disagree	13	17.8	17.8	20.5
Neutral	25	34.2	34.2	54.8
Agree	15	20.5	20.5	75.3
Strongly Agree	18	24.7	24.7	100.0
Total	73	100.0	100.0	

Table 4.10 lack of allowance and reward system to project members

Source: SPSS Survey, 2025 output

Table 4.10 above portrayed the degree to which respondents agree to the statement saying Lack of allowance and less attention to project member. Majority of the respondents which is 45.2 % agreed that the incentives and allowance to project members offered by EEU does not enough. On the other hand, 20.5% of the respondents' state that the company was delivers enough incentives and allowance. The remaining 34.2% of the respondents neither agree nor disagree on this idea. Table 4.5 above shows that the mean value is 3.4658 and standard deviation is 1.13. This implies that there was general consensus by the respondents for this specific variable under consideration. Therefore, initiatives and allowance for the employee must consider for SAP ERP system implementation. From the interview discussion, in order to compensate the cost over-run that resulted, since Indian company who take the contract of implementation of the system, was more focus on the cost minimization this variable do not get attention.

4.1.2.6 Lack of time management

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	4.1	4.1	4.1
Disagree	9	12.3	12.3	16.4
Neutral	23	31.5	31.5	47.9
Agree	21	28.8	28.8	76.7
Strongly Agree	17	23.3	23.3	100.0
Total	73	100.0	100.0	

Table 4.11 lack of time management

Source: SPSS Survey, 2025 output

With respect to the statement saying “lack of time management,” majority of respondents i.e. 68.5% of them expressed their level of agreement and out of which 52.1% of them agreed and 16.4% of the respondents disagree and 31.5% of the respondents neither of the two. Table 4.5 above indicates that the mean value is 3.54 and the standard deviation is 1.106 which is close to the mean. This implies that there was a common understanding by the respondents for this specific variable under consideration. Therefore, most of the respondents asserted that time management will contribute more on the implementation of SAP ERP project efficiently and effectively. From the interview, time taken to make ready infrastructure for the system platform is the major challenges.

4.1.2.7 Lack of formal communication with end users.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	2	2.7	2.7	2.7
Disagree	11	15.1	15.1	17.8
Neutral	18	24.7	24.7	42.5
Agree	26	35.6	35.6	78.1
Strongly Agree	16	21.9	21.9	100.0
Total	73	100.0	100.0	

Table 4.12 Lack of formal communication with end users.

Source: SPSS Survey, 2025 output

Table 4.12 above shows the respondents level of agreement to the statement lack of formal communication with end users. Majority of the respondents which is 57.5% agreed the statement whereas 17.5% of the respondents disagree and the remaining 24.7% of the respondents neither agree nor disagree. Table 4.5 above indicates that the standard deviation was 1.07 which implied that the data points tended to be close to the mean i.e. 3.58 and there was general consensus by the respondents for this specific variable under consideration. This implies that lack of communication with end users is a challenge for ERP implementation. According to the interview, even though there is a good communication between departments there is a challenge for communication between end user. Also there is the knowledge gap between end user and higher officer. They didn't immediately update, inform & mentor about its nature & feature. Additionally since the department has not the outlook email the information propagation face extreme barrier.

4.1.2.8 Lack of effective team composition and coordination

lack of effective team composition	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	2.7	2.7	2.7
Disagree	5	6.8	6.8	9.6
Neutral	26	35.6	35.6	45.2
Agree	27	37.0	37.0	82.2
Strongly Agree	13	17.8	17.8	100.0
Total	73	100.0	100.0	

Table 4.13 Lack of effective team composition and coordination

Source: SPSS Survey, 2025 output

Table 4.9 above shows the degree to which respondents agree to the statement saying “Lack of effective team composition and coordination”. Majority of the respondents which is 54.8% were agree while 9.5% of the respondents were disagreed the statement. The remaining 35.6% of the respondents were neither of the two. The evidence table 4.5 above indicated that, the mean value is 3.6 and standard deviation is 0.90 which implied that there was disparity between the respondents. Therefore, majority of the respondents asserted that the company has not effective and coordinated team and it is also a challenge to implement SAP ERP system.

4.1.3 Technological challenges of ERP implementation

A total of 9 questions on technological challenges of ERP were asked to indicate the extent to which each respondent agrees to corresponding closed ended statements rated on a five-point Likert type scales ranging from „1“ “Strongly Disagree” to „5“ “Strongly Agree”. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

4.1.3.1 Problem of data inaccuracy

Regarding data inaccuracy problems table 4.14 shown at appendix1, summarized that 39.7% of respondents are in favor of the statement where as 21.9% are against the statement but 61.6% are neither agreed nor disagreed. As indicated in table Summary Table 4.23 below the standard

deviation was 1.1 which inferring that the data points tended to be close to the mean i.e. 3.2 and there was general consensus by the respondents for such specific variable under consideration. Therefore, data inaccuracy is a challenge for SAP ERP system implementation and majority of the respondents asserted that the EEU should consider this variable.

4.1.3.2 Integration different types of data was a big Problem

Table 4.22 present at appendix1, show the respondents level of agreement to the statement Integration of different types of data was a big Problem. Majority of the respondents (45.5%) agreed that integration of data was a big problem where as 19.2% of the respondents were disagree. where the remaining 38.4% of the respondents are neither of the two sides. Summary Table 4.23 below indicates that the mean value of 3.32 and standard deviation is 1.14 which is close to the mean and it implied that there was general consensus by the respondents by this variable. From the interview dialog there was a problem of Integration with other modules and interface with T24, cisco switch and router, problems of integrating safety system for the server and like effect of dependency across modules, system integration test problem, and delay in interface issue are the challenges for SAP ERP system implementation.

4.1.3.3 High costs of software

Table 4.15 shown at appendix1, presented the issues regarding to the level of costs for the software. As shown in the table out of 73 respondents 50.5% agreed as the costs for the software is high, whereas 20.6% of the respondents disagreed as there are high costs for the software but 24.7% of the respondents did say neither. In the same manner Summary Table 4.23 below shows that the standard deviation was calculated at 1.14 which implied that the data was extended out over a large range of values which means there were varied options among respondents regarding this specific variable considered. The data points tended to be close to the mean i.e. 3.4 and meaning that more of smaller values were concentrated around the mean. I.e. high cost of SAP ERP software is the major challenge for implementing it.

4.1.3.4. Poor technological infrastructure

Table 4.16 shown at appendix1, shows that respondent's level of agreement to the statement saying "poor technological infrastructure" majority of the respondents which is 53.5% shows their agreement to the statement. On the other hand, 27.4% of the respondents disagree and

remaining 19.4% are neutral of both idea. As presented in Summary Table 4.23 below the standard deviation was 1.27 which implied that the data points tended to be close to the mean i.e., 3.4 and there was general consensus by the respondents for such specific variable under consideration. Poor technological infrastructure is the challenge for the implementation of SAP ERP project.

4.1.3.5 ERP system too complex

Table 4.17 shown at appendix1,presents the degree to which respondent's state of agreement to the statement complexity of the SAP ERP system. As a result, 32.9% of the respondents agreed that ERP system is too complex. On the other hand majority of the respondents which is 38.4% states that the system is not complex and it is easily understandable. The remaining 28.8% are neither of the two sides. As indicated in Summary Table 4.23 below, the mean value is 2.9 and standard deviation is 1.19.this implies that majority of the respondents disagree to the statement. That means even if SAP ERP system is complex set of software, it is not a challenge for EEU to implement the project.

4. 1.3.6. Standardization problem

Table 4.18 shown at appendix1,shows that the respondent's level of agreement to the statement problems of standardization majority of the respondents which is 42.5% were agreed to the statement, 31.5% of them was neither agreed nor dis agreed and the rest 26% was disagreed to the statement. As indicated in Summary Table 4.23 below the mean value is 3.29 and standard deviation is 1.08 which is data point close to the mean. This implies that majority of the respondents assertive that standardization is a challenge for ERP implementation.

From the interview discussion, standardizing and mapping the EEU business processes to match the SAP ERP software is seen as a challenging task, leading to attempts of modifying the software to match their business needs.

4.1.3.7 Problem of pilot test of package.

Regarding Problem of pilot test of package table 4.19 shown at appendix 1, summarized that 49.3% of respondents are in favor of the statement whereas 37.3% are against the statement but 23.3% are neither agreed nor disagreed. As indicated in Summary Table 4.23 below the standard deviation was 1.1 which inferring that the data points tended to be close to the mean i.e. 3.2 and there was general consensus by the respondents for such specific variable under consideration. Therefore, data inaccuracy is a challenge for SAP ERP system implementation and majority of the respondents asserted that the EEU should consider this variable

4.1.3.8 System performance and network interruption

Table 4.20 shown at appendix 1, explain that respondents level of agreement to the statement system performance and network interruption, majority of the respondents which 56.2% agreed, on the other hand 23.3% of the respondents disagree and the remaining 20.5% are neither of the two sides. As presented in Summary Table 4.23 below the standard deviation was 1.22 which inferring that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. This implies that system performance and network interruption is a challenge for SAP ERP system implementation. According to the interview, since the network becomes local address the network is not strong enough to handle all the system with the required rate. The centralized server is busy and self-locked sometimes. This becomes the challenging variable.

