ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT

FACTORS AFFECTING ENTERPRISE RESOURCE PLANNING END USER ACCEPTANCE IN MOHA SOFT DRINKS INDUSTRY S.C PLANTS

By

GEMECHU ALEMAYEHU (GSE/2874/11)

ADVISOR

TILAHUN TEKLU (PhD)

A Thesis Submitted to the Department of Management of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Masters in Business Administration (MBA)

January, 2021

Addis Ababa University
College of Business and Economics
Department of Management

This is to certify that the thesis prepared by Gemechu Alemayehu entitled *Factors Affecting Enterprise Resource Planning End User Acceptance in MOHA Soft Drinks Industry S.C Plants*, which is submitted in partial fulfillment of the requirements for the Degree of Masters in Business Administration (MBA), complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by Board of Examiners:

_____ Signature_____ Date_____

Advisor

_____ Signature_____ Date_____

Internal Examiner

Dr. Getie Andualem Signature getand Date 19/03/21

External Examiner

_____ Signature_____ Date_____

Chair of Department or Graduate Programs Coordinator

DECLARATION

This thesis has not previously been accepted for any degree and is not being concurrently submitted in candidature for any degree in any university.

I declare that this thesis is a result of my own investigation, except where otherwise stated. I have undertaken the study independently with the guidance and support of my research advisor. Other sources are acknowledged by citations giving explicit references. A list of references is appended.

Signature: _____

Gemechu Alemayehu

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

Advisor's Signature: _____

Tilahun Teklu (PhD)

ACKNOWLEDGEMENT

First and foremost, all praises to God and His blessing not only for the completion of this thesis, but also for his protection and “unconditional love”. I thank God for all the opportunities, trials and strength that have been showered on me to finish writing the thesis. It was such a good journey studying this program and almost everything was smooth attending the program.

I also would like to express my gratitude to my thesis supervisor, Dr. Tilahun Teklu, for his support and mentorship during the planning, conducting and analysis of this study. Secondly, I would like to offer my heartful thank to the MOHA ERP project team for their support and guidance. Furthermore, I would like to thanks to each respondent and interviewees who have participated in this research.

Lastly but not least, I would like to thank my family and friends for their support. My Sis, Kiya Alemayehu, my uncle, Emana Beyene (PhD) and my friend, Kena Ghimbi are the one who inspired me to get back to school with this program. My mom’s and dad’s prayer was and is always with me wishing me good luck and I thank them from the bottom of my heart.

ABSTRACT

It is widely identified in literatures that user acceptance is one of the key factors in ERP implementation process. This study is aimed at identifying and testing factors affecting the acceptance of ERP system in MOHA Soft Drinks Industry S.C Addis Ababa plants. Different technology and system acceptance model have been reviewed from previous literatures and this study was based on popular technology acceptance model called Unified Theory of Acceptance and Use of Technology (UTAUT) model. The main research question was to answer whether the factors identified in UTAUT model holds for selected study area. To attain and fulfill the objective of the study, primary data were collected through a survey questionnaire from a sample of 150 ERP users from three plants. Strata sampling of probability sampling has been used. The data was analyzed using statistical software package for social science (SPSS). The analysis performed includes correlation and regression analysis on predetermined variables. The study revealed that from the six independent variables three of them (Performance Expectancy, Effort Expectancy and Self Efficacy) were found to be significant factor in determining user acceptance while the remaining three (Social Influence, Facilitating Conditions and Anxiety) are not significant factors. The identified factors together explained about 53% of the variation in the ERP system acceptance, while the remaining variation is duet to not captured external factors. Based on these findings, this has study has forwarded some recommendations for practitioners and academicians as it is already identified ERP implementation is a huge IT investment and needs proper management and knowledge.

Keywords: ERP, Symbolic Adoption, Technology Acceptance, UTAUT

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

BI:	Behavioral Intention
EE:	Effort Expectancy
ERP:	Enterprise Resource Planning
FC:	Facilitating Conditions
ICT:	Information Communication Technology
IDT:	Innovation Diffusion Theory
MIS:	Management Information System
PE:	Performance Expectancy
PEU:	Perceived Ease of Use
PU:	Perceived Usefulness
SA:	Symbolic Adoption
SI:	Social Influence
TAM	Technology Acceptance Model
TPB:	Theory of Planned Behavior
TRA:	Theory of Reasoned Action
TTF:	Task Technology Fit
UTAUT:	Unified Theory of Acceptance and Use of Technology
THP:	Teklehaimanot Plant
NSP:	Nefas Silk Plant

1. INTRODUCTION

1.1 Background of the study

There are many Information Systems that are designed to fulfill the requirements of individuals, social groups, organizations and even countries. Computer based information system is a way of storing, processing and retrieving data through digital devices such as phones, tablets, and computers. Information systems are being used from personal to organizational level. The most common used types of information systems in organizations are transaction processing system (TPS), management information system (MIS), decision support system (DSS) and executive information system (EIS). TPS's are used by end level employees to record daily transaction process of an organization which will be processed and give meaningful information or report later on. MIS and DSS are used by management staff in the form of reports and EIS is used by top level management of an organization. ERP system incorporates all the previously mentioned IS systems, which means it can record daily routine transactions, process reports and support decision of the management.

ERP, which stands for Enterprise Resource Planning, is an enterprise system that automates the business process of a company in such a way that all organizational functional and supporting activities are interlinked and organized in one central database. They are designed to provide information used to strategy, operations, analysis and decision for management (Matende & Ogao, 2013). ERP can help in tracking and monitoring the company resources such as cash and inventories, receivables and payables in real time. This system helps companies in increasing their competitive advantage through improved process efficiency and integrated information, of course which will reduce cost of operation. It will ease the flow of information between different organizational units, ensure data integrity and availability, help in fast decision making, improve customer satisfaction with the target of gaining competitive advantage. The other benefits of an ERP system worth mentioning is that the capability of its complete integration with all business processes, minimizing amount of data entry and time required, portability and its upgradability to latest version (Rajan & Baral, 2015).

Many organizations have implemented ERP system to support and modernize their activity and still many are implementing. The implementation of ERP system is very complex process as it

involves different stakeholders ranging from end level employee to top level management staff including the implementor. It needs to be managed properly in order to attain the required level of efficiency and it needs a close cooperation between all involving bodies. ERP implementation may fail due to various reasons. As user participation and involvement is of one of the critical success factors for ERP implementation, attention must be given for users, especially end level users. End users are the people which directly uses the system and they have direct contact with the system.

Despite their (ERPs) importance in supporting organizational activities, it is not that easy to implement it and harvest from its implementation (Akbulut & Motwani, 2005; Matende & Ogao, 2013; Seymour et al, 2007). There are many factors that contribute to the success of the ERP implementations; some positively affect and others negatively affect the process. The quality of a system and support of top managements are the two main factors that contribute to the success of ERP systems implementation, while concentrating only on end result is what negatively affects the implementation process. ERP implementation projects are rapidly failing at a higher rate (only about 10% were success; of the projects that didn't fail outright, 55% didn't meet their initial budgets or plan, and 35% were totally cancelled) than other project types (Amid et al, 2012).

In summary, the ERP industry have seen many ups and downs starting from early implementations, many of them with failure rates. Many studies have revealed that ERP implementations success factors are ranging from project startup to closure including factors such as management commitment (top management support, project scope definition, communication and training, customization and proper budget allocations. Thus, this failure rates due to these factors should be carefully and broadly needs to be studied. In this research, attention and direction have been given to find out the effect of user acceptance in ERP acceptance and usage in one of Ethiopian manufacturing company, MOHA.

1.2 Background of the Organization

MOHA also known as Pepsi is one of the major beverages industry company in Ethiopia under the license of Pepsi International. It is currently manufacturing and selling products of Pepsi (Pepsi, Mirinda and 7up) at 8 plants in different parts of Ethiopia. In addition to these international brands, it has its own water product lines called Tossa and Kool water.

MOHA is currently implementing ERP system called Microsoft Dynamics NAV which is suitable for small and mid range companies. The implementation process has started at four plants i.e. Teklehaimanot, Nefas Silk, Awassa and Summit and will be expanded to remaining 4 MOHA plants in the coming months or years after successful implementation of currently implementing plants. The implementation at each plant has almost matured and the system is fully functional in departments of Procurement and Warehousing, Sales and Marketing, Quality, Production, Technic and Plant maintenance while Finance department did not drop its legacy system (Peachtree) but all source documents they get from other departments are generated through the new ERP system.

The first implementation was started in 2014 at Teklehaimanot plant. There was a planned period of 6 months to finish implementation and to go live with new ERP system, but it took about a year. There was a functional user requirement gathering from implementer side before starting the implementation. During the implementation process, user acceptance training was given and the training was completed before the go-live stage. One year after the go-live there was a milestone called document-cutover in which the only document that circulates in each department is generated from the new ERP system (before that there was a side by side document, manual documents and system generated documents). Six months later after Teklehaimanot go-live the implementation at Nefas Silk plant started in 2015 and the same process has been done for each plant. The latest plant to join the implementation is Summit plant in January 2018.

During this ERP implementation process, many issues that affected all the three measurements of project success i.e. time, budget and functionality, specially time are observed. Among the problems that delayed the implementation process since the start of the project are delivery and approvals of deliverables between the implementer and client (MOHA), inconsistency between user requirements and deliverables, delay in deliverables from implementer, knowledge gap of users, uncooperating of users in accepting what they are told to do so and many other factors were observed.

1.3 Problem Statement

Most of the time the decision to have ERP system come from the top management of the company which may not consider the interest of the end users which obviously will result in the gap between the interest of top management and low-level employees. According to many literatures one of the

most significant factor that contribute to the failure/slow of ERP implementation is the lack of end user acceptance (Matende & Ogao, 2013; Nah et al, 2004; Jiang et al, 2000). But why users do not fully cooperate?

Researches show that there are many factors that could affect the acceptance of users in technology generally and ERP systems specifically. Some of the previous studies proposed some models that use to find out the reason for either accepting or not accepting. Technology Acceptance Model is the most studied theoretical model to find issues related with user acceptance of new system. Other empirical studies have shown some factors but when we come to our country, Ethiopia, it is hard to find studies on user acceptance related with Enterprise systems.

It is known that our country is one of the countries that left behind in usage of information technology because of many reasons. What is more challenging is since general technology penetration is low in our country, Enterprise systems such as ERP are even uncommon in our country. It is only in near years that many Ethiopian companies started implementing ERP systems. At this very infant stage, many companies trying to implement ERP systems are facing many challenges including budget and schedule overruns. One of the major causes of these issues are user acceptance rate. It needs to be studied thoroughly. Unfortunately, there is no or little study done on why this happens here in Ethiopia. It is hoped that this research will add some insights why this is happening and how to resolve and keep the implementation process on track.

1.4 Research Questions

The main interest of this topic as a research thesis is to investigate the factors affecting end user acceptance in three MOHA plants which will be an input for upcoming implementations in remaining plants and of course for other companies in Ethiopia who have plan to implement ERP system. Specifically speaking, after identifying different user acceptance factors from previous literatures, it is the interest of this study to explore and test the factors that affect user acceptance, as it is one of the most issues the companies have been facing since the start of the project. These factors could be those either positively affect or negatively affect.

The main research question is how significant is the effect of user acceptance factors identified in UTAUT model are in MOHA Addis Ababa plants? The specific questions are:

1. How significant is the effect of *system performance* on user acceptance of ERP system in MOHA?
2. Does ERP system *ease-of-use* level affect user acceptance of ERP system in MOHA significantly?
3. How significant is the effect of *facilitating conditions* on user acceptance of ERP system in MOHA?
4. Does *Social Influence* affect user acceptance of ERP system in MOHA significantly?
5. Does *employee's self-efficacy* level affect user acceptance of ERP system?
6. Does *employee's anxiety* level affects user acceptance of ERP system?

1.5 Research Objectives

1.5.1 General Objectives

The general objective of this survey study is to test the theory of UTAUT model that explain the effect of user acceptance factors such as performance expectancy, effort expectancy, facilitating conditions and social influence on user symbolic adoption (mental acceptance) of ERP system and actual usage at sites of MOHA Addis Ababa plants namely Teklehaimanot, Nefas Silk and Summit. The independent variables are generally defined as antecedent factors for user acceptance and the study will statistically control for intervening variables.

1.5.2 Specific Objectives

The specific objectives are

- To test the significance of effect of system performance on user acceptance at identified sites
- To test the significance of effect of system ease of use on user acceptance.
- To test the effect of social influence on user acceptance at identified sites
- To test the effect of facilitating conditions on user acceptance at identified sites
- To test the effect of employee self-efficacy on ERP system acceptance.
- To test the effect of employee anxiety on ERP system acceptance.

1.6 Significance of the Study

The expected output of this research work is finding out what motivates and demotivates end users of ERP system in MOHA. The main significance of this work is that it plays a vital role in understanding end users' psychology on the implementation of ERP system which will be an input for managements to consider when they think of ERP implementation as employee involvement is one of a critical success factor. After this research it is believed that it will help MOHA and other practitioner companies in the country that are implementing or planning to implement ERP system to find out the way they can speed up their implementation by understanding their end user's requirement. It also contributes to the body of knowledge of Ethiopia related literatures as there are vey limited study of user acceptance of ERP system in Ethiopia.

1.7 Scope of the Study

The scope of this work is limited to only three MOHA plants located in Addis Ababa. These plants are selected because they are the one who have started the implementation process except the Hawassa planted who has started implementation but located outside Addis Ababa. Additionally, they are located in the convenient place for the researcher to undertake the research. The other thing is that this research is confined to only identifying factors contributing the acceptance of employees, not all factors in the implementation process. This research is based on popular user acceptance model called Unified Theory of Acceptance and Use of Technology. As there are different types of user acceptance theories and models, the scope of this study is only limited to testing the factors identified under UTAUT model.

1.8 Limitation of the Study

The limitation of this study is that it does not incorporate all the factors affects the implementation of ERP system. Other limitation is that the status of each plants is different, meaning all plants started the implementation at different times one after another and this might be a problem in comparing and deducing data collected from each plant. The strategies and methods used in this study might be problematic as every strategy and method has got its own advantage and disadvantages. Using these three plants under one parent organization might raise the issue of generalizability to different organizations in Ethiopia.

2 Literature Review

2.1 Enterprise Resource Planning (ERP)

2.1.1 ERP Definition

ERP can be defined as an extensive and complex software systems that integrates different business process such as finance, procurement and warehousing, manufacturing, customer relationship, supply chain, sales and marketing and budgeting of a company (Rajan & Baral, 2015). ERP's usually bring changes in an organization (Aladwani, 2001). They are designed to solve information fragmentation by integrating all the flow of a company with scopes include finance, HR, operations and logistics and sales and marketing (Davenport, 1998).

2.1.2 Trends of ERP

Emerged in 1980s when companies implemented enterprise systems in order to integrate their internal processes (Rajan & Baral, 2015). ERPs played a great role for companies most important development in the corporate use of information technology in 1990s (Davenport, 1998).

2.1.3 Benefits

Information distributed to different places are costly and time consuming to retrieve and give meaning since they are redundant. Besides these legacy problems, companies' transaction must notify each other to improve efficiency and productivity and to respond to customers quickly (entering information in one place will make that information available in different departments unlike old legacy systems). Beside their greater value, ERP systems carry equal risk if not managed properly (Davenport, 1998)

2.1.4 Success factors

Companies better understand factors leading users in new system implementation acceptance for successful implementation. Esteves & Pastor (2000), identified four CSF perspectives in enterprise system implementation such as an ERP. These success factors are strategic (long term core competencies), tactical (short term objectives), organizational (structure, culture, business process) and technological (technical aspects such as hardware and software) (Esteves & Pastor, 2000).

These CSF perspectives are ordered according to citations in literatures and the authors identified top management support seems to be the most important factor of all.

Esteves & Pastor (2000) also established the approaches for the above four perspectives – for organizational using strategies such as sustained management support, effective organizational change management, good project management scope, forming better project team, comprehensive business process alignment with system functionality, user involvement, establishing trust between stakeholders. The tactical approaches are assigning dedicated staff and consultants, establishing effective communication, formalize project plan, proper training, preventive trouble shooting. For technological perspective strategies are laying out adequate ERP implementation strategy, avoiding customization, choosing suitable ERP version while the tactical factors are proper software configuration and adequate legacy system familiarity.

The other CSF models developed by Bhatti (2005) are project management, process redesign, user training, technological infrastructure, change management, risk management, top management support, communication, team work, user involvement, use of consultant and clear goals and objectives.

2.1.5 Challenges

It has been observed that there are many challenges in implementing enterprise systems such as ERP's. "There have been horror stories of ERP implementation and improper implementation has taken the companies to bankruptcy" (Bhatti, 2005). Many companies such as Mobil Europe, Dell Computer, Applied Materials and Dow chemicals gave up on implementation because of lack of expectations after spent millions of dollars and it is identified that technical problems are not the main reasons for failures but because of not reconciling technology with business need (Davenport, 1998).

2.1.6 Implementation

Companies must have clear understanding of the implications before deciding to implement ERP systems. Though speedy implementation is crucial move, companies must not just rush in to the implementation process (Davenport, 1998). ERP implementation process is different from other information systems implementation is such a way that it brings greater change on process flow

and organizational structure by changing the way people perform their tasks due to its nature of integration among different functions (Matende & Ogao, 2013).

2.2 User Acceptance

2.2.1 Overview

Acceptance is demonstrable willingness of user to apply system functionalities for which the system is designed to do (Dillon & Morris, 1996). According to Venkatesh et al (2003), the basic concept underlying user acceptance is, individuals' reaction to use information technology is mediated by the intention they have to use the system.

According to Matende & Ogao (2013) human and organizational factors are the broad factors behind enterprise systems failure, where human factors are related with the concept of user acceptance. The authors also noted that participation of users in ERP implementation is beneficial as it leads to system requirement determination. User acceptance issue is not only limited to information technology, but it does exist in any other disciplines too (Bradley, 2009). Participating users in the implementation of an ERP system can address the problem of user acceptance issue since they are familiar with their respective functional and business processes better (Matende & Ogao, 2013).

The three theoretical perspectives for user's lack of acceptance are people oriented (individual users' internal factors), system oriented (system factors such as its user interface) and interaction oriented (interaction between individuals and system) (Haddara & Moen, 2017; Aladwani, 2001). As per Shang & Su (2004), users may not accept the new system for reasons such as power loss, additional role, low tolerability level, and lack of trust; however participating users and redefining job may help resolve the resistance. According to Aladwani (2001) perceived risk and habit are the two most common user acceptance factors for information technology innovations such as an ERP.

Haddara & Moen (2017) mentioned lack of user acceptance in enterprise systems was the second most important factor for causing time and budget overrun and the fourth factor in the overall implementation in 186 organizations, according to empirical study. On the other hand, DA

consulting identified that failure to address user side equation is one of the most reason why SAP implementations failed to achieve business goals (Seymour et al, 2007).

Organizations need to know that the reason for not accepting the system varies across different system types and they should follow the appropriate strategy (Haddara & Moen, 2017). The strategies and experiences in marketing fields could help ERP in reducing and overcoming user resistance as both areas reflect an exchange process between two parties (Haddara & Moen, 2017; Aladwani, 2001). According to Aladwani (2001), by answering and understanding issues like which groups or individuals are resisting, what do they need, beliefs and values they have and finally what interests them can be a better approach to help them solve the problem of system acceptancy. From this we can understand that organizations need to take into account the system implementation from employees' point of view to prepare their employees for new challenges and opportunities the new system is about to bring.

There are theoretical models that explains user acceptance of information systems. The models are based on whether the usage is optional or compulsory such as in the case of ERP.

Motivational theory is one of a theory that used to explain and better understand behavior of individuals in system usage (Venkatesh et al, 2003). The theory has two dimensions i.e. extrinsic motivation which is motivation because of external factors and intrinsic motivation in which people perform the activity by their own initiation and interest without external reward. According to Venkatesh et al (2003), Social cognitive theory is another most powerful theory of human behavior with five core constructs i.e. performance outcome expectations, personal outcome expectations, self-efficacy (self judge ability), affect (liking) and anxiety (emotional consequences). The capability of IT system to fully perform a given task is described by Task Technology Fit (TTF) model (Bradley, 2009). In this model, for the system to be fully accepted by the user, the functionality of a system must match or fit in to the actual task needed from the user, else it will not be accepted. Other popular and most mentioned models and theories of user acceptance will be discussed next.

2.2.2 Innovation Diffusion Theory (IDT)

IDT is defined as "a social process in which subjectively perceived information about a new idea is communicated person to person" as cited by Bradley (2009) from Roger (2003). This theory

views individual user characteristics, information sources and communication channels factors as the very determinants of system usage and adoption (Bradley, 2009).

According to Dillon and Morris (1996), the system must incorporate five characteristics to be accepted by a user; they are relative advantage of existing system, its compatibility with user requirement, how easy it is to use, opportunity to try before final use and the observability of new systems output. Cognitive style, personality, demography and situational variables determine the level of the user acceptance intention.

2.2.3 Theory of Reasoned Action (TRA)

Based on social psychology, it is the most influential theory of human behavior with attitude toward behavior and subjective norm constructs (Venkatesh et al, 2003). It is the relationship between beliefs, attitudes, norms, intentions and behaviors. Venkatesh et al (2003) noted that behavior is determined by intention and influenced by attitude and subjective norms in which belief also determine attitude. Attitude is derived from beliefs and evaluation of a person and subjective norm can be affected by normative beliefs and motivation, but both attitude and subjective norms leads to behavioral intention (Bradley, 2009).

This theory's applicability is not confined to MIS fields only unlike other acceptance models such as Technology Acceptance Model. The other difference is that the subjective norm is dropped from TAM by arguing it is context-driven but both TRA and TAM postulates that behavioral intention is what determine actual usage (Dillon & Morris, 1996).

2.2.4 Theory of planned Behavior

It is derived from TRA by adding perceived behavioral control which depends on skills, resources, and opportunities including their perceived importance, as a third antecedent of intention. It addresses situations where users do not have complete behavioral control (Bradley, 2009). This theory asserts that attitude, norm and this antecedent of intention directly determine intention results in behavioral influence. (Dillon & Morris, 1996; Venkatesh et al, 2003). The addition of subjective norm and perceived behavioral control resulted in greater explanatory power of TPB (Bradley, 2009).

Decomposed theory of planned behavior, DTPB, is an expansion of TPB that deconstructed the elements of attitudes in to three variables i.e. perceived usefulness, ease of use and compatibility; comprised subjective norm from peer influence and superior's influence variables and lastly explained perceived behavioral control in terms of self-efficacy, resource facilitating conditions, and technology facilitating conditions (Bradley, 2009).

2.2.5 Technology Acceptance model

This model is first developed by Davis (1989) and it is the widely applied IS model to explain why end users accept or does not accept the system (Rajan & Baral, 2015). Its root is from expectancy-value theory which is used to understand motivation behind behaviors of individuals (Bradley, 2009). It is based on TRA which states that the perception of using a system is based on perceived usefulness (to what extent the system improves user performance and efficiency) and perceived ease of use (how much the system decreases the effort needed to accomplish the task) beliefs (Bradely, 2009). This theory theorizes that PU and PEU mediate intention to use the system with PU showing consistent interaction with actual usage (Venkatesh & Davis, 2000). Both PU and PEU directly have an impact on attitude toward using the system by indirectly affecting behavioral intention of a user (Bradley, 2009). PEU influence PU but not vice versa (Dillon & Morris,1996). The behavioral intention which leads to desired action or actual usage is a key element of TAM.

The three external variables considered in TAM are individual characteristics (computer self-efficacy) organizational characteristics (organizational support and training) and technological characteristics (complexity and compatibility) (Rajan & Baral, 2015).

Original TAM developed by Davis (1989) cannot explain user acceptance in the context of mandatory usages such as ERP because it was primarily tested on simple to use systems such as Microsoft Office applications (Nah et al, 2004; Seymour et al 2007; Bradley, 2009). Self-reported usage approach is another limitation mentioned by Bradley (2009) and it should have been employing independent measure of actual usage. Nah et al (2004) added the concept of symbolic adoption (mental acceptance before actual usage) which replaced behavioral intention to better describe user acceptance in mandatory setting. They identified that PU and PEU of TAM may affect symbolic adoption. Nah et al (2004) added perceived compatibility, perceived fit with PU and PEU to test symbolic adoption with attitude toward the system being mediator.

Venkatesh & Davis (2000) developed TAM2 by adding social influence process (subjective norm which is consistent with TRA from TAM, voluntariness and image) and cognitive instrumental process; what system can do and what people want from it (job relevance, output quality, result demonstrability and perceived ease of use) constructs. Subjective norm, which is mediated by whether system usage is mandatory or not is added to TAM2 by excluding attitude construct of TAM to better explain intention easily (Venkatesh et al, 2003). Venkatesh & Davis (2000) included internalization and identification motivation theories. According to Venkatesh et al (2003) effect of subjective norm in mandatory usage context will be high on initial stages of implementation and decrease over time, this is also true for perceived usefulness because of experience. Cognitive instrumental theory is derived from work motivation theory, action theory and task-contingent decision-making theories and output quality remains significant determinant of perceived usefulness continuously (Venkatesh et al, 2003).

TAM has covered about 40% of the explanatory power in user behavioral intention while TAM2 has resulted in about 60% explanation as seven additional variables of which five of them have direct impact on PU has added to it (Bradley, 2009).

2.2.6 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al (2003) reviewed eight acceptance models and formulated their own model, the unified theory of acceptance and use of technology, UTAUT after they have discussed and identified their similarities and differences, which they confirmed its improvement by empirical study. It is composed of Performance expectancy, Effort expectancy, social influence and facilitating condition variables including four moderators namely gender, age, experience and voluntariness (Venkatesh et al, 2003). UTAUT is seen as an improvement to TAM that is primarily modified to support mandatory context. Performance expectancy is the equivalent version of Perceived usefulness of TAM and it is defined by Venkatesh et al (2003) as “the degree to which an individual believes that using the system will help him/her to attain gains in job performance”. Effort expectancy which is similar to perceived ease of use of TAM describes how easy the system is to operate and use. Social influence is when an individual bases their usage intention on how others believe they should use the system. It is proved by Venkatesh et al (2003) that the three constructs of social influence namely subjective norm, social factor and image are not significant for voluntary usage but they did for mandatory usage. Facilitating conditions which includes

training, shared belief and project communication is the feeling and beliefs users have that there are enough organizational and technical resources that help them to use the system.

UTAUT has more explanatory power than both TAM and TAM2 with up to 69% variance explanation, but the question raised the issue of balance between added explanatory variables and model's complexity as a result of added variables (Bradley, 2009).

2.3 Empirical Literature Review

Nah et al (2004) studied antecedent factors of user acceptance of enterprise system in public institution of US that implemented SAP R/3 ERP system using survey questionnaire. In order to explain user acceptance behavior, they extended the popular TAM model by adding perceived compatibility and perceived fit to original PEU and PU constructs. As they believed that behavioral intention cannot be used in mandatory contexts, they replaced it with symbolic adoption (mental acceptance). By running multiple linear regression on 229 samples, they found out that PU, PEU, Perceived Compatibility, and Perceived fit positively affected attitude toward system usage with 61.9% of variance explanation; and including the four variables attitude explained about 64.9% of the variance in SA, but PU and PEU had no direct impact on SA. The most important discovery in this study is that Perceived Compatibility and Perceived Fit had higher explanatory power than PU and PEU which implies that when employees are obliged to use the system, it is compatibility and fit that does matter much than PU and PEU. The issue with this study is that there might be a generalizability problem as the study was conducted in non-profit organization which is much different from other organizations such as business-oriented ones. In addition to that, user characteristics such as behavioral control and subjective norms which are interesting constructs in user acceptance measurement were not included. Finally, similar to many studies, the result might reveal temporal acceptance as it was cross sectional study.

The study by Youngberg et al (2009), study in Rural 2-year Utah college, showed information quality and job relevance of the information had direct effect on PU. The study combined PU and PEU of TAM with result demonstrability and subjective norm of TAM2. After multiple path analysis process, they found out that job relevance, output quality and PEU are significant variables in explaining user system acceptance.

Seymour et al (2007) used UTAUT model to study user acceptance of ERP system in university of cape town, South Africa. They replaced the behavioral intention and use behavior factor of the model by SA for better prediction of the variables in mandatory context. They also removed voluntariness moderating factor from the model because their study is fully focused on the use of mandatory environment. Facilitating conditions construct of UTAUT was expanded in to training, project communication and shared belief constructs. The analysis on 60 samples showed that Performance expectancy; effort expectancy; project communication; training; and shared belief were found to be antecedents of SA (56% variation explanation) with age being moderating variable. Comparing to other studies the 56% explanatory power looks like not good. The absence of social influence construct from their model might have affected their study result.

The other study conducted to understand end users' acceptance of ERP system is Kwak et al (2011)'s study in Engineering and construction industry, which are project-based sectors. Based on TAM, they constructed intention to use, PU, PEU, subjective norm, internal support, consultant support and function (perceived degree of system functionality in supporting and matching business activity) constructs to measure user acceptance in terms of intention to use. After analyzed 254 samples using multiple regression analysis, they found out that PU is strongly positively associated with behavioral intention with beta 0.53 ($p<0.0001$). PEU is also significant in determining behavioral intention with beta 0.19 ($p<0.001$). Together the three variables explained about 60% of the variation in intention to use. Function is found to be the strongest determinant for PU with beta 0.44 ($p<0.0001$) while PEU positively affected PU with beta 0.2 ($p<0.0001$), however consultant support was insignificant in determining PU. Note that measuring behavioral intention in mandatory context was not accepted by majority of previous researches and instead they used symbolic adoption as the primary determinant for user acceptance. The characteristics of individual respondents is not considered in this research and that may limit the result of this study.