4.1.3.9 Problems of requirement definition and customization

Table 4.21 shown at appendix 1, shows the respondent's level of agreement to the statement Problems of requirement definition and customization. From those majorities of the respondents 48% of them show their level of agreement. On the other side, which is 24.6% disagree and the remaining 27.4% of the respondents is neither agrees nor disagrees. Summary Table 4.23 below indicates that the mean value of 3.27 and standard deviation of 1.09. This implies that majority of the respondents agree the statement that means problem of requirement definition and customization is controlled and it is a challenge for the implementation of SAP ERP project.

Table 4.23. Statistical summary on technological challenges of ERP system implementation

Descriptive Statistics			
Technological challenges of ERP implementation	N	Mean	Std. Deviation
Problems of data inaccuracy	73	3.2055	1.11752
Integration different types of data was a big Problem	73	3.3288	1.14327
High costs of software	73	3.4932	1.14411
Poor technological infrastructure	73	3.4247	1.27930
ERP system too complex	73	2.9863	1.19598
Standardization problem	73	3.2917	1.08040
problem of pilot test of package	73	3.3562	1.18286
System performance and network interruption	73	3.5479	1.22521
Problems of requirement definition and Customization	73	3.2740	1.09621

Source: SPSS Survey, 2025 output

Summary table 4.23 above shows the consolidated statistical results on the variables under technological challenge including the number of frequencies, the Mean, and Standard Deviation of the data points. The mean tried to tell the average where the data points fall for each specific variable while the standard deviation column showed the variability of the data points for each variable under consideration. The major technological challenges for the implementation of the system highly stated by the respondents are: System performance and network interruption, High costs of software ,Poor technological infrastructure, problem of pilot test of package, Integration different types of data was a big Problem and Problems of data inaccuracy mean value of 3.5, 3.4, 3.49, 3.35, 3.32 and 3.2 respectively. On the other hand, ERP system complexity, with mean value 2.9 is not stated by the respondents as implementation challenges.

4.1.4 Individual challenges

For this particular independent variable total of 6 questions were asked to indicate that to what extent each respondent agrees to corresponding closed ended statements rated on a five-point Likert type scales ranging from „1“ “Strongly Disagree” to „5“ “Strongly Agree”. Where: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 4.30. Statistical summary Individual challenges of ERP system implementation

Descriptive Statistics				
	N	Mean	Std. Deviation	Equivalent mean
problem of willing to accept new technology	73	3.2740	1.18157	3.48
Keeping up employee morale in tricky situation of system	73	3.4110	1.16471	
Employee resistance to the new system	73	3.4795	1.16797	
problem in users' adoptability	73	3.5068	1.15618	
Poor conceptual knowledge of consultant	73	3.5205	1.08153	
Lack of user involvement and addressing adequate training	73	3.6986	1.07606	
Valid N (listwise)	73			

4.1.4.1 Problem of willing to accept new technology

Considering Problem of willing to accept new technology as one determining factor of implementation challenges in table 4.29 shown at appendix 1, question about the Problem of willing to accept new technology was raised. And hence 63.4% agreed, 30.1% disagreed and 16.4% are neutral of both idea. As indicated in table 4.30 above the standard deviation was 1.18 which implied that the data points tended to be close to the mean i.e. 3.27 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that Problem of willing to accept new technology plays a vital role for the implementation of the system.

4.1.4 .2 keeping up employee morale in tricky situation of system

As per the questionnaires Table 4.28 shown at appendix 1, points at respondent's level of agreement to the statement saying that "Keeping up employee morale in tricky situation of system," majority of the respondents about 52% argued as Keeping up employee morale in tricky situation of system. On the other hand, only 20.5% of the respondents disagreed. But 27.5% responded as neutral of two ideas. Table 4.30 above indicates that the standard deviation was 1.16 which implied that the data was extended out over a large range of values which means there were varied options among respondents regarding this specific variable considered. The data points tended to be close to the mean i.e. 3.4 and there was general consensus by the respondents for such specific variable under consideration. From this the researcher inferred that, also in the EEU this variable raised as the challenging factor for implementation.

4.1.4.3. Problem in users' adoptability

As per the table 4.24 shown at appendix 1, the respondent's level of agreement to the statement "Problem in users' adoptability," majority of the respondents about 54.8% agreed the statement. On the other hand, 20.6% of the respondents disagree and the remaining 24.7% are neither of the two sides. As indicated in table 4.30 above the standard deviation was 1.15 which inferring that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. This implies that there was high tendency of users in using the legacy data for their customer relation management (CRM), EAM and FICO platform and adopt the new system is so challenging.

As a result of interview discussion, SAP ERP project is expected to trigger major changes in way digitalizing and rousting the service given by the EEU. The ERP system is expected to fully automate the internal processes and support functions based on its strong features of "Self Service" and "self-monitoring" service functionality. This is a new business paradigm which expects users to request and approve the work. it is paperless transaction, thus has become a challenge.

4.1.4.4 Lack of user involvement and addressing adequate training

Considering user involvement and addressing adequate training as one determining factor of implementation in table 4.26 shown at appendix 1, lack of user involvement and addressing adequate training was raised. And hence 61.6% agreed, 15.1% disagreed and 23.3% are neutral of both idea. As

indicated in table 4.30 above the standard deviation was 1.07 which implied that the data points tended to be close to the mean i.e. 3.69 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that user involvement and adequate training plays a vital role for the implementation of the system, absence of concerned user involvement and inadequate training is a challenge for implementation of the system.

4.1.4 .5. Employee resistance to the new system

As per the questionnaires Table 4.25 shown at appendix 1, shows that respondents level of agreement to the statement saying that “Employee resistance to the system,” majority of the respondents about 56.1% argued as employee resistance to new system. On the other hand, only 23.3% of the respondents disagreed. Table 4.30 above indicates that the standard deviation was 1.16 which implied that the data was extended out over a large range of values which means there were varied options among respondents regarding this specific variable considered. The data points tended to be close to the mean i.e. 3.4 and there was general consensus by the respondents for such specific variable under consideration. From this the researcher inferred that no matter how the fact that, it is obvious to be reluctant in most companies for a new system to be in effect, Also in the EEU this variable raised as the challenging factor for implementation.

4.1.4 .6. Poor conceptual knowledge of consultant

As per the questionnaires Table 4.27 shown at appendix 1, shows the respondents level of agreement to the statement “poor conceptual knowledge of consultant,” majority of the respondents which is 53.4% agree the statement while 19.1% of the respondents disagree and the remaining 27.4% neither of the two. As indicated in table 4.30 above the standard deviation was 1.08 which implied that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that conceptual knowledge of consultant must consider and is a challenge for the implementation of SAP ERP system.

4.1.4 .7. Statistical Summary on individual challenges of ERP system implementation

As per the table 4.30 above shown, the resultant statistical results on the variables under individual challenge including, the number of frequencies, the Mean, and Standard Deviation of the data points addressed. The mean tried to tell the average where the data points fall for each

specific variable while the standard deviation column showed the variability of the data points for each variable under consideration. The major individual challenges for the implementation of the system highly stated by the respondents are Problem of willing to accept new technology, Lack of user involvement and addressing adequate training, Employee resistance to the system, Problem in users' adoptability, Poor conceptual knowledge of consultant, Keeping up employee morale in tricky situation of system, with mean value of 3.27, 3.69, 3.4, 3.5, 3.5 and 3.4 respectively. To let employees, add on whatever additions they have about the system additional question was placed at the last part of the questionnaire for the respondents, but only few respondents has reacted on it is used to strength the idea through the paper.

4.1.5 Change Management challenge

4.1.5.1 Lack of readiness to change

Table 4.31 shown at appendix 1, elaborate that the respondents level of agreement to the statement "Lack of readiness to change", majority of the respondents about 74% agreed to the statement. On the other hand, 15.1% of the respondents disagree and the remaining 11% are neither of the two sides. As indicated in table 4.34 below the standard deviation was 1.13 which inferring that the data points tended to be close to the mean i.e. 3.9 and there was general consensus by the respondents for such specific variable under consideration. This implies that there was no tendency of users/employee to the new environment. As a result the researcher finds that this particular variable is challenging in implementation of the system challenging.

4.1.5.2 Lack of tools and methodology

Considering Lack of tools and methodology as one determining factor of implementation in table 4.32 shown at appendix 1, questionnaires order, Lack of tools and methodology was raised. And hence 57.6% agreed, 21.9% disagreed and 20.5% are neutral of both idea. As indicated in table 4.34 below the standard deviation was 1.21 which implied that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that presence of tools and methodology plays a vital role for the implementation of the system, absence of concerned tools and methodology is a challenge for implementation of the SAP ERP system.

4.1.5.3 problem of fine tuning SAP ERP system from manual

As per the questionnaires Table 4.33 shown at appendix 1, shows that respondents level of agreement to the statement saying that “problem of fine tuning SAP ERP system from manual,” majority of the respondents about 52% argued to the idea. On the other hand, only 23.3% of the respondents disagreed to the query. The remaining 24.7% are neither of the two. As indicated in table 4.34 below indicates that the standard deviation was 1.3 which implied that the data was extended out over a large range of values which means there were varied options among respondents regarding this specific variable considered. The data points tended to be close to the mean i.e. 3.4 and there was general consensus by the respondents for such specific variable under consideration. From this the researcher inferred that fine tuning of the system to go live is challenging factor.