Sternad and Bobek (2013) conducted a field survey on two organizations with matured ERP implementation stage. Based on TAM, the constructs of their model are PU of ERP, PEU of ERP and attitude toward ERP usage influenced by external factors. The external factors are personal characteristics (computer self-efficacy, innovativeness, anxiety) and information literacy, system characteristics (data quality, functionality, performance) and organizational characteristics (social

influence, business process fit, training, education, support and communication). All items measured on 7-point Likert scale and data was analyzed using PLS technique in two stages. The analysis on 293 samples from 44 different industry organizations, they confirmed the influence of PEU and PU on attitude toward usage. Personal characteristics and Information literacy showed weak effect on ease of use while system and technological characteristics showed significant effect on ease of use with beta 0.61 ($p<0.01$).

Govindaraju & Indriany (2007) studied user acceptance of ERP system on several division of Indonesian telecommunication company using TAM. They specifically adapted the model of Nah et al (2004) by adding five more constructs. The constructs used in this study are PEU, PU, Compatibility, Business fit, shared belief, facilitating conditions, self-efficacy, argument for change and personal innovativeness of IT. They measured all the items on 6-point Likert-type scale. They used structural equation modeling and examined the hypothesized causal paths among constructs variables by performing simultaneous test. In their results PEU, compatibility and Facilitating condition have shown no direct effect on attitude, while ERP business fit have significant effect on attitude. Generally, perceived compatibility and attitude showed direct influence on end users' acceptance in mandatory context while PU and ERP business fit affected acceptance indirectly.

Arekete et al (2014) studied antecedent factors of enterprise systems symbolic adoption in Nigerian organizations based on popular UTAUT user acceptance model. After they measured all items on 5-point Likert-type scale and performed equation modeling using Partial Least Square technique, they found out that Facilitating conditions and Attitude accounted for about 51% variations in Symbolic Adoption. On the other hand, PE, EE and Social influence together explained about 45% of the variance in Attitude. Dropping control variables such as gender and age could be the potential problem with the result of this study. This study didn't focus on actual adoption of ES but only symbolic adoption.

Amoako-Gyampah & Salam (2004) examined effect of antecedent factors on PU and PEU of TAM constructs in a large global organization that was implementing ERP system. The sample size in this study is 1562. Belief in the ERP benefit, Project communication and training are the three antecedent factors that influence PU and PEU which indirectly influences behavioral intention to use an ERP system. They hypothesized that mutual trust and commitment must exist between the

participants for the shared belief which can shape the usage intention. They noted that shared belief differs from PU of TAM in such a way that shared belief is a value share between peers and managers about the ERP system while PU is a belief about how the system would enhance the performance of an individual. On the other hand, training would also affect the shared belief. The authors argue that since the usage in mandatory context is also up to the minimal required function, the usage beyond that is voluntary. This implies that unlike other authors, they believed behavioral intention construct would work to measure user acceptance in mandatory settings too. They found out that belief in ERP benefit was significantly affected by training and project communication; suggested managers to undertake communications effectively coupled with training. Both PU and PEU were affected by shared belief in the benefits of the system. PEU did not affect attitude toward ERP usage.

Fillion et al (2012) investigated the ERP system usage by middle managers and end users' in medium to large sized Canadian enterprises. The user acceptance model used in this study is UTAUT model. The authors performed individual item reliability, internal consistency and discriminant validity to ensure construct reliability and all tests passed. The moderating factors included in this study are age, gender, experience, voluntariness of use, anxiety and self efficacy. In their results, all the four variables of UTAUT explained 39% of the variance in behavioral intention. BI explained 21.6% variance of use behavior. The overall model explained about 60.6% of variance which is significantly low from original Venkatesh et al (2003)'s 70% explanatory power. Moderating variables, age and anxiety were significant at 99% and the other two variables, facilitating conditions and behavioral intentions were significant to required level of confidence (95%). The relation between PE and BI were not affected by age and gender moderating variables. Age, gender and experience did not influence the relation between EE and BI. Age, gender and voluntary of use had no significant influence on the relation between social influence and BI. BI was significantly influenced by facilitating conditions, self efficacy and anxiety. Finally, it is worth noting that the results uncovered in this study may not be applicable for all countries and for small enterprises since the focus was medium and large enterprise in developed country, Canada.

Alam et al (2018) studied the influence of factors that determine end user acceptance of ERP system by applying UTAUT model of user acceptance in manufacturing enterprises found in Bangladesh. The number of samples included in this study are 350. The measurement of all items

has been validated. According to this finding, all the four constructs (PE, EE, SI and FC) significantly affected behavioral intention. Usage behavior is also positively and significantly affected by behavioral intention. The limitation of this study is that the representation of organizations is not evenly distributed among small, medium and large organizations and thus may be in problem of generalizability.

The studies regarding user acceptance of ERP system in Ethiopia does not exist, but there is very limited research concentrated on Information technology acceptance. The researcher tried to find related works in Ethiopian context and did not find any peer reviewed article. The keywords "ERP user acceptance in Ethiopia", "User acceptance in Ethiopia", "IT User acceptance in Ethiopia" and many other related search keywords did not generate ERP user acceptance contents in Ethiopian context. The databases searched for are Google Scholar, Science Direct and other IT and Business Management journals. Instead the researcher found two less related works of user acceptance in Ethiopia. The first one is the study on acceptance of homegrown ERP systems in Ethiopia by Wagaw (2017). The second one is a study by Lessa et al (2011) on acceptance of WoredaNet E-Government service in Ethiopia. Both of the above studies used UTAUT model to determine acceptance. The limitation with the first work is that it just focused on acceptance of home-grown ERP systems by organizations, not end user's acceptance of general ERP system which makes it irrelevant. The irrelevance with the second study is that first, it does not focus on ERP system and second, the study is in government offices which might be very different from business-oriented organizations. Keeping their difference as it is, these study still confirmed that UTAUT model works in Ethiopian contexts too. Both studies found that all the four constructs of UTAUT (PE, EE, SI and FC) significantly affected behavioral intention to use except for the case of Lessa et al (2011)' facilitating conditions which did not have significant effect on behavioral intention due to the effect captured by effort expectancy according to the authors reason out.

2.4 Knowledge Gap

It is true that the are extensive studies done regarding user acceptance of ERP systems in different parts of the world, in different organization types, in different organization sizes and in different cultures. Though there are such studies around the world as this one, the gap is when we come to our country, Ethiopia, there are no or very few such studies. Thus, this work intends to find out what factors affect user acceptance of ERP systems in Ethiopian context, specifically in MOHA

Soft Drinks Industry S.C. by adopting and extending UTAUT model. The conceptual framework used in this study will be presented in the next section.

2.5 Conceptual Framework

As it is highlighted in the previous sections, there are many authors who empirically evidenced their studies by applying and extending different user acceptance models. The theoretical base for this study is Venkatesh et al (2003)'s Unified Theory of Acceptance and Use of Technology, UTAUT model with few adjustments. This model has been empirically supported by many studies in different contexts and achieved greater explanatory powers as this model is depicted from eight previously used acceptance models. The behavioral intention variable will be replaced by Symbolic Adoption as many previous literatures vote for the use of SA instead of BI in mandatory usage contexts. Like Seymour et al (2007) the moderating variable Voluntariness will be excluded from this model as this work focuses on mandatory setting and anxiety will be added. The following figure shows the conceptual framework for this study.

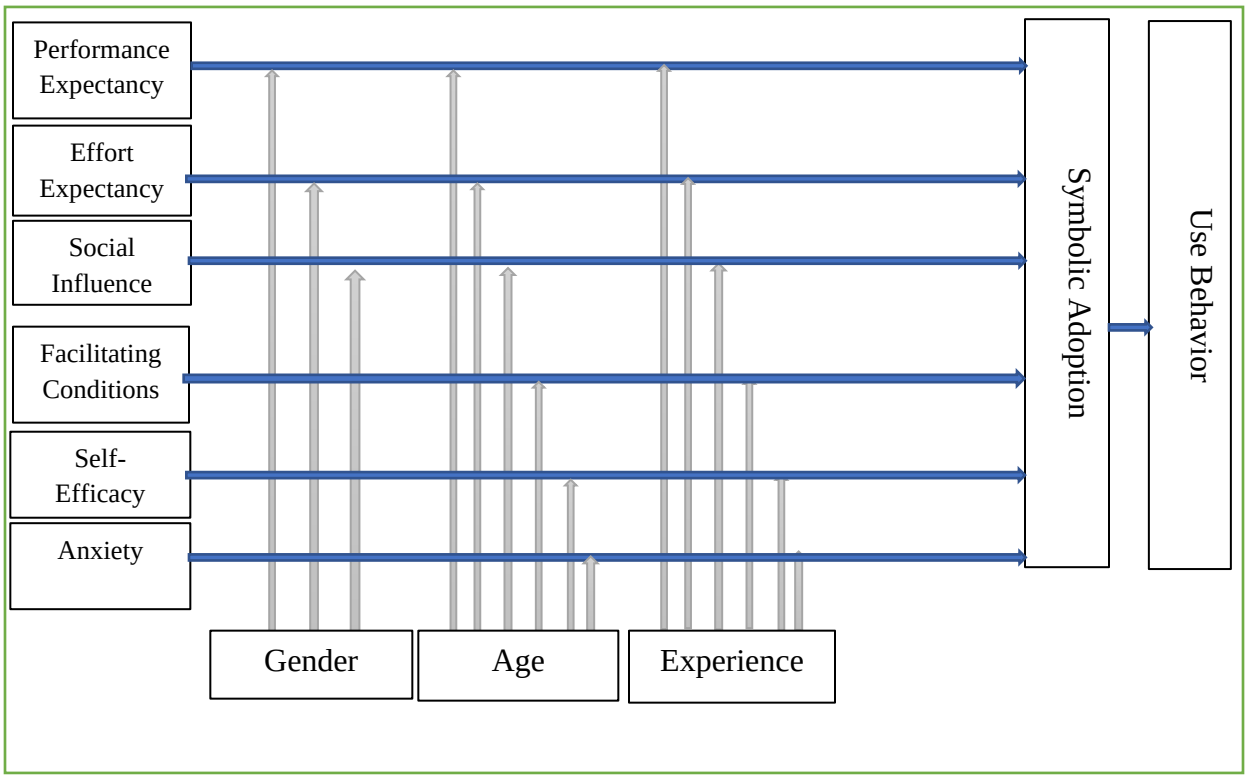

Figure 1 Conceptual Framework (Extended from Venkatesh et al (2003) UTAUT model)

Figure 1 shows extended UTAUT model consists of 6 independent and 2 dependent variables with four moderating variables that may affect the explanation of independent variables. Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Self-efficacy and Anxiety are the independent variables which are proposed to explain Symbolic Adoption and Use Behavior dependent variables with gender, age and experience moderating variables. The major difference of this study's model with original UTAUT model is that Self-efficacy and Anxiety are not the direct determinants of intention to use in UTAUT because its effect has been captured by effort expectancy (Venkatesh et al, 2003). In the same manner with Self-efficacy and Anxiety, Venkatesh et al (2003) predicted and validated the independent variable FC does not have significant effect on intention because its effect to predict intention has been captured by PE and EE. But contrary to this original UTAUT model empirical results such as Fillion et al (2012) found out there is a significant effect of FC, Self-efficacy and Anxiety on behavioral intention.

2.5.1 Definition of Variables

The definition of dependent and independent variables this study is going to incorporate are given below together with their moderating variables.

Independent Variables

- Performance Expectancy – The degree to which users believe that using the system will increase their job performance (Venkatesh et al, 2003)
- Effort Expectancy – How hard or easy the system is to learn and to use (Venkatesh et al, 2003)
- Social Influence – The degree to which users believe that some one important to them believe that they should use the system
- Facilitating Conditions – The degree to which users believe that there are both organizational and technical infrastructures to support them in using the system
- Self-efficacy – The degree to which users' believe that they have the ability required to do the given job or task using the system.
- Anxiety – the degree of worry and fear users show when they need to use the system

Dependent Variables

- Symbolic Adoption – The degree to which the user accepted the system mentally.
- Use Behavior – Users positive or negative feeling about using the system

2.5.2 Hypothesis Development

Based on the theoretical research model presented in figure 1, the following research hypothesis has been formulated.

H1: *Performance Expectancy will have significant positive effect on Symbolic Adoption, moderated by Age and Gender.*

H2: *Effort Expectancy will have significant positive effect on Symbolic Adoption, moderated by Age, Gender and experience.*

H3: *Social Influence will have significant positive effect on Symbolic Adoption, moderated by Age, Gender and Experience.*

H4: *Facilitating Condition will have significant positive effect on Symbolic Adoption, moderated by Experience.*

H5: *Employee Self-efficacy will have significant positive effect on Symbolic Adoption.*

H6: *Anxiety will have significant negative effect on Symbolic Adoption of ERP system.*

H7: *Symbolic Adoption will have positive significant effect on ERP system usage.*

3 Research Design and Methodology

This section of research introduces the methods the researcher used for successful completion of the study. Specifically, research type, research method, population of interest, sampling method and sampling size, method of data analysis, method of data validation and ethical issues has been addressed.

3.1 Research Design and Approach

Research design is a strategy a researcher is going to follow to collect and interpret data based on clear objective of the study. As stated by Bryman (2016), it provides a framework for data collection and analysis that can be useful to express causal relationship between study variables. There are different research design types such as experimental, survey (also known as cross-sectional), longitudinal, case study and comparative study (Bryman, 2016).

According to Bryman (2016) major social science researches do not incorporate experimental research due to its nature of variable manipulation requirement. The most used social research design is cross-sectional study which occurs in a single point in time and associated with deductive research approach (Rahi, 2017). In deductive approach, theory is not generated from observation instead by basing on conceptual and theoretical framework, the observation is used to test existing theory by empirical data (Rahi, 2017). A survey method is preferred when there is more than one case to be studied since variation establishment takes place only when more cases are examined. A survey method uses quantifiable data in order to provide consistent benchmark. Survey design provides numerical description of the variable under study of sample of population. (Creswell, 2017). According to (Rahi, 2017) quantitative method is a scientific method that focuses on fresh data collection and analysis from large group of population according to problem definition. Most of the times, the survey method is used with questionnaires or structured interview of data collection methods and its advantage is mainly rapid turnout in data collection (Creswell, 2017) but this method has issues with validity unlike experimental research.

The other type of research design, longitudinal design is little used due to high requirement of cost and long-time duration (Bryman, 2016). Case study design focuses on detailed and deep understanding of single case and it is preferred when a researcher has little control of a situation

going on (Rahi, 2017). Comparative design is used when a researcher wants to study two or more contrasting cases using the same method (Bryman, 2016).

Based on the previously mentioned pros and cons of each research designs, survey design is used as research design for this study. The data collected with this study is quantitative and a deductive approach have been used to analyze and test the hypothesis. The result of data collected using this method was presented using explanatory analysis.