4.1.4 .6. Lack of managerial insight to appreciate end-user

Table 4.34 below shows the respondents level of agreement to the statement “Lack of managerial insight to appreciate end-user,” majority of the respondents which is 71.3% agree the statement while 13.7% of the respondents disagree and the remaining 15% neither of the two As indicated in table 4.34 below the standard deviation was 1.13 which implied that the data points tended to be close to the mean i.e. 3.84 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that Lack of managerial insight to appreciate end-user must consider and is a challenge for the implementation of SAP ERP system.

Table 4.34. Statistical summary change management challenges of SAP ERP system implementation

	N	Mean	Std. Deviation
lack of readiness to change	73	3.9178	1.13961
lack of tools and methodology	73	3.5342	1.21429
problem of fine tuning SAP ERP system from manual	73	3.4658	1.25921
lack of managerial insight to appreciate end-user	73	3.8493	1.13861
Valid N (listwise)	73		

4.1.6 SAP ERP Implementation Challenges

4.1.6.1 Weakness of effective communication

Table 4.35 shown at appendix 1, shows the respondents level of agreement to the statement “Weakness of effective communication,” majority of the respondents which is 53.4% agree the statement while 20.6% of the respondents disagree and the remaining 26% neither of the two. As indicated in table 4.34 below the standard deviation was 1.12 which implied that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that Weakness of effective communication must consider and is a challenge for the implementation of SAP ERP system.

4.1.6.2 Problem of software customization

As per the questionnaires Table 4.36 shown at appendix 1, shows that respondents level of agreement to the statement saying that “problem of fine tuning SAP ERP system from manual,” majority of the respondents about 61.7% argued to the idea. On the other hand, only 15.1% of the respondents disagreed to the query. The remaining 23.3% are neither of the two. As indicated in table 4.39 below indicates that the standard deviation was 1.03 which implied that the data was extended out over a large range of values which means there were varied options among respondents regarding this specific variable considered. The data points tended to be close to the mean i.e. 3.69 and there was general consensus by the respondents for such specific variable under consideration. From this the researcher concluded that Problem of software customization was also parts of system to go live is challenging factor.

4.1.6.3 Not enough ERP champion user

Regarding query “Not enough ERP champion user” Table 4.37 shown at appendix 1, elaborate the respondents level of agreement. Majority of the respondents about 60.3% agreed to the statement. On the other hand, 15% of the respondents disagree and the remaining 24.7% are neither of the two sides. As indicated in table 4.39 below the standard deviation was 1.13 which inferring that the data points tended to be close to the mean i.e. 3.5 and there was general consensus by the respondents for such specific variable under consideration. This implies that there was no

tendency of SAP ERP champion user. As a result the researcher finds that this particular variable is challenging in implementation of the system.

4.1.6.4. Appropriate business and IT legacy systems

Regarding query appropriate business and IT legacy systems as one determining factor of implementation in table 4.38 shown at appendix 1, questionnaires order, appropriate business and IT legacy systems was raised. And hence 72.6% agreed, 9.6% disagreed and 17.8% are neutral of both idea. As indicated in table 4.39 below the standard deviation was 1.05 which implied that the data points tended to be close to the mean i.e. 3.8 and there was general consensus by the respondents for such specific variable under consideration. Therefore, there was general consensus by the respondents that presence of appropriate business and IT legacy systems plays a vital role for the implementation of the system, absence of concerned appropriate business and IT legacy systems is a challenge for implementation of the SAP ERP system.

Table 4.39. Statistical summary SAP ERP system implementation change

Challenges

	N	Mean	Std. Deviation
Weakness of effective communication	73	3.3699	1.20769
Problem of software customization	73	3.3288	1.15536
Not enough ERP champion user	73	3.4795	1.17980
Appropriate business and IT legacy systems	73	3.6986	1.03662
Valid N (listwise)	73		

Answering of research question

Q1. What are the accessibility and technological difficulties faced by the targeted end user with SAP ERP implementation? This question is answered by the TC variable listed. All The major technological challenges for the implementation of the system highly stated by the respondents are: System performance and network interruption, High costs of software ,Poor technological infrastructure, problem of pilot test of package, Integration different types of data was a big Problem

and Problems of data inaccuracy has higher contribution for the technological difficulties of SAP ERP IC.

Q2. How these accessibility and technological difficulties affect the ability of the targeted end user in integrating with SAP ERP? The research question answered from the analysis of listed TC. Even if the employee had ability to do that work, because of not enough training it will becomes constraint to do it.

Q3. What is the status of the SAP ERP implementation at EEU Jimma? For this particular research question the research finds that from the interview question taken with automation manager and district director currently SAP ERP is fully implemented and the time given for the implementation stage for the project is wind up, i.e the system engaged on its track using full potential.

Q4. What are organizational challenges of SAP ERP implementation EEU Jimma?

This research question is fully answered by the independent variable OC through regression analysis.

Q5. What are the employee individual related challenges in the implementation of SAP ERP at EEU Jimma? This reaserch question is also answered by navigating through all the above independent variable and from the below regression analysis.

4.2. Reliability Analysis

To measure the consistency of the questionnaire particularly the Likert-type scale the reliability analysis is essential in reflecting the overall reliability of constructs that it is measuring. To carry out the reliability analysis, Cronbach's Alpha ($\hat{\alpha}$) is the most common measure of scale reliability and a value greater than 0.700 is very acceptable (Field, 2009; Cohen and Sayag, 2010) and according to Cronbach's (1951), a reliability value ($\hat{\alpha}$) greater than 0.600 is also acceptable

Table 4.40. Cronbach's Alpha ($\hat{\alpha}$) value for variables

Variables	N of Items	Cornbrash's Alpha
Organizational challenges of ERP implementation	8	.611
Technological challenges of SAP ERP implementation	9	.731
Individual challenges of SAP ERP implementation	6	.707
Change management challenges	4	.683
Sap ERP implementation challenges	4	.711
Total	5	.825

Sources: survey data, 2025 SPSS output

Reliability Statistics

Cronbach's Alpha	N of Items
.825	5

Sources: survey data, 2025 SPSS output

From table above reliability statics table, the value for Cronbach's Alpha (α) was 0.825 for all variables. When these calculated reliability values are close to 0.8000, and compared with the minimum value of alpha 0.600 advocated by Cronbach's (1951), then the responses generated for all of the variables' used in this research were reliable enough for data analysis.

4.3. Linear Regression Assumption Analysis

Multiple regression techniques give researchers flexibility to address a wide variety of research questions (Hoyt et al., 2006). Since the analyses are based upon certain definite conditions or assumptions, it is imperative that the assumptions be analyzed (Sevier, 1957).

The assumptions of Multiple Regression that are identified as primary concern in the research include linearity, independence of errors, homoscedasticity, normality, and col-linearity.

4.3.1 Linearity

Linearity defines the dependent variable as a linear function of the predictor (independent) variables (Darlington, 1968). Multiple regressions can accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2002). More in-depth examination of the residual plots and scatter plots available in most statistical software packages will also indicate linear vs. curvilinear relationships (Keith, 2006; Osborne & Waters, 2002). Residual plots showing the standardized residuals vs. the predicted values and are very useful in detecting violations in linearity (Stevens, 2009). In this case the relationship between the Independent Variables and the Dependent Variables is linear; Scatter plots show that this assumption had been met.

4.3.2 Collinearity

Collinearity refers to the assumption that the independent variables are uncorrelated (Keith, 2006). Also sometimes it so called multicollinearity. The researcher is able to interpret

regression coefficients as the effects of the independent variables on the dependent variables when collinearity is low this means that we can make inferences about the causes and effects of variables reliably. Multicollinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables (Keith, 2006).

We can do this in two ways. First, we need to look at the Correlations table. Correlations of more than 0.8 may be problematic. As per our result the highest correlation is $r=.748$ which is acceptable.

Table 4.41 multi collinearity test by correlation

Correlations Sources: survey data, 2025 SPSS output

		SAP ERP implementation challenges at EEU	Organizational challenges	Technological challenges	Individual challenges	Change management Challenges
SAP ERP implementation challenges at EEU	Pearson Correlation	1	.748**	.431**	.518**	.427**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	73	73	73	73	73
Organizational challenges	Pearson Correlation	.748**	1	.443**	.425**	.569**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	73	73	73	73	73
Technological challenges	Pearson Correlation	.431**	.443**	1	.428**	.532**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	73	73	73	73	73
Individual challenges	Pearson Correlation	.518**	.425**	.428**	1	.560**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	73	73	73	73	73
Change management Challenges	Pearson Correlation	.427**	.569**	.532**	.560**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	73	73	73	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation can take on any value in the range [-1, 1]. The sign of the correlation coefficient indicates the direction of the relationship, while the magnitude of the correlation (how close it is to -1 or +1) indicates the strength of the relationship.