3.2 Population and Sampling

Population is collection of items or people the researcher wants to understand while sampling is the process of selecting portion of population for investigation (Rahi, 2017). Thus, the target population of this study is employee of three plants of MOHA (Teklehaimanot, Nefas Silk and Summit) which are using the ERP system. The three plants are selected as a population of interest because of various reasons such as accessibility, ERP implementation level and convenience of getting data.

The plants are similar in such a way that they receive order of implementing the system from corporate office and this means that plants do not have any right to reject the implementation of this ERP system. The three plants are different in terms of their leadership style, resources they have, number of employees, manpower capability and organizational capacity. Thus, the point of interest here is that the data collected from one plant does not necessarily represent the data of another plant and the result of this study work is sufficient enough to identify factors affecting end user acceptance of the ERP system.

Sampling is useful to reduce the burden and the cost of study by speeding up data collection. When doing sampling, a researcher must be careful to not commit sample bias. Sample bias is a distortion of individual or item in representation of sample; in other words, not getting the chance of inclusion in a sample (Bryman, 2016). There are many ways to select sample of population from general population of study. The two common ways of sampling are probability and non probability sampling. In probability sampling, each unit has a known chance of being selected while non probability sampling is when the chance of selection of one unit is higher or lower than the other. The sampling method this study going to use is probability sampling.

3.2.1 Sampling Technique

There are many techniques applied when selecting representatives of population in both probability and non probability sampling methods. The techniques used with probability sampling are simple random sampling (generating random number and selecting from list of population), systematic random sampling (start at some position and use that number as an interval to select from lists), stratified random sampling (giving equal chance of selection for each group) and cluster sampling (for geographically dispersed groups). Convenience, snowball, quota and judgmental sampling are techniques used for non probability sampling. In this study, Strata sampling of probability sampling were used in this study. This means that proportional number of samples were reserved for each plant to avoid probability of exclusion of one plant's ERP user.

3.2.2 Sample Size

Since the population in interest is identified as an ERP user who works in three MOHA plants, selecting reasonable sample size would be appropriate for reliable and valid output of this study. According to the data from each plant's MIS office, currently there are 238 employees using ERP system, of which 60 are in Teklehaimanot Plant, 100 in Nefas Silk plant and the remaining 78 are from Summit plant. The simplified Slovin formula to determine sample size is given below by Yamane (1967).

$$\frac{N}{e^2(N)+1}$$

$$\frac{238}{0.05^2(238)+1}$$

$$n = 150$$

Where,

N = population size

n = is the sample size

e = is the acceptable sampling error (95% confidence level)

Thus, 150 employees have participated in this study.

3.3 Data Collection Methods

In order to obtain and determine the factors affect user ERP acceptance in selected MOHA plants, the primary data has been directly obtained from users and information and data such as management support, management composition, management style and interventions has been observed by researcher as a secondary data source in this study. The data collection method employed id self-administered structured questionnaire. The items for independent variables used in this study are adopted from Venkatesh et al (2003) as this study extended the model used in UTAUT. The items for dependent variable Symbolic adoption are adopted from Seymour et al (2007), while the items for Usage is adopted from Nwankpa (2015). Participants were asked to rate relative effect of each variables identified in the model on 5-point Likert type scale ranging from Strongly Disagree to Strongly Agree. In addition to these factors, respondents were asked to provide their personal background such as their age range, gender, experience and department they work in. The questionnaire were translated to Amharic language in order to help respondents to understand what they are being asked. The items for this study are attached in appendix section.

3.4 Method of Data Analysis

After successful completion of data collection and validation, the data was analyzed using Statistical Software Packages for Social Sciences (SPSS) software. Before analysis the collected data has been compiled, grouped and checked for completeness. The responses with incomplete response were discarded. The data was first coded using Microsoft Excel and then imported to SPSS software. After data preparation, some descriptive statistics were run to provide numerical information of variables including respondent's demographic distribution. The explanatory approach has been employed in order to explain why and to what level identified factors affect dependent variables using correlational analysis, inferential and regression analysis. To asses the influence of independent variables on dependent variables multiple regression analysis has been performed. The multiple regression model construction is presented in model specification section.

3.5 Validity and Reliability

Validity and reliability are the two most important requirement for data validation. Reliability is about whether the data is replicable or not, while validity concerns with integrity of the conclusion generated from single study (Bryman, 2016). Validity consists of different dimensions such as measurement validity also known as construct validity (does the current measurement measure what it intends to measure), internal validity (how sure we are that the effect of one variable on other is not because of other external factor; does it really caused this) and external validity (generalizability of current research to other studies).

Venkatesh et al (2003) has checked for internal consistency of the items and all constructs consistency were found to be greater than 0.7. In addition to reliability the authors also found that the square roots of the shared variance of constructs were higher than their correlations which confirmed convergent and discriminant validity. In this study the researcher has tried to held pilot testing to establish content validity of instruments to get feedback on questions, formats and scales of the instrument. The participants on this pilot testing were 9 finance department ERP users and their feedback helped to correct some question ordering and clarification. The items reliability has been tested using Cronbach alpha as it the most widely used and convenient way to determine the reliability of items. The reliability of Facilitating Conditions items was found to be less than required value and after testing for outlier, the third question is excluded. In parallel with Venkatesh et al (2013)'s study, the reliability for this item were found to be 0.911 which confirms good reliability. The reliability test using Cronbach's Alpha for each dimension of factors is presented in the following table.

Dimensions	No of Items	Alpha Coefficients
Performance Expectancy	4	0.894
Effort Expectancy	4	0.872
Facilitating Conditions	3	0.714
Social Influence	4	0.734

Self Efficacy	4	0.741
Anxiety	4	0.865
Symbolic Adoption	3	0.849
Actual Usage	3	0.959
Overall Model	29	0.911

Table 1 Reliability Test

3.6 Model Specifications

To achieve objectives of this study, the following multiple regression analysis model is constructed as regression analysis is a way forward to predict change on dependent variable due to change in independent variable. As stated in previous sections, Symbolic Adoption and Use Behavior are the two dependent variables while other constructs such as PE, EE, SI, FC, Self-efficacy and Anxiety are independent variables with age, gender, experience and department control variables. The assumptions of classical linear regression is tested. The regression model is presented as follows.

$SAi= \beta0 + \beta1PEi + \beta2EEi+ \beta3SIi+ \beta4FCi+\beta5Sei + \beta6Axi+ \varepsilon i,$

Where,

$\beta0$ is Symbolic adoption all other variables being 0

$\beta1$ is the partial change in symbolic adoption of ERP system due to one unit increase in PE, controlling for other variables

$\beta2$ is the partial change in symbolic adoption of ERP system due to one unit increase in EE, controlling for other variables

$\beta3$ is the partial change in symbolic adoption of ERP system due to one unit increase in SI, controlling for other variables

$\beta4$ is the partial change in symbolic adoption of ERP system due to one unit increase in FC, controlling for other variables

β5 is the partial change in symbolic adoption of ERP system due to one unit increase in Self-efficacy, controlling for other variables

β6 is the partial change in symbolic adoption of ERP system due to one unit increase in Anxiety, controlling for other variables

εi is the variation not captured due to predefined variables (error term).

The model to determine the effect of symbolic adoption on actual ERP usage is given as:

$AU_i = \beta_0 + \beta_1 SA_i + \varepsilon_i$,

Where,

β0 is Actual usage of an ERP system at absence of effect of symbolic adoption, and

εi is the variation not captured due to predefined variables (error term).

3.7 Ethical Considerations

It is necessary to have ethical behaviors during data collection and result presentation. The researcher does not have any intention to conduct such unethical behavior. The privacy of respondents will be kept confidential, the questionnaire does not contain their name or any other personal information. Their response will not be forwarded to any party including their supervisor. The researcher is not going to modify the responses given by the users. Users were not be obliged to respond. Generally, this study followed professional research approaches by refraining from any bias.

4 Data Presentation, Analysis and Interpretation

4.1 Introduction

This section of paper covers the presentation, analysis and interpretation of data collected from samples of each MOHA plants to answer the research questions and to achieve the objectives laid down in the first section of this paper. It starts with the descriptive presentation of data for each variable to gain insights of how the questionnaires were distributed across different groups. The comparative, correlation and regression analysis that contains the main findings of the research questions is presented and discussed in parallel with hypothesis testing.

4.2 Response Rates

For this study, 150 questionnaires were administered according to the sampling proportion previously presented in sampling size subsection. 45 questionnaires were distributed for ERP end users of Teklehaimanot Plant, 55 for Nefas Silk plant and the remaining 50 for Summit plant, proportional to each plant's user size. The response rate and valid response rates for each plant is summarized and presented in the following table.

Plant	Distributed	Returned		Valid Response		Discarded Responses	
		Quantity	Percent	Quantity	Percent	Quantity	Percent
THP	45	39	87%	36	80%	3	20%
NSP	55	55	100%	46	84%	9	16%
Summit	50	46	92%	39	78%	7	22%
Total	150	140	93%	120	81%	19	19%

Table 2 Summary of response rate per plant

4.3 Demographic Characteristics of Respondents

The demographic characteristics of respondents which includes their gender, age group, department they work in, experience they have in using the ERP system, their education level and the job position they possess is presented in the following table.

Variable	Category	Frequency	Percent
Gender	Male	73	60.3
	Female	47	38.8
Age Group	Less than 25	8	6.6
	26 to 35	59	48.8
	36 to 45	39	32.2
	Above 45	14	11.6
ERP Experience	Less than 1 year	22	18.2
	1 to 3 years	66	54.5
	4 to 5 years	19	15.7
	More than 5 years	13	10.7
Job Position	Junior	10	8.3
	Medium	50	41.3
	Senior	53	43.8
	Supervisor	5	4.1
	Manager	2	1.7
Department	Finance	30	24.8
	Sales	19	15.7
	Production	16	13.2
	Quality	13	10.7
	Technic	15	12.4
	Procurement	15	12.4
	Garage	5	4.1
	Human Resource	7	5.8
Education Level	High School or below	14	11.6
	Diploma	33	27.3
	Degree	66	54.5
	Post Graduate	7	5.8

Table 3 Demographic distribution of respondents

The following table shows the comparison of demography of respondents between each plant.

		Plant					
		NSP		Summit		THP	
		Count	%	Count	%	Count	%
Gender	Male	29	63.0%	24	61.5%	20	57.1%
	Female	17	37.0%	15	38.5%	15	42.9%
	Less than 25	4	8.7%	2	5.1%	2	5.7%
	26 to 35	20	43.5%	22	56.4%	17	48.6%

Age Group	36 to 45	14	30.4%	13	33.3%	12	34.3%
	Above 45	8	17.4%	2	5.1%	4	11.4%
Experience in ERP	Less than 1 year	13	28.3%	5	12.8%	4	11.4%
	1 to 3 years	21	45.7%	32	82.1%	13	37.1%
	4 to 5 years	7	15.2%	1	2.6%	11	31.4%
	More than 5 years	5	10.9%	1	2.6%	7	20.0%

Table 4 Demographic distribution of respondents per plant

4.4 Psychographic Factors affecting User Acceptance of ERP system

As it has been shown from the literatures, the factors that affect the acceptance of the system are thoroughly identified and different models have been suggested. The research question of this paper tries to test whether the Unified Theory of Acceptance and Use of Technology, UTAUT model will hold true for the case of our data. According to this model, the user acceptance level is affected by factors such as Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions. Users were requested to provide their level of agreement with different questions under each category. The descriptive analysis for each category is presented in the following subsections.

4.4.1. Performance Expectancy

In this category the users are asked to determine how their job performance is affected by using the ERP system at their workplace. Most responses for this dimension of ERP acceptance measure indicate that users are “strongly agreed” that the ERP system has helped them to increase their productivity. For all the questions under this category, the majority of the respondents strongly agreed for the performance expectation. The summary response for all items under this category is presented in the following table. Regarding each plant, the majority of users in THP and NSP strongly agreed to the performance increase while those in Summit plant said they just agreed that the system has improved their performance. This difference might be because of the late implementation of the ERP system at Summit plant and since they didn’t start the full utilization of the system like the other two.

Items	Plants	Rating					Comment
		1	2	3	4	5	
PE1: I would find the ERP system useful in my job	THP	2.9%	0%	14.3%	37.1%	45.7%	
	NSP	8.7%	2.2%	4.3%	39.1%	45.7%	
	Summit	10%	10%	10%	37.5%	32.5%	
	Overall	**7.4%**	**4.1%**	**9.1%**	**38%**	**41.3%**	**Strongly Agree**
PE2: Using the ERP system enables me to accomplish tasks more quickly	THP	5.7%	2.9%	5.7%	34.3%	51.4%	
	NSP	8.7%	2.2%	8.7%	45.7%	34.8%	
	Summit	17.5%	7.5%	7.5%	35%	32.5%	
	Overall	**10.7%**	**4.1%**	**7.4%**	**38.8%**	**38.8%**	**Strongly Agree**
PE3: Using the ERP system increases my productivity.	THP	0%	11.4%	14.3%	31.4%	42.9%	
	NSP	6.5%	2.2%	21.7%	45.7%	23.9%	
	Summit	12.5%	12.5%	12.5%	42.5%	20%	
	Overall	**6.6%**	**8.3%%**	**16.5%**	**40.5%**	**28.1%**	**Agree**
PE4: If I use the ERP system, I will increase my chances of getting a raise	THP	17.1%	14.3%	20%	22.9%	25.7%	
	NSP	10.9%	15.2%	32.6%	17.4%	23.9%	
	Summit	22.5%	7.5%	40%	22.5%	7.5%	
	Overall	**16.5%**	**12.4%**	**31.4%**	**20.7%**	**19%**	**Neutral**

Table 5 Response for Performance Expectancy

4.4.2. Effort Expectancy

The Effort Expectancy questions were designed in order to know whether a user's interaction with the system is clear and how much they understand the system. The average score for this dimension indicates that the respondent's level of agreement is "agree" to questions such as the system is easy to learn, easy to use and their role is clear and understandable in using the ERP system. The summary response for all items under this category is presented in the following table.

Items	Plants	Rating					Comment
		1	2	3	4	5	
EE1: My interaction with the ERP system would be clear and understandable.	THP	0%	5.7%	17.1%	40%	37.1%	
	NSP	6.5%	2.2%	17.4%	58.7%	15.2%	
	Summit	2.5%	10%	12.5%	52.5%	22.5%	
	Overall	**3.3%**	**5.8%**	**15.7%**	**51.2%**	**24%**	**Agree**
EE2: It would be easy for me to become skillful at using the ERP system	THP	0%	11.4%	20%	40%	28.6%	
	NSP	6.5%	4.3%	13%	60.9%	15.2%	
	Summit	0%	12.5%	15%	52.5%	20%	
	Overall	**2.5%**	**9.1%**	**15.7%**	**52.1%**	**20.7%**	**Agree**
EE3: I would find the ERP system easy to use	THP	0%	11.4%	14.3%	37.1%	37.1%	
	NSP	4.3%	10.9%	17.4%	50%	17.4%	
	Summit	2.5%	7.5%	25%	42.5%	22.5%	
	Overall	**2.5%**	**9.9%%**	**19%**	**43.8%**	**24.8%**	**Agree**
EE4: Learning to operate the ERP system is easy for me	THP	2.9%	5.7%	5.7%	40%	45.7%	
	NSP	4.3%	10.9%	6.5%	65.2%	13%	
	Summit	2.5%	5%	15%	52.5%	25%	
	Overall	**3.3%**	**7.4%**	**9.1%**	**53.7%**	**26.4%**	**Agree**

Table 6 Response for Effort Expectancy

4.4.3. Social Influence

The social influence factor measures whether users' friends, supervisors and relatives expect them to use or not to use the system does affect their acceptance. The response from users indicates that they “agree” to social influence in accepting the ERP system.