As per the Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates. Stated that:-

- -1 : perfectly negative linear relationship
- 0 : no relationship
- +1 : perfectly positive linear relationship

For the conclusion and decision ,Again it can be addressed as the following

- ➔ $0.1 < |r| < 0.3$ small / weak correlation
- ➔ $0.3 < |r| < 0.5$ medium / moderate correlation
- ➔ $0.5 < |r|$ large / strong correlation

In our case the researcher take the person correlation and finds that, all the variables are highly correlated at the significance level of the 0.01 and assigned as ** in the correlation table. For all variable the p value is less than 0.05($p < .001$). As per Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed). The r value for the Pearson correlation form correlation table above range from $r = 0.427$ to $r = 0.748$. Out of the 25 combination, 14 combination of the variable r values fall under the strong correlation and the other 9 combination fall under the moderate correlation. Which lead the researcher to conclude that almost all of the variables are highly correlated.

Moreover the second option was procedure to examine the correlation matrix of the predictor variables, computing the coefficients of determination, R^2 , and measures values of the data matrix including variance inflation factors (VIF) (Mason & Perreault Jr., 1991). Tolerance measures the influence of one independent variable on all other independent variables. Tolerance levels for correlations range from zero (no independence) to one (completely independent) (Keith, 2006). We can demonstrate this assumption by looking at the Coefficients table (table 4.44). This allows us to more formally check that our predictors are not too highly correlated.

We can use VIF and Tolerance statistics to assess this assumption. For the assumption to be met we want VIF scores to be well below 10, and tolerance scores to be above 0.2; Analysis of collinearity statistics show this assumption has been met, as VIF scores were well below 10, and tolerance scores in the regression coefficient table 0.2 (see table 4.44 below)

4.3.3. Independence of Errors

Independence of errors refers to the assumption that errors are independent of one another, implying that subjects are responding independently (Stevens, 2009). The goal of research is often to accurately model the 'real' relationships in the population (Osborne & Waters, 2002). To check this assumption we need to look at is the Model Summary box. Here, we can use the Durbin-Watson statistic (in this case: Durbin-Watson = 1.823) at table 4.42 below, to test the assumption that our residuals are independent (or uncorrelated). This statistic can vary from 0 to 4. For this assumption to be met, we want this value to be close to 2. Values below 1 and above 3 are cause for concern and may render our analysis invalid. As a result our assumption is valid and met, since 1.823 is greater than 1 and less than 3.

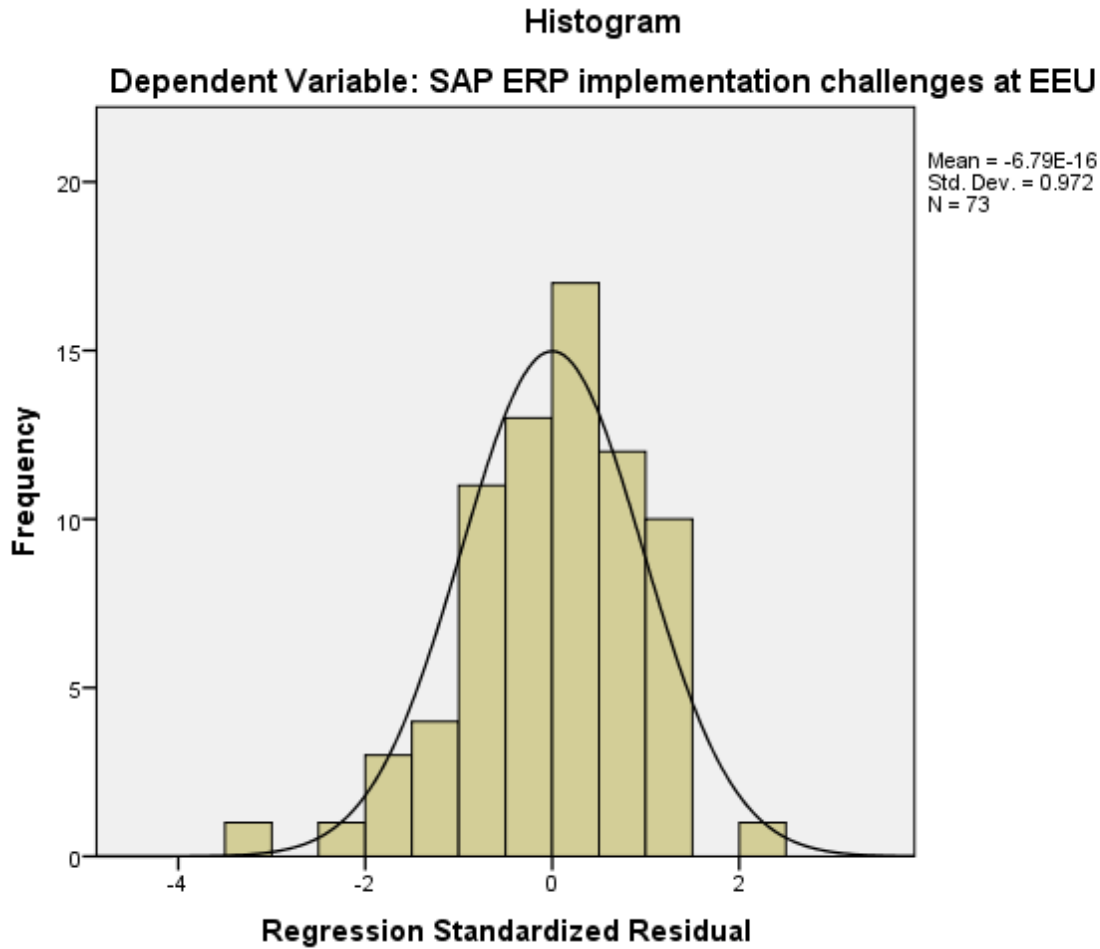


Figure 3 histogram of dependent variable regression

4.3.4 Homoscedasticity

The assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables (Osborne & Waters, 2002). This means that researchers assume that errors are spread out consistently between the variables (Keith, 2006). This is evident when the variance around the regression line is the same for all values of the predictor variable. Homoscedasticity can be checked by visual examination of a plot of the standardized residuals by the regression standardized predicted value (Osborne & Waters, 2002). Specifically, statistical software scatter plots of residuals with independent variables are the method for examining this assumption (Keith, 2006). Ideally, residuals are randomly scattered around zero (the horizontal line) providing even distribution (Osborne & Waters, 2002). Our plot of standardized residuals

vs standardized predicted values showed no obvious signs of funneling; suggesting the assumption of homoscedasticity has been met.

4.3.5 Normality

This assumption shows that errors are normally distributed, and that a plot of the values of the residuals will approximate a normal curve (Keith, 2006). The assumption is based on the shape of normal distribution and gives the researcher knowledge about what values to expect (Keith, 2006). Normality can further be checked through histograms of the standardized residuals (Stevens, 2009)

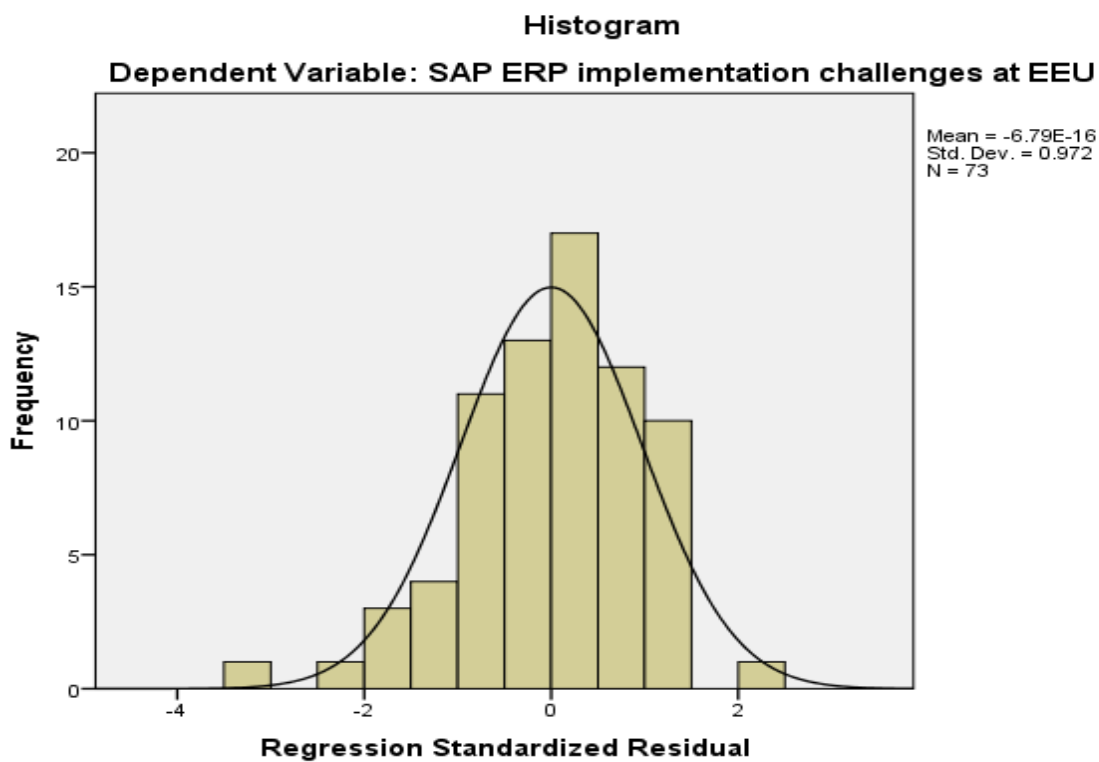


Figure 4 Histogram for testing normality analysis

Normality also tested using Q-plots and P-plots are more exacting methods to spot deviations from normality, and are relatively easy to interpret as departures from a straight line (Keith, 2006). The P-P plot for the model suggested that the assumption of normality of the residuals may have been met.

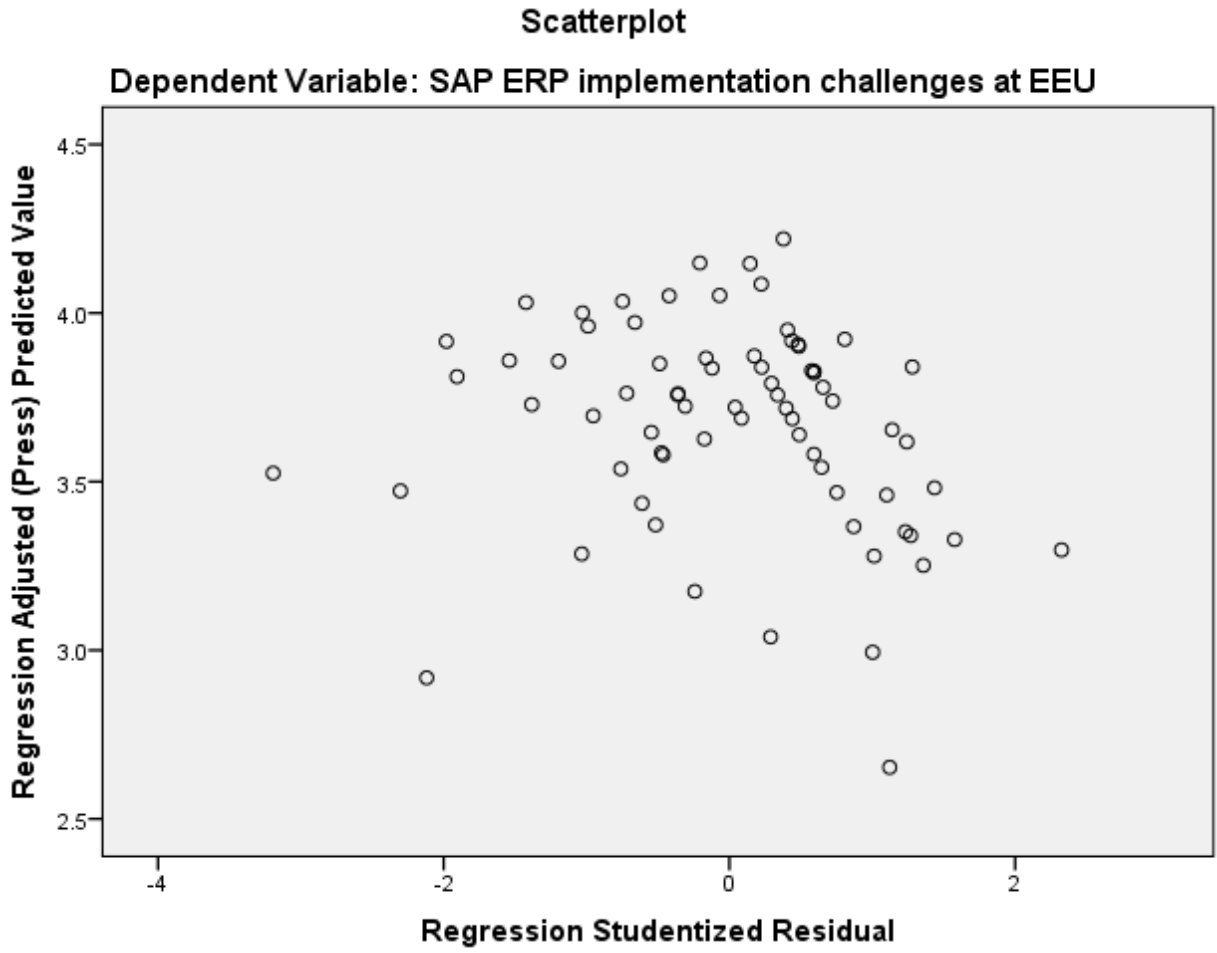


Figure 5 Scattered plot for SAP ERP IC for homoscedasticity analysis

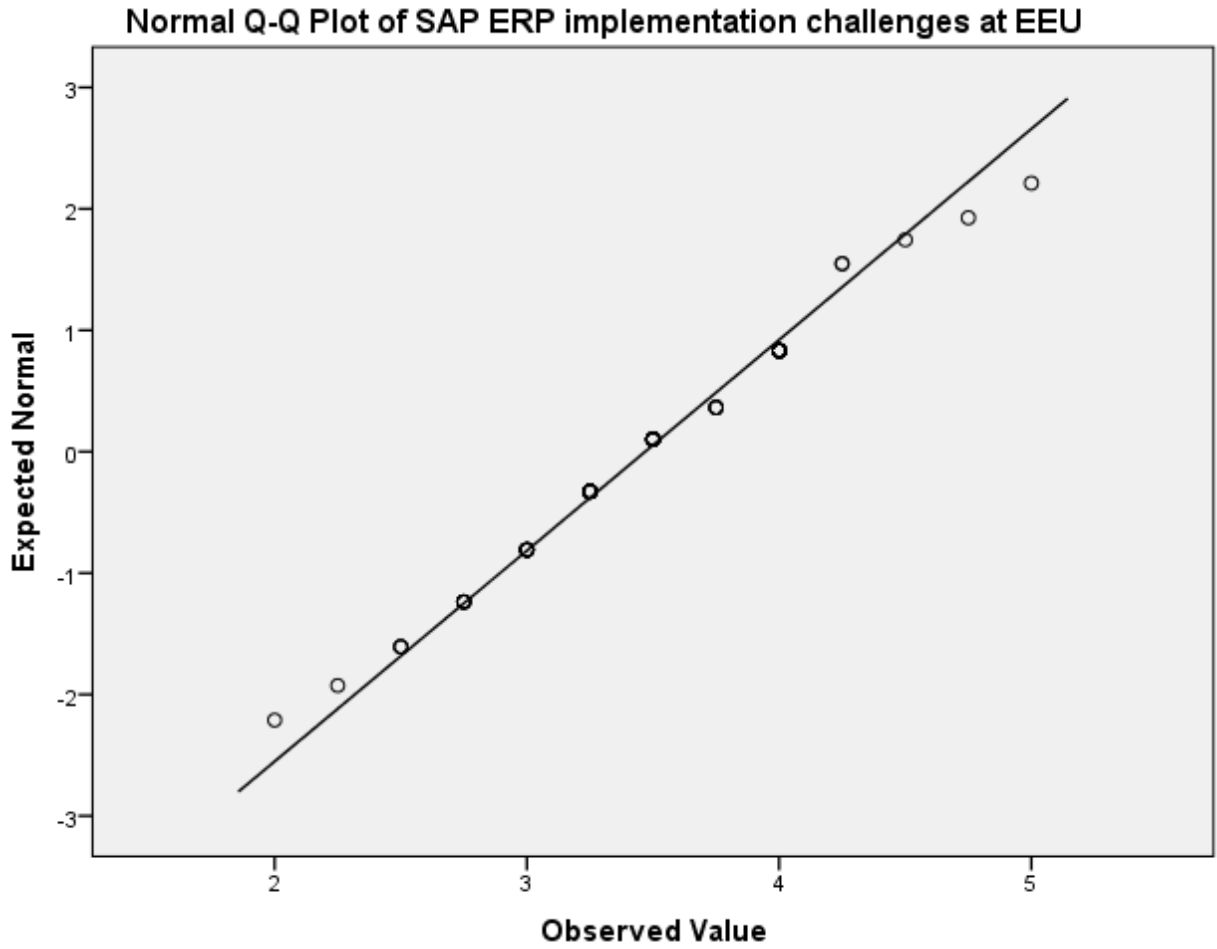


Figure 6 Normal Q-Q plot analyses for the normality test for independent variable