Items	Plants	Rating					Comment
		1	2	3	4	5	
SI1: People who influence my behavior	THP	31.4%	25.7%	22.9%	14.3%	5.7%	
	NSP	17.4%	30.4%	28.3%	17.4%	6.5%	

think that I should use the ERP system	Summit	22.5%	17.5%	27.5%	22.5%	10%	
	Overall	**23.1%**	**24.8%**	**26.4%**	**18.2%**	**7.4%**	**Neutral**
SI2: People who are important to me think that I should use the ERP system	THP	11.4%	14.3%	17.1%	45.7%	11.4%	
	NSP	10.9%	15.2%	21.7%	32.6%	19.6%	
	Summit	17.5%	7.5%	25%	27.5%	22.5%	
	Overall	**13.2%**	**12.4%**	**21.5%**	**34.7%**	**18.2%**	**Agree**
SI3: The senior management of this company has been helpful in the use of ERP system	THP	8.6%	11.4%	14.3%	34.3%	31.4%	
	NSP	8.7%	8.7%	6.5%	41.3%	34.8%	
	Summit	5%	17.5%	20%	42.5%	15%	
	Overall	**7.4%**	**12.4%%**	**13.2%**	**39.7%**	**27.3%**	**Agree**
SI4: In general, the organization has supported the use of the ERP system	THP	0%	17.1%	20%	40%	22.9%	
	NSP	4.3%	8.7%	6.5%	37%	43.5%	
	Summit	2.5%	12.5%	17.5%	40%	27.5%	
	Overall	**2.5%**	**12.4%**	**14%**	**38.8%**	**32.2%**	**Agree**

Table 7 Summary of Survey findings for Social Influence

4.4.4. Facilitating Conditions

This factor measures the user's level of agreement if there are sufficient human and technological resources that could help them in using the ERP system. The average response for this factor is that the users do "agree" with the fact that there are enough facilities and resources such as dedicated support staff to use the ERP system. The summary report for facilitating conditions factor is presented below.

Items	Plants	Rating					Comment
		1	2	3	4	5	
FC1: I have the resources necessary to use the system	THP	2.9%	17.1%	17.1%	42.9%	20%	
	NSP	10.9%	10.9%	21.7%	37%	19.6%	
	Summit	2.5%	10%	15%	35%	37.5%	
	Overall	**5.8%**	**12.4%**	**18.2%**	**38%**	**25.6%**	**Agree**

FC2: I have the knowledge necessary to use the system	THP	0%	17.1%	14.3%	37.1%	31.5%	
	NSP	4.3%	4.3%	10.9%	63%	17.4%	
	Summit	0%	10%	20%	50%	20%	
	Overall	**1.7%**	**9.9%**	**14.9%**	**51.2%**	**21.5%**	**Agree**
FC3: The system is not compatible with other systems I use	THP	11.4%	40%	14.3%	28.6%	5.7%	
	NSP	6.5%	26.1%	45.7%	8.7%	13%	
	Summit	7.5%	15%	35%	30%	12.5%	
	Overall	**8.3%**	**26.4%%**	**33.1%**	**21.5%**	**10.7%**	**Neutral**
FC4: A specific person or group is available for assistance with system difficulties	THP	5.7%	2.9%	25.7%	34.3%	28.6%	
	NSP	8.7%	2.2%	6.5%	52.2%	30.4%	
	Summit	7.5%	10%	15%	40%	27.5%	
	Overall	**7.4%**	**5%**	**14.9%**	**43%**	**28.9%**	**Agree**

Table 8 Summary of Survey findings for Facilitating conditions

4.4.5. Self Efficacy

From the response of ERP system users in MOHA plants we can understand that the majority of the respondents have the ability or self confidence to accomplish the task on their own with little external support. It has been observed that the majority of the respondents are highly agreed to the first question and/or agreed to the second and third questions which shows good overall confidence of users.

Items	Plants	Rating					Comment
		1	2	3	4	5	
SE1: If there was no one around me to tell me what to do as I go	THP	2.9%	17.1%	11.4%	34.3%	34.3%	
	NSP	6.5%	15.2%	10.9%	37%	30.4%	
	Summit	5%	12.5%	20%	25%	37.5%	
	Overall	**5%**	**14.9%**	**14%**	**32.2%**	**33.9**	**Strongly Agree**
	THP	8.6%	5.7%	2.9%	54.3%	28.6%	

SE2: If I could call someone for help if I got stuck	NSP	8.7%	2.2%	6.5%	47.8%	34.8%	
	Summit	2.5%	2.5%	17.5%	42.5%	35%	
	Overall	**6.6%**	**3.3%**	**9.1%**	**47.9%**	**33.1%**	**Agree**
SE3: If I had a lot of time to complete the job for which the system was provided	THP	2.9%	0%	14.3%	45.7%	37.1%	
	NSP	4.3%	0%	6.5%	34.8%	54.3%	
	Summit	0%	2.5%	7.5%	57.5%	32.5%	
	Overall	**2.5%**	**0.8%**	**9.1%**	**45.5%**	**42.1%**	**Agree**
SE4: If I had just the built-in help facility for assistance	THP	5.7%	5.7%	14.3%	45.7%	28.6%	
	NSP	4.3%	0%	13%	41.3%	41.3%	
	Summit	2.5%	7.5%	15%	47.5%	27.5%	
	Overall	**4.1%**	**4.1%**	**14%**	**44.6%**	**33.1%**	**Agree**

Table 9 Summary of Survey findings for Self Efficacy

4.4.5. Anxiety

The users have been asked whether they worry or not to use the implemented ERP system and the response from each plant user indicates that they do not worry, as an overall result. For all the four questions provided, the ERP users in all three plants responded that they strongly disagree with the questions which measure their level of anxiety and fear to use the ERP system.

Items	Plants	Rating					Comment
		1	2	3	4	5	
AX1: I feel worried about using the system	THP	31.4%	34.3%	11.4%	20%	2.9%	
	NSP	26.1%	32.6%	26.1%	15.2%	0%	
	Summit	42.5%	22.5%	22.5%	10%	2.5%	
	Overall	**33.1%**	**29.8%**	**20.7%**	**14.9%**	**1.7%**	**Strongly Disagree**
AX2: It scares me to think that I could lose a lot of information	THP	25.7%	28.6%	11.4%	20%	14.3%	
	NSP	21.7%	23.9%	13%	30.4%	10.9%	
	Summit	27.5%	20%	22.5%	20%	10%	

using the system by hitting the wrong key	**Overall**	**24.8%**	**24%**	**15.7%**	**24%**	**11.6%**	**Strongly Disagree**
AX3: I hesitate to use the system for fear of making mistakes I cannot correct	THP	37.1%	22.9%	17.1%	14.3%	8.6%	
	NSP	23.9%	34.8%	17.4%	17.4%	6.5%	
	Summit	30%	32.5%	7.5%	20%	10%	
	Overall	**29.8%**	**30.6%%**	**14%**	**17.4%**	**8.3%**	**Disagree**
AX4: The ERP system is somewhat threatening to me	THP	37.1%	20%	14.3%	37.1%	11.4%	
	NSP	26.1%	28.3%	17.4%	21.7%	6.5%	
	Summit	30%	27.5%	17.5%	12.5%	12.5%	
	Overall	**30.6%**	**25.6%**	**16.5%**	**17.4%**	**9.9%**	**Strongly Disagree**

Table 10 Summary of Survey findings for Anxiety

4.4.6. Symbolic Adoption (Mental Acceptance)

Symbolic Adoption is a dependent variable that depends on the previously mentioned independent variables that are used to measure the mental acceptance of the system by end users. In order to determine whether the users are mentally accepting the system or not, three questions were provided to get their level of agreement. These questions focused on their eagerness to use the system, their excitement about using the system and their hope for the full utilization of the system. Majority of the respondents (38.8%) agreed that they are eager to use the system; 46.3% agreed that they are excited to use the system and 47.9% of the respondents strongly agreed that they hoped for the full utilization and implementation of the system. The summary descriptive statistics for all the levels of agreements is presented below.

Items	Plants	Rating					Comment
		1	2	3	4	5	
SA1: I am eager about using the ERP system	THP	0%	2.9%	17.1%	34.3%	45.7%	
	NSP	6.5%	10.9%	4.3%	45.7%	32.6%	
	Summit	10%	0%	22.5%	35%	32.5%	
	Overall	**5.8%**	**5%**	**14%**	**38.8%**	**36.4%**	**Agree**

SA2: I am excited about using the ERP system in my workplace	THP	0%	2.9%	8.6%	45.7%	42.9%	
	NSP	6.5%	2.2%	13%	45.7%	32.6%	
	Summit	7.5%	5%	20%	47.5%	20%	
	Overall	**5%**	**3.3%**	**14%**	**46.3%**	**31.4%**	**Agree**
SA3: It is my desire to see the full utilization and deployment of the ERP system	THP	2.9%	0%	2.9%	37.1%	57.1%	
	NSP	4.3%	4.3%	8.7%	37%	45.7%	
	Summit	10%	2.5%	15%	30%	42.5%	
	Overall	**5.8%**	**2.5%%**	**9.1%**	**34.7%**	**47.9%**	**Strongly Agree**

Table 11 Summary of Survey findings for Symbolic Adoption

4.4.7. Actual Usage

Actual usage is the dependent variable that is proposed to be directly affected by symbolic adoption and indirectly affected by the previously mentioned independent variables. In this variable the respondents are asked how effectively and frequently the users are using the ERP system deployed in their organization. Since mental acceptance alone does not guarantee the full acceptance of the system, it is necessary to find out their actual usage behavior. It is found out that the users agreed that they are using the system more than average. The following table presents descriptive statistics for their usage behavior.

Items	Plants	Rating					Comment
		1	2	3	4	5	
AU1: I use the ERP system installed in my organization very intensively to support my work	THP	2.9%	8.6%	11.4%	37.1%	40%	
	NSP	6.5%	10.9%	21.7%	34.8%	26.1%	
	Summit	10%	10%	17.5%	40%	22.5%	
	Overall	**6.6%**	**9.9%**	**17.4%**	**37.2%**	**28.9%**	**Agree**
AU2: I use the ERP system installed in my organization very frequently to support my work	THP	2.9%	5.7%	11.4%	42.9%	37.1%	
	NSP	6.5%	6.5%	23.9%	34.8%	28.3%	
	Summit	5%	17.5%	17.5%	32.5%	27.5%	
	Overall	**5%**	**9.9%**	**18.2%**	**36.4%**	**30.6%**	**Agree**

AU3: Overall, I use the ERP system well.	THP	2.9%	11.4%	8.6%	37.1%	40%	
	NSP	6.5%	6.5%	26.1%	45.7%	15.2%	
	Summit	12.5%	10%	17.5%	32.5%	27.5%	
	Overall	**7.4%**	**9.1%**	**18.2%**	**38.8%**	**26.4%**	**Agree**

Table 12 Summary of Survey findings for Actual Usage

4.5 Comparative Analysis

This section of study presents comparative analysis of different factors in participating MOHA plants. The researcher tried to present what factor is more effective at which plant and why one plant is better or worse than another one. It is important to note that each plant has its own approach or management for the ERP implementation project, but all the plants get ERP system wise support and infrastructure from the head office. The ERP implementation time at each plant is consecutive that the first plant started implementation is THP then NSP and lastly Summit plant. Taking all their similarities and differences the analysis of the comparison is presented.

First, let's compare performance expectancy factor. The average score for performance expectancy ranges from 3.4 to 3.94 with average of 3.7 for all plants. Teklehaimanot plant is a plant with the highest score while Summit plant is the lowest. These scores tell us that all plant users are agreeing to the fact that using the system has improved their productivity. Though we can order the plants, the difference between each plant is not that much. A possible cause for this difference might be that Teklehaimanot plant users started using the ERP system before the other and Summit plant is the last one to start using. This might indicate that the productivity the users get from the ERP system will increase from time to time and there is a hope that all plant users feel the ERP system has improved their performance in the future.

In terms of effort expectancy, the ERP users of THP seem to be more adapting to the system compared to other plant users. That means they are easily learning, have a clear role and responsibility and found the system useful. In contrast, the ERP users in NSP are less adaptive to the system. There is no clear reason why one is better than the other on this factor, but it is probably that majority of the old users (with age group comparison) are found in NSP plant than others.

The third predicted factor of user acceptance, social influence, is somehow normally distributed across each plant. The ERP users of Nefas Silk plant are more affected by social influence (supervisors, friends and communities) while users in Teklehaimanot plant are less affected. From the perspectives of THP we are observing that as the lifetime of the ERP system increases, users are more likely agree to system specific characteristics than other external factors.

The facilitating condition factor is less effective factor across all the three plants. It is the least effective factor that each plants' ERP user did not agree to. All plants ERP users believe that there are no enough infrastructures (human resources and technological resources) to use the system, but slightly the users in THP are more agreed to better resources which confirms that there are enough support staff deployed at the plant than the other plants which also the researcher observed directly from the site.

The feeling that a user has important skills and abilities to accomplish a given task has measured using Self Efficacy dimension of acceptance. Comparing the three plants, NSP ERP users are found to be the one with better confidence, but it is almost the same feeling for all the plants. As this dimension is found to be significant effect of acceptance, it is important to build users' self efficacy.

Anxiety measured whether the users worry or not to use the provided ERP system. All plants ERP system user did not show worry regarding the usage of the system, with average feeling level of disagree. Comparing the plants, NSP plant users are somehow worrying than the other plants, but the distance from other plants is not significant. There is no justification why this difference occurred between plants.

The main focus of this study is about symbolic adoption which measures the mental acceptance of the system by the users. The data shows that Teklehaimanot and Nefas Silk plant users have accepted the system better than Summit plant with feeling level of more than "agree". Once again, this score confirms us the early the users started using the system, the more they are going to accept the system. Thus, it can be said that the users need to spend more time to fully accept and utilize the system.

The actual usage which follows symbolic adoption is also seen better in the plant that have started using the system earlier, Teklehaimanot plant followed by the second one which is Nefas Silk plant

and lastly Summit plant which is also the latest to join the implementation. This path is expected as it is proposed that actual usage will depend on whether the user has mentally accepted the system or not.