Detrended Normal P-P Plot of SAP ERP implementation challenges at EEU

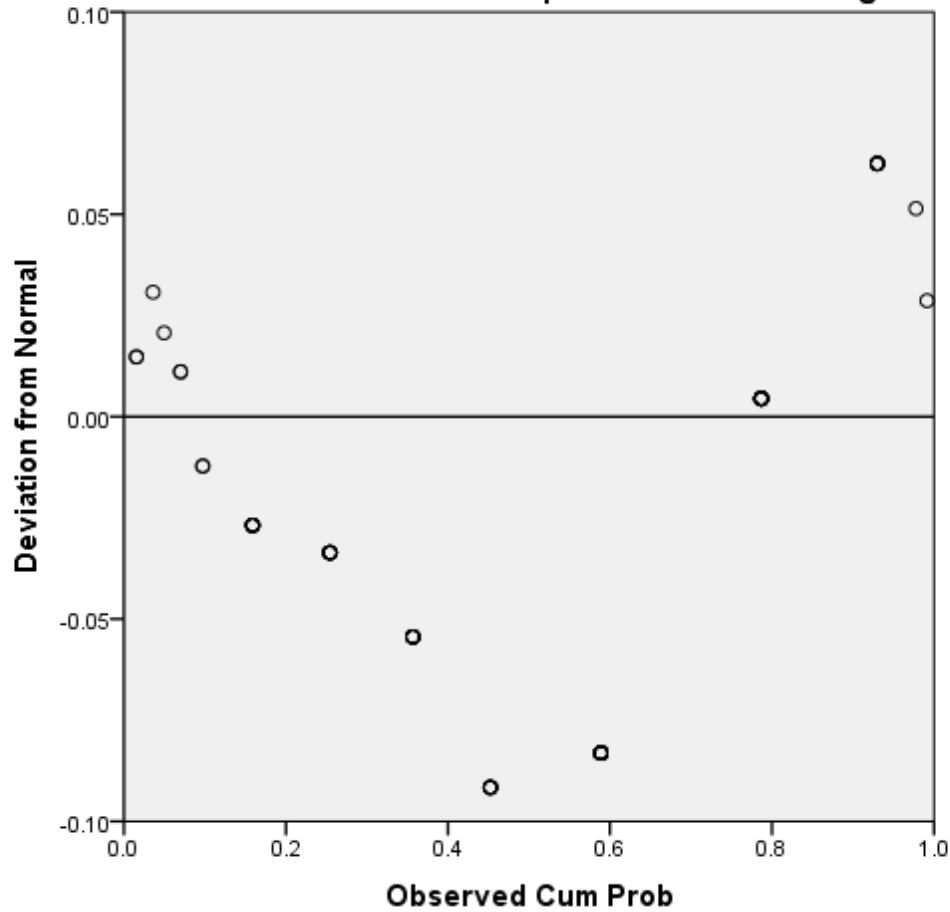


Figure 7 Detrended Normal P-P plot analyses for the normality test for independent variable.

4.3.6 Influential cases

Our final assumption can be tested by going back to our Data File and looking at the Cook’s Distance values. This contains the Cook’s Distance statistic for each participant. Any values over 1 are likely to be significant outliers, which may place undue influence on the model, and should therefore be removed and your analysis rerun. In this case, no such instances have occurred. Technically, Cook’s D is calculated by removing the i_{th} data point from the model and recalculating the regression. It summarizes how much all the values in the regression model change when the i_{th} observation is removed. The formula for Cook’s distance is:

$$D_i = \frac{\sum_{j=1}^n (\hat{Y}_j - \hat{Y}_{j(i)})^2}{(p + 1) \hat{\sigma}^2}$$

4.4. The Regression Result

The regression result explores the necessary indicators of the SAP ERP implementation challenges by using the variables identified in the model. As indicated in the model summary (table 4.) the appropriate indicators of the variable used to identify the SAP ERP IC were explored. That is, the value of R square used to identify how much of the variance in the dependent variable SAP ERP IC) identified by the model. The overall contribution of Organizational challenges(OC SAP ERP), Technological related challenges(TC SAP ERP), Individual related challenges(IC SAP ERP), Change management challenges(CMC SAP ERP) to the SAP ERP IC accounted for 62.6 % ($R^2 = 0.626$) of the variation in the SAP ERP IC, therest 37.4% are other variables not included in this study

Table 4.42 Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.791 ^a	.626	.604	.36217	.626	28.492	4	68	.000	1.823

a. Predictors: (Constant), Change management Challenges, Technological challenges, Individual challenges, Organizational challenges

b. Dependent Variable: SAP ERP implementation challenges at EEU

- The researcher asses the R-value which represents the correlation between the dependent and independent variable. A value greater than 0.4 is taken for further analysis. In this case, the value is 0.791, which is very good.
- The researcher analyzes R-square value which shows the total variation for the dependent variable that could be explained by the independent variables. A value greater than 0.5 shows that the model is effective enough to determine the relationship. In this case, the value is 0.626, which was effective enough.
- Also pointing out the Adjusted R-square results to show the generalization of the results i.e. the variation of the sample results from the population in multiple linear regression. It is required to have a difference between R-square and Adjusted R-

square minimum. In this case, the value is 0.604, which is not far off from 0.626, so it is meet the model fit.

Table 4.43 ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	14.949	4	3.737	28.492	.000 ^b
Residual	8.919	68	.131		
Total	23.868	72			

a. Dependent Variable: SAP ERP implementation challenges at EEU

b. Predictors: (Constant), Change management Challenges, Technological challenges, Individual challenges, Organizational challenges

Null hypothesis H₀₁: the availability of independent variables does not have impact on the SAP ERP implementation performance.

As per the anova table output above, elements of this table relevant for interpreting the results are:

- **Sign-value/ p-value:** Generally, 95% confidence interval or 5% level of the significance level is chosen for the study. Thus the p-value should be less than 0.05. In the above table, it is .000. Therefore, the result is very significant.
- **F-ratio:** F- ratio analysis points out improvement in the prediction of the variable by fitting the model after considering the inaccuracy present in the model. A value is greater than 1 for F-ratio yield efficient model. In the aboveanova table, the value is 28.492, which is excellent.

Therefore, the researcher concluded that, as the p-value of the ANOVA table is the tolerable significance level, thus there is a possibility of rejecting the null hypothesis in further analysis.

Table 4.44 regression Coefficient^s

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.068	.326		.209	.835		
Organizational challenges	.769	.105	.683	7.359	.000	.638	1.567
Technological challenges	.088	.080	.099	1.099	.276	.671	1.490
Individual challenges	.224	.073	.282	3.079	.003	.653	1.531
Change management Challenges	-.117	.071	-.173	-1.661	.101	.505	1.979

a. Dependent Variable: SAP ERP implementation challenges at EEU
Sources: survey data, 2025 SPSS output

In case of regression coefficient analysis, dealing with important parametersig value interpretation. The value should be below the tolerable level of significance for the study i.e. below 0.05 for 95% confidence interval in this study. Based on the significant value the null hypothesis is rejected or not rejected.

If Sig. is < 0.05, the null hypothesis is rejected.If Sig. is > 0.05, then the null hypothesis is not rejected. If a null hypothesis is rejected, it means there is an impact. However, if a null hypothesis is not rejected, it means there is no impact.

4.5 Hypothesis Test

Researcher constructed certain factors that could influence on implementation of SAP ERP performance level. This particular section benchmarked the findings from the data and literature analysis that answers the research question to SAP ERP implementation constraint.The following hypotheses test were conducted based on the regression results of the implementation Constraint of SAP ERP performance level obtained from the regression output table 4.44

H1: OC (organizational challenges) under EEU environment positively influence on implementation Constraint of SAP ERP performance level.

As per regression coefficient table above 4.44, the positive beta sign and a statistically significant result of OC related with the implementation Constraint of SAP ERP performance level. ($\beta = .769$, $P < 0.000$) support the proposed hypothesis. Therefore H1 is acceptable. The OC are Problems of quality training, facilities co-ordination, inadequate access of physical equipment and lack of formal communication with end users. Lack of time management, lack of allowance and reward system to project members and shortage of budget provide their added value to the Implementation Constraint of SAP ERP performance level.

The result was consistent with the previous research conducted by Kibebework (2015) has conducted research on the challenges and current status of ERP implementation at Muger and Derba Cement industries. Derese (2013) has conducted a study on Oracle ERP system at Ethio-Telecom.

H2: TC (Technological challenges) under EEU environment positively influence on implementation Constraint of SAP ERP performance level

This particular hypothesis is assumed to be the determinants of SAP ERP IC is conducted. As shown in table 4.44 above the coefficient of TC ($\beta = .088$) were positively related with the implementation Constraint of SAP ERP performance level. But, because of its statistical result ($P = 0.276 > 0.05$) the regression output result haven't statistically significant relationship between the Control environment and the SAP ERP IC reveals not to support thesecond hypothesis.

Control environment involves Problems of data inaccuracy, Integration different types of data was a big Problem, High costs of software, Poor technological infrastructure, ERP system too complex, Standardization problem, problem of pilot test of package, System performance and network interruption and Problems of requirement definition and Customization.

H3: IC (Individual challenges) under EEU environment positively influence on implementation Constraint of SAP ERP performance level.

The occurrence of employee (user) individual related challenges was also supposed to be the determinants of implementation Constraint of SAP ERP performance level and is the third hypothesis of this research. The regression result highly supports this hypothesis at ($P < 0.03$) level of significant and with the positive signs of beta ($\beta = 0.224$). Surprisingly, the result is consistent with (Saharia et.al. 2008: Honselaar, 2012) Adoption of ERP system.

H4:CMC (Change management challenges) EEU environment positively influences on implementation Constraint of SAP ERP performance level

Independent Variable	Sig value	Hypothesis Testing Result at 95% confidence interval	Interpretation
Organizational challenges	0.000	Hypothesis H1 Accepted ($0.000 < 0.05$)	Occurrence of OC positively affects Implementation constraints of the SAP ERP. This is because of the Sig. value is 0.000, which is less than the acceptable limit of 0.05. So, With a 1% increase in the OC the SAP ERP IC by 0.769% (B value)
Technological challenges	0.276	Hypothesis H2 rejected ($0.276 > 0.05$)	The presence of TC statistically inconsistent with SAP ERP IC; because of the Sig. value is 0.276, which is greater than the acceptable value of 0.05.
Individual challenges	.003	Hypothesis H3 Accepted ($0.003 < 0.05$)	Occurrence of IC positively affects Implementation constraints of the SAP ERP. This is because of the Sig. value is 0.003, which is less than the acceptable limit of 0.05. So, With a 1% increase in the OC the SAP ERP IC by 0.224% (B value)

Change management Challenges	.101	Hypothesis H4 rejected (0.276 > 0.05)	The presence of TC statistically inconsistent with SAP ERP IC; because of the Sig. value is 0.276, which is greater than the acceptable value of 0.05.
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Table 4.45 Summary of hypothesis test result

Therefore, the analysis suggests that the occurrence of OC, IC and TC has a significant positive relationship with the SAP ERP IC and CMC has negative relationship with SAP ERP IC.

Lastly, the findings must always be supported by secondary studies who have found similar patterns. Additionally, the model summary also shows the significance of the model by the value of F statistics ($P = .000$) and $F = 28.492$ which implies that there were good relationship between the predictors and the outcomes of the regression variables and are at best fit the model to predict SAP ERP IC in the study context. The beta (β) sign also shows the +ve or -ve effect of the independent variables coefficient over the independent variable. And as shown in table 4.44 below, beta sign of all the independent variables shows the positive effect of the predicting dependent variable and only one variable change management challenges show the negative sign. That means, any increase in the independent variables lead to increase in the dependent variable SAP ERP IC. This finding is consistent with most of the previous studies that are identified in this paper (Bosire et al (2017); Haislip et al (2016); Sintayehu (2014); Wines, (2012) Dessalegn et al, (2011); Jain and Soral, (2011). But based on the statistical significances of the independent variable over the dependent variable at 5% level of significance, two independent variables (Individual challenges) and organizational challenges(OC)are significantly contributed for the SAP ERP IC at ($P < 0.01$) level of confidence.

As per the above table the regression formula becomes as follows, based on the beta value

$$\underline{\text{SAP ERP IC} = .068 + .769 \text{ OC} + 0.088\text{TC} + 0.224\text{IC} -.117\text{CMC}}$$

Therefore the value for the regressions formula coefficients becomes:-

$$\text{Alfa}_{\text{(constant)}} = \underline{0.068}$$

$$\underline{B1 = 0.769}$$

$$\underline{B2 = 0.088}$$

$$\underline{B3 = 0.224}$$

$$\underline{B4 = -0.117}$$

The regression formula that governs the system can be written as follows.

$$\text{SAP ERP IC} = \underline{0.068 + 0.769 \text{ OC} + 0.088\text{TC} + 0.224\text{INC} - .117\text{CMC}}$$

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Summary of major Findings

The study has conducted detail interview, questionnaire, and documents review and finally identified challenges that face the implementation of SAP ERP system. Accordingly, this part of the research summarizes the major findings of the study. The study found out that the organizational challenges influencing the implementation of SAP ERP system, majority of the respondents believed that lack of formal communication with end users is the most influential challenge for SAP ERP system implementation. The second most pressing organizational challenge that the research spotted out on facing SAP ERP system implementation was problems of quality training facility and coordination. Inadequate access of physical equipment was ranked on the 3rd place. Lack of time management and lack of incentives/ allowance and reward system to project members were considered as the 4th and 5th organizational challenges of SAP ERP system implementation. On the contrary majority of the respondents believed that lack of top management support and commitment and lack of effective team composition and coordination is not considered as a challenge for SAP ERP system implementation. Regarding to technological challenges, majority of the respondents believed that data inaccuracy is the most influential challenge for ERP system implementation. System performance and network interruption is the second technological challenge. Integration different types of data, poor technological infrastructure and standardization problems are other technological challenges for ERP system implementation. Concerning the individual challenges, majority of the respondents believed that lack of user involvement and addressing adequate training is the most influential challenges for ERP system implementation. Poor conceptual knowledge of consultant and problem in users' adoptability were other individual challenges for ERP system implementation.

According to the regression output all these predictors except (CMC) were positively contributed for the SAP ERP IC. Therefore, the organization should give emphasis to use these determinant variables to make its service delivery effective, efficient and economical throughout its

departments. Moreover, this study finds that the integrate measure of OC, TC, INC, CMC accounts for .626 % ($R^2 = 0.604$) variance for the SAP ERP IC. That means, the impact of these four independent variables contributed for the dependent variable SAP ERP IC were 62.62 %, and the remaining were other variables that are not included in this study. The final parts of this research aims to conclude the finding of the study focusing on the core determinants that have significant impacts to SAP ERP IC and to provide recommendations based on the research findings of the study.

5.2 Conclusion

The primary objective of this study was to identify challenges facing the implementation of ERP at Ethiopian electric utilities. The findings of the study revealed that the major challenges that face the implementation of ERP system grouped in four variables called organizational, technological, individual challenges and change management challenges

Under organizational variables the researcher found that major challenges on the implementation of the system are lack of time management, lack of formal communication with end users, inadequate access of physical equipment, Lack of incentives/allowance and reward system to project member, problems of quality training facility and coordination are addressed in depth.

Dealing with the technological variables lack of integration among different types of data, presence of poor technical infrastructure, problems of standardization, system performance and network interruption as well as data inaccuracy are the other pressing problems in addition to problems under the organization variable for the well implementation of the system.

Furthermore, individual challenges facing the implementation of ERP system are problem in users' adoptability, lack of user involvement and addressing adequate training and poor conceptual knowledge of consultant are identified from the response of the respondents.

Finally, change management challenge is the last independent variables putting its finger print for the implementation are lack of redness to change, lack of tools and methodology, problem of fine tuning of SAP ERP from the manual and lack of managerial insight.

Totally, the findings of the study emphasize challenges influencing the implementation of SAP ERP project of EEU. Barriers identified in this study while implementing the ERP project may help to indicate the best alternative course of actions to enhance its development.

5.3 Recommendations

Referring to earlier discussion, the aims of the study is to identify challenges facing SAP ERP implementation at EEU. Depending on the finding, the researcher recommends the following suggestions;

- The company should train enough and skilled SAP ERP champions users at the right quality for the project success and decrement of the project implementation challenges.
- Top management of EEU organization should strengthen supporting the project and ensure that all the resources required are available needed for the implementation of the system.
- The research also highly suggested that effective channels of communication should also be adopted. This will clarify the benefits of SAP ERP to the employees and also increase its acceptance level among employees.
- Training is very critical factor in SAP ERP implementation since SAP ERP system is relatively new and complex platform. EEU should carefully assess the training needs of their respective employees, the type, and quality, content, duration of the training must be clearly arranged and controlled, for the right person at the right time at the right quality.
- It is known that the resolving data inaccuracy is a complex undertaking as it usually involves modification of an ERP system's structure. These modifications should not be recommended as they require massive development efforts and specialized skills and might even lead to unexpected future software difficulties during upgrades.
- On the other hand, any domestic companies' specifically financial sectors those planning to implement SAP ERP system can cop up with critical challenges identified in this study as

input for proper management of their SAP ERP project. EEU can also use this study as post project implementation chapter assessment especially in some areas that are not part of the system.

- lastly but not the least, the researcher also recommended that it is very essential more research case studies of ERP implementation should be conducted in Ethiopian organization to strengthen the findings of implementation challenges and adaptability of the system advantage.

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APPENDIX I

LIST OF TABLES FOR RESULT AND ANALYSIS

Educational Status of respondents

Classification	Frequency	Percent	Valid Percent	Cumulative Percent
Diploma	7	9.6	9.6	9.6
BA or BSC	60	82.2	82.2	91.8
MA or MSC and Above	6	8.2	8.2	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4.14 Problems of data inaccuracy

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	7	9.6	9.6	9.6
Disagree	9	12.3	12.3	21.9
Neutral	28	38.4	38.4	60.3
Agree	20	27.4	27.4	87.7
Strongly Agree	9	12.3	12.3	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 15 High costs of software

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	4	5.5	5.5	5.5
Disagree	11	15.1	15.1	20.5
Neutral	18	24.7	24.7	45.2
Agree	25	34.2	34.2	79.5
Strongly Agree	15	20.5	20.5	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 16 Poor technological infrastructure

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	6	8.2	8.2	8.2
Disagree	14	19.2	19.2	27.4
Neutral	14	19.2	19.2	46.6
Agree	21	28.8	28.8	75.3
Strongly Agree	18	24.7	24.7	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4.17 ERP system too complex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	7	9.6	9.6	9.6
Disagree	21	28.8	28.8	38.4
Neutral	21	28.8	28.8	67.1
Agree	14	19.2	19.2	86.3
Strongly Agree	10	13.7	13.7	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 18 Standardization problem

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	2	2.7	2.8	2.8
Disagree	17	23.3	23.6	26.4
Neutral	23	31.5	31.5	56.9
Agree	20	27.4	27.8	84.7
Strongly Agree	11	15.1	15.3	100.0
Total	73	100	100.0	
Total	73	100.0		

Source: SPSS Survey, 2025 output

Table 4. 19 problem of pilot test of package

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	5.5	5.5	5.5
Disagree	16	21.9	21.9	27.4
Neutral	17	23.3	23.3	50.7
Agree	22	30.1	30.1	80.8
Strongly Agree	14	19.2	19.2	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 20 System performance and network interruption

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	4	5.5	5.5	5.5
Disagree	13	17.8	17.8	23.3
Neutral	15	20.5	20.5	43.8
Agree	21	28.8	28.8	72.6
Strongly Agree	20	27.4	27.4	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 21 Problems of requirement definition and Customization