Overall, we can say that on all factors, the feeling of each plants ERP user is not that much different but Teklehaimanot plant users are more agreeing to the factors and more accepted and used the system than other plants which takes us to the conclusion time is important factor in the acceptance and usage of newly implemented ERP system. Teklehaimanot plant scored more on positive effects and less on negative effects. Contrary to Teklehaimanot, Summit plant scored less on positive factors and more on negative factors. The conclusion here is that, side by side with other factors, the more they spend on usage the more they are going to accept.

Dimensions	Plant			
	NSP Mean	Summit Mean	THP Mean	All Plants Mean
Performance Expectancy	3.78	3.40	3.94	3.70
Effort Expectancy	3.84	3.94	4.10	3.95
Social Influence	3.48	3.33	3.27	3.37
Facilitating Conditions	2.46	2.32	2.50	2.43
Self Efficacy	4.18	3.98	4.00	4.06
Anxiety	2.54	2.43	2.44	2.48
Symbolic Adoption	4.13	3.96	4.34	4.13
Actual Usage	3.64	3.56	4.03	3.72

Table 13 Comparative Analysis of Plants

4.6 Correlation Analysis

Correlation analysis is an inferential statistic that is used to determine the relationship between explanatory and dependent variables including their strength and direction of relationship. They are used to test hypotheses by analyzing the association among the variables. In this research, the researcher has computed correlation and regression analysis to test the hypotheses as these techniques are strongly related in their power of describing relationship and independence.

The most common used correlation analysis method is linear product-moment correlation coefficient which is also called Pearson's Correlation coefficient denoted by r. In correlation

analysis, if the correlation coefficient is close to +1, it is the sign that indicates the strong relationship between the variables (increase in the first variable will increase the second variable); the correlation coefficient of near -1 indicates strong negative relationship in which the first variable increases and the second variable decreases or when the first decreases the second variables increases. A zero-correlation coefficient indicates that there is no relationship between the variables. A correlation coefficient value between 0 to 0.3 or -0.3 to 0 is an indication of weak relationship while the values between 0.3 to 0.7 and -0.3 to -0.7 is an indication of moderate relationship. The acceptable range for the relationship between variables is a coefficient with 0.7 to 1 and -0.7 to -1 which is the sign of strong relationship among the variables.

Before running regression analysis to determine the cumulative explanatory power of the model, we need to run the correlation between each dependent variable and independent variable. The correlation output generated by SPSS for all independent variables with dependent variables is presented in the following table.

Correlations

		PE	EE	SI	FC	SE	AX	SA	AU
PE	Pearson Correlation	1	.413	.524	.353	.425	.039	.718	.594
	Sig. (2-tailed)		.000	.000	.000	.000	.668	.000	.000
	N		121	121	121	121	121	121	121
EE	Pearson Correlation		1	.343	.567	.619	-.124	.434	.573
	Sig. (2-tailed)			.000	.000	.000	.176	.000	.000
	N			121	121	121	121	121	121
SI	Pearson Correlation			1	.508	.426	.259	.459	.397
	Sig. (2-tailed)				.000	.000	.004	.000	.000
	N				121	121	121	121	121
FC	Pearson Correlation				1	.529	.052	.319	.411
	Sig. (2-tailed)					.000	.574	.000	.000
	N					121	121	121	121
SE	Pearson Correlation					1	-.088	.534	.476
	Sig. (2-tailed)						.337	.000	.000

	N						121	121	121
AX	Pearson Correlation						1	-.073	-.123
	Sig. (2-tailed)							.425	.178
	N							121	121
SA	Pearson Correlation							1	.601
	Sig. (2-tailed)								.000
	N								121
AU	Pearson Correlation								1
	Sig. (2-tailed)								
	N								121

Table 14 Correlation Analysis

From above table, it is observed that the coefficient of Effort Expectancy, Social Influence, Facilitating Conditions and Self Efficacy independent variables with the dependent variable Symbolic Adoption is less than 0.7 which can be interpreted as there exist moderate relationship. The -0.073-correlation coefficient of Anxiety with Symbolic Adoption indicates weak negative relationship. Only Performance expectancy is strongly correlated with Symbolic Adoption with correlation coefficient of 0.718 which implies that when user's performance has been increased as a result of their ERP usage, there is a high probability that they accept the system mentally. All the relationships are significant with p value less than 0.01.

4.7 Regression Analysis

In order to predict the change in dependent variable due to change in independent variable, regression analysis is used to better explain the variance. In this research, the effect of independent variables identified (PE, EE, SI, FC, Anxiety and Self efficacy) on dependent variable (Symbolic Adoption) and the effect of Symbolic Adoption on Actual usage is studied and presented using multiple regression analysis. Before running regression analysis, the assumptions of linear regression have been studied. Since the variables used in this study are composed of ordinal scale (even if individual items summed up to get the average response to make it continuous data) some of the variables may not met some assumptions of linear regression, but most of the assumptions has been met.

4.7.1 Linearity of the Relationship Test

The linearity assumption of regression analysis states that the relationship between independent and dependent variables must be linear. If the linearity is not found between the variables, it may affect the true relationship and therefore a way to reassure the relationship such as using previous theory, examining residual plots or running regression using nonlinear components should be made (Osborne & Waters, 2002). In this research, the linearity relationship has been analyzed using scatter plot and found to be acceptable.

4.7.2 Normal Distribution Test

The normality assumption of linear regression analysis must be met for the independent variable to rightly explain the variance of the dependent variable. The normality distribution is performed using the skewness and kurtosis measurement to check whether the variables are normally distributed or not. As a rule of thumb both skewness and kurtosis should be in the range of -1 to +1 and as it can be seen from the below table below, all the variables are normally distributed though many of the variables are negatively skewed. In order to fulfill the normality test, outliers have been removed from facilitating conditions dimension i.e. the third question which intends to measure the compatibility of legacy system with current system.

	N	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Performance Expectancy	121	3.7029	-.967	.220	.392	.437
Effort Expectancy	116	3.9483	-.214	.225	-.422	.446
Social Influence	121	3.3686	-.482	.220	-.102	.437
Facilitating Conditions	121	3.5734	-.510	.220	.596	.437
Self Efficacy	118	4.0593	-.281	.223	-.535	.442
Anxiety	121	2.4752	.257	.220	-.880	.437
Symbolic Adoption	117	4.1348	-.923	.224	.872	.444

Actual Usage	121	3.7246	-.874	.220	.058	.437
Valid N (listwise)	114					

Table 15 Normality Distribution

4.7.3 Multicollinearity Test

Multicollinearity occurs when two or more predictor variables in multiple regression analysis are highly correlated to each other which means that all the variables are measuring the same thing and the effect of one variable is indistinct from the other (Daoud, 2017). If this problem occurs, the result will be misleading as the sum of the effects is high but the contribution of each variable independently is very low. Variance Inflation Factor (VIF) is a tool to measure how much the variance has been inflated. According to Daoud (2017), VIF value of 1 is a sign of no correlation, less than 5 is moderately inflated and more than 5 is highly inflated. Accordingly, the VIF of each variable has been analyzed and it is concluded that there is not much multicollinearity detected for our independent variables. The following table summarizes the VIF for each independent variable.

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.936	.445		2.105	.038		
	Performance Expectancy	.397	.064	.485	6.231	.000	.715	1.398
	Effort Expectancy	.188	.092	.162	2.040	.044	.687	1.456
	Social Influence	.066	.076	.072	.880	.381	.640	1.562
	Facilitating Conditions	-.128	.097	-.104	-1.322	.189	.701	1.427
	Self Efficacy	.321	.095	.271	3.376	.001	.674	1.484
	Anxiety	-.051	.051	-.072	-1.004	.318	.845	1.183
a. Dependent Variable: Symbolic Adoption								

Table 16 Multicollinearity Test

4.7.4 Model Summary

The summary of the model which tries to answer the question what portion of the variance in dependent variable (Symbolic Adoption) is explained by six independent variables i.e. Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Anxiety and Self-efficacy is presented in the following table. The R is the strength of the relationship between dependent and independent variables while R square value indicates how much variance of dependent variables has been explained by given independent variables. In this case the .733 value of R indicates a strong relationship between the variables while the 0.537 value indicates that about 53.7% of the variance in Symbolic Adoption is due to the given six factors. The remaining 46.3% of variance is error term, which means that there are other factors that affect Symbolic Adoption of ERP users in MOHA plants.

Model Summary [b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.733[a]	.537	.511	.53791	1.937
a. Predictors: (Constant), Anxiety, Performance Expectancy, Facilitating Conditions, Effort Expectancy, Self Efficacy, Social Influence					
b. Dependent Variable: Symbolic Adoption					

Table 17 Model Summary for Symbolic Adoption

The second model depicts the effect of symbolic adoption on actual usage. It is shown that the R value is 0.548 which indicates the moderate positive relationship between Symbolic Adoption and Actual Usage. The R square value of 0.3 shows 30% of the variance in Actual Usage is due to Symbolic adoption while the remaining 70% is due to the indirect effect of other variables and other unidentified factors.

Model Summary [b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.548[a]	.300	.294	.88100	1.584
a. Predictors: (Constant), Symbolic Adoption					
b. Dependent Variable: Actual Usage					

Table 18 Model Summary for Actual Usage

In addition to independent variables, the effect of control variables has been checked whether the moderator variables listed in the model are actually affecting the overall model or not. From the three predicted moderator variables i.e. Gender, Age and Experience, it is found that Gender and Experience has significant effect on the overall model while age has no significant effect and therefore dropped from the model.

Gender control variable has a significant effect which accounts for 4.5% of variation in Symbolic Adoption which is statistically significant at 95% confidence interval.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.213[a]	.045	.037	.75805	.045	5.255	1	111	.024
2	.741[b]	.549	.519	.53553	.504	19.567	6	105	.000
a. Predictors: (Constant), Gender									
b. Predictors: (Constant), Gender, Anxiety, Facilitating Conditions, Performance Expectancy, Self Efficacy, Effort Expectancy, Social Influence									

Table 19 Model Summary with Gender Control Variable

Experience in ERP control variable has a significant effect which accounts for 4% of variation in Symbolic Adoption which is statistically significant at 95% confidence interval.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.200[a]	.040	.032	.76003	.040	4.649	1	111	.033

2	.734[b]	.539	.508	.54170	.499	18.918	6	105	.000
a. Predictors: (Constant), Experience in ERP									
b. Predictors: (Constant), Experience in ERP, Performance Expectancy, Anxiety, Facilitating Conditions, Effort Expectancy, Self Efficacy, Social Influence									

Table 20 Model Summary with Experience in ERP control variable

4.7.5 Analysis of Variance (ANOVA)

ANOVA is a statistical technique to analyze the variance in dependent (response) variables which is used to test equality of explained means with random error (Larson, 2008). It can help to test whether equal population means exist or not by using the significance level. ANOVA can help us to determine if our regression model is fit to our data. It is important to look at ANOVA table before proceeding to the regression process on independent variables. From the below table, from the total of 66.843 sum of squares, our model consists of 35.882 which is r square value presented in the previous section, while the error term accounts for the remaining 30.96. The model is statistically significant with p value 0.000. The F value of 20.668 shows us significant change from critical value from F distribution table which is confirmed by P value.

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35.882	6	5.980	20.668	.000[b]
	Residual	30.960	107	.289		
	Total	66.843	113			
a. Dependent Variable: Symbolic Adoption						
b. Predictors: (Constant), Anxiety, Performance Expectancy, Facilitating Conditions, Effort Expectancy, Self Efficacy, Social Influence						

Table 21 Analysis of Variance for Symbolic Adoption

For the second model which study the dependence of Actual Usage on Symbolic Adoption, out of 127.54 sum of squares 23.28 has been explained by the regressor and it is found to be statistically significant at a P value of 0.000.

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.284	1	38.284	49.325	.000[b]
	Residual	89.259	115	.776		
	Total	127.543	116			
a. Dependent Variable: Actual Usage						
b. Predictors: (Constant), Symbolic Adoption						

Table 22 Analysis of Variance for Actual Usage

4.7.6 Beta Coefficients

The beta coefficients of the regression output presents the contribution of each independent variable to dependent variables including their statistical significance. The interpretation of these beta coefficients depends on the nature and type of variables. In this case the coefficients represent the effect of unit change in independent variables and the direction of change. From the table below we can observe that Performance Expectancy, Effort Expectancy and Self Efficacy are statistically significant independent variables which contribute to the change in dependent variable, Symbolic Adoption. Both Performance Expectancy and Self Efficacy are significant at 99% confidence level with P value of 0.000 and 0.001 respectively. Effort Expectancy is significant at 95% confidence level with p value 0.044 The other three variables are not statistically significant which means their value is because of some random chances. The constant beta value of 0.936 which is significant is a value of acceptance when other variables are set to zero.

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.936	.445		2.105	.038
	Performance Expectancy	.397	.064	.485	6.231	.000
	Effort Expectancy	.188	.092	.162	2.040	.044
	Social Influence	.066	.076	.072	.880	.381
	Facilitating Conditions	.128	.097	.104	1.322	.189
	Self Efficacy	.321	.095	.271	3.376	.001
	Anxiety	-.051	.051	-.072	-1.004	.318

a. Dependent Variable: Symbolic Adoption

Table 23 Beta Coefficients of Variables

The interpretation of each variable is as follows. A unit change in Performance Expectancy will increase Symbolic Adoption of a user by 0.397. This change is statistically significant and not due to chance. Therefore, this coefficient represents the strong effect of user performance increase on acceptance of the system. The 0.188 coefficient for Effort Expectancy can be interpreted as a unit change in effort the system decreases will change the acceptance of the system by 0.188. Similarly for the cas of Self Efficacy, a unit change in Self Efficacy will change the level of acceptance by 0.321. The coefficients of other variables do not yield meaningful interpretation as they are not statistically significant at 95% confidence interval. The negative sign of Anxiety indicates that as the users are more worrying about using the system, they tend to accept the system less. Since the three independent variables, Social Influence, Facilitating Conditions and Anxiety are not significant effects of Symbolic Adoption, they are going to be dropped from the model specified. In general, the acceptance of ERP system by MOHA plants ERP system users are affected by the performance they gain from the system, the effort required to perform task using the system and their confidence to use the system while the external force by colleagues and friends (Social Influence) and existence of infrastructure and support (Facilitating Conditions) will not significantly affect their acceptance. The re-specified model for this research is as follows:

$$SAi = 0.936 + 0.397PEi + 0.188EEi + 0.321Sei + \varepsilon i,$$

The second coefficient needs to be checked is the dependency between Symbolic Adoption and Actual Usage to see the effect of mentally accepting the system has on actually using the system and its significance level. As we can see from the following table the effect of Symbolic Adoption on Actual usage is significant at 99% confidence interval with 0.749 beta coefficient which can be interpreted as a unit change in Symbolic Adoption will change Actual Usage by 0.749. The constant beta value of 0.696 indicates that, in the absence of Symbolic Adoption the Actual usage will increase by 0.696. This is of course expected as ERP usage is mandatory in MOHA plants regardless of their acceptance.

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.696	.448		1.551	.124
	Symbolic Adoption	.749	.107	.548	7.023	.000
a. Dependent Variable: Actual Usage						

Table 24 Beta Coefficients for Symbolic Adoption

Therefore, we can preserve the model proposed and it can be seen as follows:

AUi= 0.696 + 0.749SAi + εi,

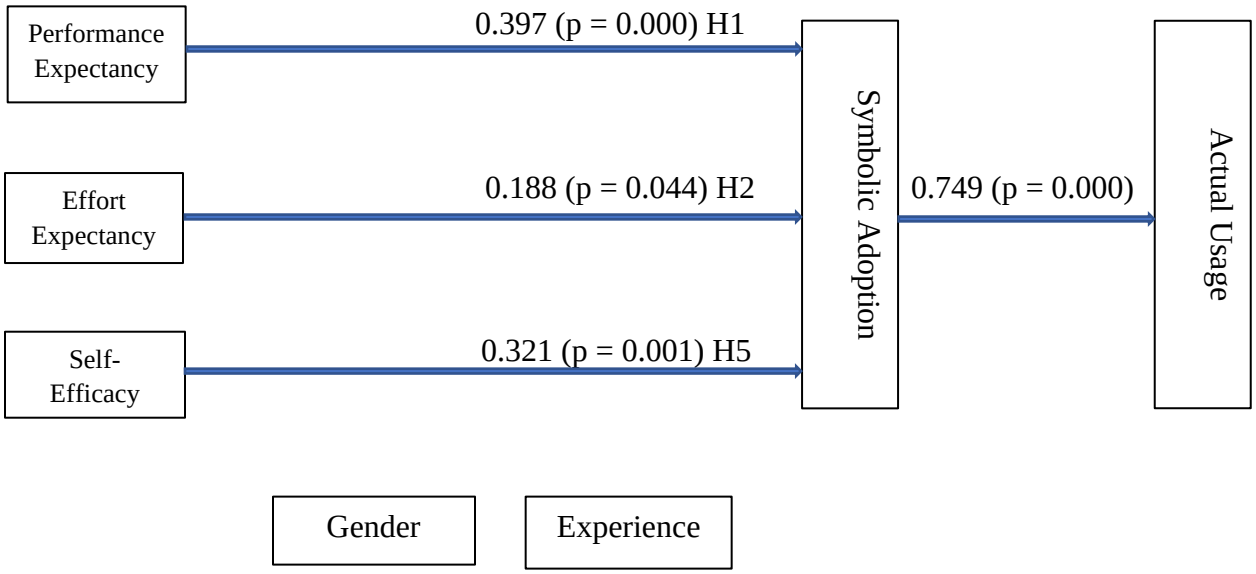

Figure 2 Generated Research Model

4.8 Discussion of Results and Hypothesis Testing

The discussion of findings of different analysis performed on collected data will be presented in this section. The findings in this study will be compared and contrasted with previous empirical studies which adopted the UTAUT model in their study to see the similarities and differences. In addition to the discussions, the hypothesis test results will be presented.

4.8.1 Performance Expectancy

The performance expectancy factor of user acceptance measures the degree to which a user agrees with the fact that the ERP system has improved their work performance. Those performances could be in different ways such as reduced time to complete action and getting information they couldn't get using the legacy system. As it has been seen from the beta coefficients section provided previously, the coefficients of performance expectancy, which is 0.397 with significant p value confirms that the performance of the ERP system actually affects the ERP acceptance in MOHA plants ERP system users. As a result of this finding, the first hypothesis which states "Performance Expectancy will have significant positive effect on Symbolic Adoption" has been accepted. Previously conducted studies such as (Seymour et al, 2007; Arekete et al, 2014; Fillion et al, 2012; Alam et al, 2018) also found significant effect of performance expectancy on acceptance. The implication in this finding can lead to the fact that if the system implementers and top-level managements of a company can find a system that can do much of the tasks in a relatively short period of time, the users are more likely to accept the system.

4.8.2 Effort Expectancy

Effort Expectancy is a dimension of UTAUT model that measures the user's level of agreement on whether the ease of the system will affect their acceptance of the system or not. Many previous studies, (Seymour et al,2007; Fillion et al, 2012 and Venkatesh et al, 2003) have found positive strong relationships between ease of the system and acceptance of the system. The result of regression analysis conducted in this study proved that the easier the system is to learn and to use, the more the users are going to accept the system. Compared to the performance expectancy dimension, effort expectancy is a less effective factor to determine acceptance with beta coefficients of 0.188. Therefore, the second hypothesis which states "Effort Expectancy will have significant positive effect on Symbolic Adoption" is accepted in this case. The result for this factor implies that the implementers should design a system in such a way as easy as possible by consulting the end users or even if the system is already designed in some other way much harder to learn and to use, it is possible to get feedback from users and try to ease that process.

4.8.3 Social Influence

In this study it is tested whether the pressure from supervisors, colleagues, friends, families or communities at large could impact the ERP user in MOHA plants and it is found that there is no statistically significant effect. The beta coefficient of social influence given in the beta coefficients section indicates that we cannot be sure that social influence is the main factor for acceptance of the system though it has a positive relationship with value of 0.066. Contrary to this finding, many of the previous studies i.e. (Alam et al, 2018, Seymour et al, 2007) found that social influence does affect the acceptance. For this study the third hypothesis which states "Social Influence will have significant positive effect on Symbolic Adoption" is rejected. This implies that MOHA management does not need to focus on this factor as it is an individual level factor.

4.8.4 Facilitating Conditions

The facilitating conditions factor is intended to study the effect of human and technological infrastructure on the acceptance level of the system. In this study, there is a positive relationship between the two factors but the effect is not statistically significant. From the perspectives of MOHA plants ERP users, the p value of 0.381 indicates that this factor is not significant even at 60% confidence interval. Other previous studies such as Alam et al (2018) has found a significant effect of facilitating conditions on system acceptance. In line with this research, other studies such as Lessa et al (2011) and Venkatesh et al (2003) did not find significant effect. Thus, the fourth hypothesis which states "Facilitating Condition will have significant positive effect on Symbolic Adoption" is rejected.

4.8.5 Self Efficacy

Self efficacy deals with how well an individual's belief he or she can accomplish or succeed in doing or performing something using the provided ERP system. As it has been identified as one of the major factors for the acceptance of the system, it has been tested for significance of the effect in this study. As per the result, it is found that self efficacy has a strong positive effect on the acceptance of the system. The beta coefficients for this factor is 0.321 which is statistically significant at 99% confidence level. This is the strongest effect discovered in this study next to performance expectancy. Similar to this study, other studies such as Fillion et al (2012) have confirmed that self efficacy has a strong and significant effect on users' acceptance. Therefore, our

fifth hypothesis which states “ERP Self-efficacy will have significant positive effect on Symbolic Adoption” is accepted. The implication for this result might be that managers have to find a way to build their employees confidence to do something by facilitating them some short-term trainings.

4.8.6 Anxiety

When we measure the emotional fear of ERP users in MOHA plants, it is discovered that the more they worry to use the system, the less they are going to accept the system, which means that there is a negative relationship between Anxiety and acceptance. It is expected that fear will decrease the acceptance of the system and what revealed in this research is also what was expected though the effect is not statistically significant with p value more than 0.3. For this case we can reject the sixth hypothesis which argues that “Anxiety will have a significant negative effect on Symbolic Adoption of ERP systems”.

4.8.7 Symbolic Adoption

The effect of symbolic adoption on actual usage has been checked and the result indicates the significant effect of mentally accepting the system on actually using the system. The beta coefficient of 0.749 with p value 0.000 shows that the effect of symbolic adoption on actual usage is statistically significant. Based on this, it is natural to expect the effect between the two variables. Thus, we can conclude that the last hypothesis has been accepted.

4.8.8 Summary of Hypothesis Testing

The following table presents the summary of hypothesis identified in chapter 2. From the six hypotheses, three of them were accepted and the remaining three were rejected.

Hypothesis	**Significance**	**Result**
H1: Performance Expectancy will have significant positive effect on Symbolic Adoption, moderated by Age and Gender.	0.000	Accept
H2: Effort Expectancy will have significant positive effect on Symbolic Adoption, moderated by Age, Gender and experience	0.044	Accept

H3: Social Influence will have significant positive effect on Symbolic Adoption, moderated by Age, Gender and Experience	0.381	Reject
H4: Facilitating Condition will have significant positive effect on Symbolic Adoption, moderated by Experience	0.189	Reject
H5: ERP Self-efficacy will have a significant positive effect on Symbolic Adoption.	0.001	Accept
H6: Anxiety will have a significant negative effect on Symbolic Adoption of ERP systems.	0.318	Reject
H7: Symbolic Adoption will have a positive significant effect on ERP system usage.	0.000	Accept

Table 25 Summary of Hypothesis Testing

5 Summary, Conclusion, Recommendation and Future Study

In this chapter, based on descriptive and regression analysis output, the researcher has provided a summary of survey findings, conclusion about each key point identified, recommendations for academicians and practitioners and finally set out a road map for future studies regarding user acceptance of ERP system in Ethiopian context.

5.1 Summary of the Findings

This research was aimed at identifying factors affecting ERP end user acceptance in MOHA Soft Drinks Industry S.C plants using UTAUT user technology acceptance model.

To achieve the general and specific objectives, first, the study area was identified and then the background information, administration and management, demographic and social activities were described. The study has used primary and secondary data as a source of information. A quantitative data analysis approach was used. A survey questionnaire was selected and pre-tested to establish the validity and reliability of an items. After questionnaire distribution and collection, the researcher was able to get pertinent and relevant information which helps to meet the objectives and answer research questions. Based on this, the researcher has provided a summary of results for each of the research objectives and questions.

The descriptive statistics of correlation analysis and inferential statistics of regression analysis has been performed on the variables. Accordingly, out of the six independent variables (Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Self Efficacy and Anxiety) which are assumed to be the predictive factor of Symbolic Adoption, three of them (PE, EE and Self Efficacy) are found to be statistically significant factor while the remaining three are not significant factor. In the second step, symbolic adoption is also found to be the significant factor of actual usage of the ERP system.

5.2 Conclusion

This research provided an understanding of what psychographic factors are actually affecting the ERP acceptance of end users in MOHA plants. Seven constructs were tested to see their effectiveness in determining acceptance. The main research question in this study is how

significant is the effect of user acceptance factors identified in UTAUT model is in MOHA Addis Ababa plants. The answer for this research question is presented as follows. Based on the collected, analyzed and summarized data, the following conclusion has been made for the findings of each research questions and specific objectives.

1. It is observed that Performance Expectancy has strong positive relationship with Symbolic Adoption. This shows that the performance users gain from the ERP system will positively affect attitude toward the system. Hence it is concluded that Performance Expectancy is a significant factor of ERP user acceptance in MOHA soft drinks industry S.C Addis Ababa plants.
2. Similar to Performance Expectancy, it is noticed that Effort Expectancy has also strong positive relationship with Symbolic adoption which takes us to the conclusion system ease of use is the significant factor of ERP user acceptance in MOHA Addis Ababa plants.
3. It is uncovered that Facilitating Conditions does not have acceptable level of relationship with Symbolic Adoption. Thus, the conclusion is that Facilitating Condition is not a significant factor of ERP user acceptance in MOHA Addis Ababa plants.
4. Social influence, the same way as Facilitating Conditions, did not show acceptable level of relationship with Symbolic Adoption. So, it is concluded that Social Influence is not a significant factor of ERP user acceptance in MOHA Addis Ababa plants.
5. It is pointed out that Employee Self Efficacy has statistically acceptable level of relationship with dependent variable Symbolic Adoption. Therefore, it can be inferred that Self Efficacy is the significant factor of ERP user acceptance in MOHA Addis Ababa plants.
6. Employees Anxiety showed negative relationship with system acceptance, but the level of relationship is not significant. As a result, it is concluded that Anxiety does not have significant effect on ERP user acceptance in MOHA Addis Ababa plants.
7. On the other hand, it is noticed that Symbolic Adoption has statistically significant positive relationship with Actual Usage. Therefore, we can conclude that system acceptance is an antecedent factor of system usage.

In summary, the general objective of this study was to test the theory of UTAUT model which explains the effect of user acceptance factors and found three significant and three insignificant factors. Thus, it is concluded that the objective of this research has been fulfilled.

5.3 Recommendation

Based on the findings and conclusions made, the following recommendations have been given for concerned bodies such as academicians, practitioners and MOHA ERP management team so that they could use as a baseline for future implementations and researches.

The study result revealed that performance gain of users due to the ERP system has significant positive impact on their acceptance. Thus, the researcher recommends MOHA management periodical and timely response for user's concerns about the system. Other practitioners also need to check whether the new system will increase productivity of the users or just bring more burdens to them before implementing. On the other hand, academicians need to increase the extensive study of this dimension to further confirm the significance of this factor.

Concerning the ease of use of the system, managements and implementers need to find a gap in where users are getting stuck or unclear on the usage of the system. By easing the process to complete a task, it is possible to make users comfortable and accept the system for long term benefit of the company. As this dimension of factor have significant effect on the acceptance of the ERP system, MOHA management need to make extensive user requirement before deploying the system in remaining plants and the same recommendation can be made for other companies planning to implement ERP system.

Another factor of user acceptance found to have significant effect on ERP user acceptance is user's self efficacy. This result gives managements and users the direction for better acceptance and utilization of the system. Managements need to build their employees confidence to accomplish tasks by using different social influence approaches. In addition to this, it is may be appropriate to assign an employee with better self efficacy on tasks needed to be done by the system.

From the perspectives of other three remaining insignificant factors i.e. Social influence, facilitating conditions and Anxiety, managements should not give priority. Though these factors are found to be insignificant, it is important not to undermine their effect since they have some value of relationship with acceptance. Academicians also need to confirm the effectiveness of these factors especially in Ethiopian context.

As a general recommendation, it is important to take in to account all the six factors are the contributing factors of acceptance as many previous researches already found significant effect.

5.4 Future Study

This study has managed to test the factors of UTAUT model on ERP end users in MOHA Addis Ababa plants, which is one of the few studies in Ethiopian context. The researcher believe that the study has contributed to the knowledge body of user acceptance of technology using popular UTAUT model regarding Ethiopian context. Even if this study has contributed some knowledge, it is not without limitation. The lack of enough research in the area establishes the need for further studies as a result of the remaining gaps this study fails short to fill. Thus, more study in the following areas may be a good direction for future research as they are well-thought-out sets of recommendations that would make concerned parties to take seriously.

It is very recommended to replicate the study by including other samples. A limitation of this study was using a sample of only plants of one parent organization which is under manufacturing sector. It is believed to be the characteristics and behaviors of manufacturing is different from other industries such as commercial, construction and financial industries. Therefore, the researcher recommends further researches that includes diverse groups and broader distribution of areas.

New researches that includes other factors of ERP system acceptance that are not included in this study is needed. Due to their weak correlation values, some factors were excluded from the model and as such, additional approaches of identifying more factors is recommended for future studies.

Future researches that intends to validate or invalidate the theory, sub-models and general model developed in this study is recommended. The descriptive conceptual model on identifying the factors affecting acceptance of ERP system applied in this research may need an improvement as the other different sectors and samples are not included in the current model and study.