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	5	6.8	6.8	6.8
Disagree	13	17.8	17.8	24.7
Neutral	20	27.4	27.4	52.1
Agree	27	37.0	37.0	89.0
Strongly Agree	8	11.0	11.0	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4.22 Integration different types of data was a big Problem

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	6	8.2	8.2	8.2
Disagree	8	11.0	11.0	19.2
Neutral	28	38.4	38.4	57.5
Agree	18	24.7	24.7	82.2
Strongly Agree	13	17.8	17.8	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

[Table 4.23 Statistical summary](#)

Table 4. 24 problem in users' adoptability

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	4	5.5	5.5	5.5
Disagree	11	15.1	15.1	20.5
Neutral	18	24.7	24.7	45.2
Agree	24	32.9	32.9	78.1
Strongly Agree	16	21.9	21.9	100.0
Total	73	100.0	100.0	

Table 4. 25 Employee resistance to the new system

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	4	5.5	5.5	5.5
Disagree	13	17.8	17.8	23.3
Neutral	15	20.5	20.5	43.8
Agree	26	35.6	35.6	79.5
Strongly Agree	15	20.5	20.5	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 26 Lack of user involvement and addressing adequate training

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	2	2.7	2.7	2.7
Disagree	9	12.3	12.3	15.1
Neutral	17	23.3	23.3	38.4
Agree	26	35.6	35.6	74.0
Strongly Agree	19	26.0	26.0	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 27 . Poor conceptual knowledge of consultant

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	2	2.7	2.7	2.7
Disagree	12	16.4	16.4	19.2
Neutral	20	27.4	27.4	46.6
Agree	24	32.9	32.9	79.5
Strongly Agree	15	20.5	20.5	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 28 Keeping up employee morale in tricky situation of system

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	6	8.2	8.2	8.2
Disagree	9	12.3	12.3	20.5
Neutral	20	27.4	27.4	47.9
Agree	25	34.2	34.2	82.2
Strongly Agree	13	17.8	17.8	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 29 problem of willing to accept new technology

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Strongly Disagree	6	8.2	8.2	8.2
Disagree	16	21.9	21.9	30.1
Neutral	12	16.4	16.4	46.6
Agree	30	41.1	41.1	87.7
Strongly Agree	9	12.3	12.3	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4.30 Statistical summary Individual challenges of ERP system implementation

Table 4. 31 lack of readiness to change

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	3	4.1	4.1	4.1
Disagree	8	11.0	11.0	15.1
Neutral	8	11.0	11.0	26.0
Agree	27	37.0	37.0	63.0
Strongly Agree	27	37.0	37.0	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 32 lack of tools and methodology

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	5	6.8	6.8	6.8
Disagree	11	15.1	15.1	21.9
Neutral	15	20.5	20.5	42.5
Agree	24	32.9	32.9	75.3
Strongly Agree	18	24.7	24.7	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 33 problem of fine tuning SAP ERP system from manual

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	6	8.2	8.2	8.2
Disagree	11	15.1	15.1	23.3
Neutral	18	24.7	24.7	47.9
Agree	19	26.0	26.0	74.0
Strongly Agree	19	26.0	26.0	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 34 lack of managerial insight to appreciate end-user

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	5.5	5.5	5.5
Disagree	6	8.2	8.2	13.7
Neutral	11	15.1	15.1	28.8
Agree	28	38.4	38.4	67.1
Strongly Agree	24	32.9	32.9	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 35 Weakness of effective communication

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	5.5	5.5	5.5
Disagree	11	15.1	15.1	20.5
Neutral	19	26.0	26.0	46.6
Agree	19	26.0	26.0	72.6
Strongly Agree	20	27.4	27.4	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 36 Problem of software customization

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	1	1.4	1.4	1.4
Disagree	10	13.7	13.7	15.1
Neutral	17	23.3	23.3	38.4
Agree	27	37.0	37.0	75.3
Strongly Agree	18	24.7	24.7	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 37 Not enough ERP champion user

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	6	8.2	8.2	8.2
Disagree	5	6.8	6.8	15.1
Neutral	18	24.7	24.7	39.7
Agree	30	41.1	41.1	80.8
Strongly Agree	14	19.2	19.2	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

Table 4. 38 Appropriate business and IT legacy systems

	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Disagree	4	5.5	5.5	5.5
Disagree	3	4.1	4.1	9.6
Neutral	13	17.8	17.8	27.4
Agree	32	43.8	43.8	71.2
Strongly Agree	21	28.8	28.8	100.0
Total	73	100.0	100.0	

Source: SPSS Survey, 2025 output

APPENDIX II

QUESTIONNAIRES

JIMMA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF POSTGRADUATE STUDIES

Masters of Art in Project Management

Dear Respondents

The main purpose of this questionnaire is to gather information about the implementation challenges of SAP ERP (Enterprise Resources Planning) at Ethiopian Electric Utilities Case of Jimma district for the partial fulfillment of the requirements for Masters of project management at Jimma University. The outcome of this study will be used for academic purpose only. Therefore, your genuine response to the questions is vital for the quality and successful completion of the study. The accuracy of the information you provide highly determine the reliability of the study. Knowing that your time is valuable, please take a few minutes to complete the questionnaire. Thank you very much for your time and assistance in my educational endeavors. This will be used only for intended purpose and kept confidential.

Thank you in advance for your cooperation!

Part I: Demographical Information - Please put „  “ in the box

1. Gender: 1. Male [] 2. Female []

2. Age Group 1. 20 – 30 [] 2. 31 – 40 []

3. 41 and above []

3. Educational Status:

1. Diploma [] 2. BA/BSC []

3. Masters & Above []

4. Other please specify _____

Part II: Issues Related with the study area

Implementation challenge of SAP ERP

1. Organizational challenges of ERP implementation

How much do you agree or disagree with the following statements about the organizational challenges faced by your organization during SAP ERP implementation? Please read each statement carefully and show the extent of your agreement on the statements by

Putting “✕” under the numbers in the column using the following rating scale (Likert Scale).

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

No	STATEMENT	SCALE				
		5	4	3	2	1
1	Problems of quality training facilities and co-ordination					
2	lack of effective team composition					
3	inadequate access of physical equipment					
4	lack of formal communication with end users.					
5	lack of top management support commitment					
6	lack of allowance and reward system to project members					
7	lack of time management					
8	shortage of budget					

Table 4 questionnaires for organizational challenges

2. Technological challenges of SAP ERP implementation

How much do you agree or disagree with the following statements about the technological challenges faced by your organization during SAP ERP implementation?

Please read each statement carefully and show the extent of your agreement on the statements by

Putting “✕” under the numbers in the column using the following rating scale (Likert Scale).

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


No	STATEMENT	SCALE
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		5	4	3	2	1
1	Problems of data inaccuracy					
2	Integration different types of data was a big Problem					
3	High costs of software					
4	Poor technological infrastructure					
5	ERP system too complex					
6	Standardization problem					
7	problem of pilot test of package					
8	System performance and network interruption					
9	Problems of requirement definition and Customization					

Table 5 questionnaires for technological challenges

3. Individual challenges of SAP ERP implementation

How much do you agree or disagree with the following statements about the Individual challenges faced by your organization during SAP ERP implementation?

Putting “” under the numbers in the column using the following rating scale (Likert Scale).

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

No	STATEMENT	SCALE				
		5	4	3	2	1
1	problem in users' adoptability					
2	Employee resistance to the new system					
3	Lack of user involvement and addressing adequate training					
4	Poor conceptual knowledge of consultant					
5	Keeping up employee morale in tricky situation of system					
6	problem of willing to accept new technology					

Table 6 questionnaires for individual challenges

Please Write down, if there is any problem you observed /faced about SAP ERP implementation

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4. Change management challenges

How much do you agree or disagree with the following statements about the Change management challenges faced by your organization during SAP ERP implementation?

Putting “✘” under the numbers in the column using the following rating scale (Likert Scale).

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

No	STATEMENT	SCALE				
		5	4	3	2	1
1	lack of readiness to change					
2	lack of tools and methodology					
3	problem of fine tuning SAP ERP system from manual					
4	lack of managerial insight to appreciate end-user					

Table 7 questionnaires for management challenges

5. Sap ERP implementation constraints

How much do you agree or disagree with the following statements about the Sap ERP implementation challenges faced by your organization during SAP ERP implementation?

Putting “✘” under the numbers in the column using the following rating scale (Likert Scale).

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

No	STATEMENT	SCALE				
		5	4	3	2	1
1	Weakness of effective communication					
2	Problem of software customization					
3	Not enough ERP champion user					
4	Appropriate business and IT legacy systems					

Table 8 questionnaires for Sap erp implementation challenges

Interview Questions

1. What is the current status of the SAP ERP implementation at your organization?
2. What were the major challenges for the implementation of SAP ERP project?
3. What were the Organizational challenges for the implementation of SAP ERP project?
4. What were the Technological challenges for the implementation of SAP ERP project?
5. What were the Individual challenges for the implementation of ERP project
6. What are the determinants of SAP ERP Implementation at EEU jimma district?
7. What are the effects of SAP ERP determinants on Performance of EEU Jimma?
8. What measures are taken to reduce the SAP implementation challenges?
9. Any ideas and comments of your experience on this project