Researches that promote ecological validity of this study is highly needed. Due to financial, time and place constraints, this study was confined to only MOHA plants which are located in Addis Ababa. Thus, the researcher recommends future researchers to include different sets of locations.

Finally, the researcher is aware of both internal and external variables that may have influence this study. Therefore, the effects of these variables alone are may be a path for further studies. Since this study laid a foundation on what factors are affecting user acceptance, future researchers can focus on confirming and broadening those already identified factors. It is also recommended for future study to use better measurement technique to capture more accurate response of the respondents. Future studies can also differentiate best technology acceptance model that can better describe the factors that would influence user's technology acceptance or even combine different models by taking each significant factor from different models.

6 References

Akbulut, A. Y., & Motwani, J. (2005). The road to ERP success: Understanding end-user perceptions. *Journal of International Technology and Information Management, 14(4), 2.*

Aladwani, A. M. (2001). Change management strategies for successful ERP implementation. *Business Process management journal.*

Alam, M. S., Uddin, K. M. K., & Uddin, M. A. (2018). End users' behavioral intention to use an enterprise resource planning (ERP) system: an empirical explanation of the UTAUT model.

Amid, A., Moalagh, M., & Ravasan, A. Z. (2012). Identification and classification of ERP critical failure factors in Iranian industries. *Information Systems, 37(3), 227-237.*

Amoako-Gyampah, K., & Salam, A. F. (2004). An extension of the technology acceptance model in an ERP implementation environment. *Information & management, 41(6), 731-745.*

Arekete, S., Ifinedo, P., & Akinnuwesi, B. A. (2014, October). Antecedent factors to end-users' symbolic acceptance of enterprise systems: An analysis in Nigerian organizations. *In 2014 IEEE 6th International Conference on Adaptive Science & Technology (ICAST) (pp. 1-8). IEEE.*

Bhatti, T. R. (2005, September). Critical success factors for the implementation of enterprise resource planning (ERP): empirical validation. *In the second international conference on innovation in information technology (Vol. 110, pp. 1-10).*

Bradley, J. (2009). The technology acceptance model and other user acceptance theories. *In Handbook of research on contemporary theoretical models in information systems (pp. 277-294). IGI Global.*

Bryman, A. (2016). Social research methods. *Oxford University Press*

Cresswell, J.W., & Cresswell, J.D. (2017). Research design: Qualitative, quantitative, and mixed method approaches. *Sage Publications, 2017*

Daoud, J. I. (2017, December). Multicollinearity and regression analysis. *In Journal of Physics: Conference Series (Vol. 949, No. 1, p. 012009). IOP Publishing.*

Davenport, T. H. (1998). Putting the enterprise into the enterprise system. *Harvard business review, 76(4).*

Dillon, A. and Morris, M. (1996) User acceptance of new information technology - theories and models. *In: M. Williams (ed.) Annual Review of Information Science and Technology, Vol. 31, Medford NJ: Information Today, 3-32.*

Esteves, J., & Pastor, J. (2000, November). Towards the unification of critical success factors for ERP implementations. *In 10th Annual BIT Conference, Manchester, UK (p. 44).*

Fillion, G., Braham, H., & Ekionea, J. P. B. (2012). Testing UTAUT on the use of ERP systems by middle managers and end-users of medium-to large-sized Canadian enterprises. *Academy of Information & Management Sciences Journal, 15(2).*

Govindaraju, R., & Indriany, N. (2007). A Study on ERP system acceptance based on technology acceptance model.

Haddara, M., & Moen, H. (2017). User resistance in ERP implementations: A literature review. *Procedia Computer Science, 121, 859-865.*

Jiang, J. J., Muhanna, W. A., & Klein, G. (2000). User resistance and strategies for promoting acceptance across system types. *Information & Management, 37(1), 25-36.*

Kwak, Y. H., Park, J., Chung, B. Y., & Ghosh, S. (2011). Understanding end-user's acceptance of enterprise resource planning (ERP) system in project-based sectors. *IEEE Transactions on Engineering Management, 59(2), 266-277.*

Larson, M. G. (2008). Analysis of variance. *Circulation, 117(1), 115-121*.

Lessa, L. Negash, S., & Amoroso, D L. (2011) "Acceptance of WoredaNet E-Government Services in Ethiopia: Applying the UTAUT Model" AMCIS *2011 Proceedings - All Submissions. Paper 112.*

Matende, S., & Ogao, P. (2013). Enterprise resource planning (ERP) system implementation: a case for user participation. *Procedia Technology, 9, 518-526.*

Nah, F. F. H., Tan, X., & Teh, S. H. (2004). An empirical investigation on end-user's acceptance of enterprise systems. *Information Resources Management Journal (IRMJ), 17(3), 32-53.*

Nwankpa, J. K. (2015). ERP system usage and benefit: A model of antecedents and outcomes. *Computers in Human Behavior, 45, 335-344.*

Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical assessment, research, and evaluation, 8(1), 2.*

Rahi, S. (2017) Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *Int J Econ Manag Sci 6: 403. doi: 10.4172/2162-6359.1000403D*

Rajan, C. A., & Baral, R. (2015). Adoption of ERP system: An empirical study of factors influencing the usage of ERP and its impact on end user. *IIMB Management Review, 27(2), 105-117.*

Seymour, L., Makanya, W., & Berrangé, S. (2007, April). End-users' acceptance of enterprise resource planning systems: An investigation of antecedents. *In Proceedings of the 6th annual ISOnEworld conference (pp. 1-22).*

Shang, S., & Su, T. (2004). Managing user resistance in enterprise systems implementation. *AMCIS 2004 Proceedings, 23.*

Sternad, S., & Bobek, S. (2013). Impacts of TAM-based external factors on ERP acceptance. *Procedia Technology, 9, 33-42.*

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science, 46(2), 186-204.*

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly, 425-478.*

Wagaw, M. (2017, December). Acceptance of homegrown enterprise resource planning (ERP) systems in Ethiopia. *In Applied Informatics (Vol. 4, No. 1, p. 6). Springer Berlin Heidelberg.*

Youngberg, E., Olsen, D., & Hauser, K. (2009). Determinants of professionally autonomous end user acceptance in an enterprise resource planning system environment. *International journal of information management, 29(2), 138-144.*

Appendix I: Questionnaire

Dear Respondents,

This questionnaire is used to investigate end user acceptance of ERP system in MOHA soft drinks industry Addis Ababa plants i.e. Teklehaimanot, Nefas Silk and Summit plants. It is being studied as a partial fulfilment for the Masters of Business Administration degree at Addis Ababa University under the title "ERP End User Acceptance in MOHA Soft Drinks Industry S.C". Please feel free to respond to provided questionnaires and I would like to thank you in advance for your precious time. Your response will be kept confidential and used for academic purpose only.

For any enquiry please contact the researcher: Gemechu Alemayehu Phone No: 0912 778324

Section 1 – Demographic profile

Please put "✓" for the correct selection

1. Gender

☐ Male ☐ Female

2. Age Group

☐ < 25 ☐ 26 - 35 ☐ 36 - 45 ☐ > 46

3. Experience in using ERP system (years)

☐ < 1 year ☐ 1 – 3 years ☐ 4 – 5 years ☐ > 5 years

4. Education

☐ High School or Less ☐ Diploma ☐ Bachelor Degree ☐ Postgraduate

5. Job Position

☐ Junior ☐ Intermediate ☐ Senior ☐ Supervisor

☐ Manager

5. Please provide your department

☐ Finance ☐ Sales ☐ Production ☐ Quality ☐ Technic ☐ Procurement ☐ Garage ☐ HR

Section 2. Question about ERP system

Please indicate the extent of your agreement or disagreement with provided question.

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

	Performance Expectancy	**1**	**2**	**3**	**4**	**5**
1	I would find the ERP system useful in my job.					
2	Using the ERP system enables me to accomplish tasks more quickly.					
3	Using the ERP system increases my productivity.					
4	If I use the ERP system, I will increase my chances of getting a raise.					
	Effort Expectancy	**1**	**2**	**3**	**4**	**5**
1	My interaction with the ERP system would be clear and understandable.					
2	It would be easy for me to become skillful at using the ERP system					
3	I would find the ERP system easy to use					
4	Learning to operate the ERP system is easy for me					
	Social Influence	**1**	**2**	**3**	**4**	**5**
1	People who influence my behavior think that I should use the ERP system					
2	People who are important to me think that I should use the ERP system					
3	The senior management of this company has been helpful in the use of ERP system					
4	In general, the organization has supported the use of the ERP system					
	Facilitating Conditions	**1**	**2**	**3**	**4**	**5**
1	I have the resources necessary to use the system					
2	I have the knowledge necessary to use the system					
3	The system is not compatible with other systems I use					
4	A specific person or group is available for assistance with system difficulties					
	Self-efficacy	**1**	**2**	**3**	**4**	**5**

	I could complete a job or task using the system…					
1	If there was no one around me to tell me what to do as I go					
2	If I could call someone for help if I got stuck					
3	If I had a lot of time to complete the job for which the system was provided					
4	If I had just the built-in help facility for assistance					
Anxiety		**1**	**2**	**3**	**4**	**5**
1	I feel worried about using the system					
2	It scares me to think that I could lose a lot of information using the system by hitting the wrong key					
3	I hesitate to use the system for fear of making mistakes I cannot correct					
4	The ERP system is somewhat threatening to me					
Symbolic Adoption		**1**	**2**	**3**	**4**	**5**
1	I am eager about using the ERP system					
2	I am excited about using the ERP system in my workplace					
3	It is my desire to see the full utilization and deployment of the ERP system					
Actual ERP usage		**1**	**2**	**3**	**4**	**5**
1	I use the ERP system installed in my organization very intensively to support my work					
2	I use the ERP system installed in my organization very frequently to support my work					
3	Overall, I use the ERP system well.					

Appendix II: Questionnaire – Translated

ውድ መላሾች፣

ይህ ቃለመጠይቅ የተዘጋጀው በአዲስ አበባ የሚገኙ በ ሞሓ ለስላሳ መጠጦች ኢንዱስትሪ አ.ማ ፋብሪካዎች ፤ በ ተከለሃይማኖት፣ ንፋስ ስልክ እና ሰሚት ፋብሪካ ውስጥ ስለ ERP ሲስተም በተጠቃሚዎች ዘንድ ያለውን ቅቡልነት የሚወስኑ ምክንያቶችን ለማጥናት ነው። ይህ ጥናት በአዲስ አበባ ዩኒቨርሲቲ ለ “Masters of Business Administration” የዲግሪ ማሟያ የሚደረግ ጥናት ነው። ለመጠይቁ የሚሰጡትን መልስ ነጻ ሆነው እንዲሰጡ እየጠየኩ ለግዜዎና ለትብብርዎ ከወዲሁ አመሰግናለሁ። ምላሽዎ በምስጥር የሚያዝና ለትምህርታዊ ተግባር ብቻ የሚውል ነው።

ላለዎት ለማንኛውም ጥያቄ አጥኚውን በዚህ አድራሻ ማግኘት ይችላሉ፦

ገመቹ አለማየሁ ስልክ ቁጥር: 0912 778324

ክፍል 1 – ስለ መላሾች አወቃቀር

እባክዎ ለመረጡት ምርጫ ላይ የ “✓” ምልክት ያድርጉ

1. ጾታ

☐ ወንድ ☐ ሴት

2. እድሜ

☐ ከ 25 በታች ☐ 26 - 35 ☐ 36 - 45 ☐ ከ 46 በላይ

3. ERP ሲስተምን በመጠቀም ያሎት ልምድ

☐ ከ 1 ዓመት በታች ☐ ከ 1 – 3 ዓመት ☐ ከ 4 – 5 ዓመት ☐ ከ 5 ዓመት በላይ

4. የትምህርት ደረጃ

☐ ሁለተኛ ደረጃና ከዛ በታች ☐ ዲፕሎማ ☐ ዲግሪ ☐ ድህረ ምረቃ

5. የስራ ደረጃ

☐ ጀማሪ ☐ መካከለኛ ☐ ሲኒየር ☐ ሱፐርቫይዘር ☐ ማናጀር

5. የሚሰሩበት መምሪያ ክፍል

☐ ሂሳብ ☐ ሽያጭ ☐ ምርት ☐ ጥራት ቁጥጥር ☐ ቴክኒክ ☐ ግዢ ☐ ጋራዥ ☐ ሰው ሃብት

ክፍል 2: ስለ ERP ሲስተም

እባክዎ ለቀረቡት ጥያቄዎች የመስማማትዎን ወይም ያለመስማማትዎን ደረጃ ይግለጹ

ለምሳሌ ለቀረበው ጥይቄ በጣም ካልተስማሙ ፣ ቁጥር ስር "✓" ምልክት ያድርጉ ፤ በጣም ከተስማሙ ደግሞ 5 ቁጥር ስር "✓" ምልክት ያድርጉ።

1 = በጣም አልስማማም 2 = አልስማማም 3 = ገለልተኛ 4 = እስማማለሁ 5 = በጣም እስማማለሁ

የሲስተሙ አፈጻጸም		**1**	**2**	**3**	**4**	**5**
1	ERPን በስራዬ ውስጥ ጠቃሚ ሆኖ አግኝቻለሁ።					
2	ERP ሲስተሙን መጠቀም ስራዬን ቶሎ እንዳከናውን ይረዳኛል።					
3	ERP ሲስተሙን መጠቀሜ ውጤታማነቴን ይጨምረዋል።					
4	ERP ሲስተሙን ከተጠቀምኩ ፤ የስራ እድገት የማግኘት እድሌ ይጨምራል።					
ጥረትትን በተመለከተ የምጠብቀው		**1**	**2**	**3**	**4**	**5**
1	ከሲስተሙ ጋር ያለኝ ግንኙነት ግልጽና የሚገባ ነው።					
2	ERP ሲስተሙን ለመጠቀም የሚያስፈልገኝን ክህሎት በቀላሉ ይኖረኛል።					
3	ERP ሲስተሙን መጠቀም ቀላል ሆኖ አገኘዋለሁ።					
4	ERP ሲስተሙን መልመድ ለኔ ቀላል ነው።					
ማህበራዊ ግፊት		**1**	**2**	**3**	**4**	**5**
1	ባህሪዬ ላይ ጫና ልያሳድሩ የሚችሉ ሰዎች ERP ሲስተሙን መጠቀም እንዳለብኝ ያስባሉ					
2	ለኔ አሳቢ የሆኑ ሰዎች ERP ሲስተሙን መጠቀም እንዳለብኝ ያስባሉ					
3	የመስሪያ ቤቱ የስራ ሀላፊዎች ሲስተሙን እንድጠቀም አጋዥ ነበሩ					
4	በአጠቃላይ ድርጅቱ ERP ሲስተም መጠቀምን ደግፎታል					
አስፈላጊ ግብዓቶች		**1**	**2**	**3**	**4**	**5**
1	ERP ሲስተሙን ለመጠቀም የሚያስፈልጉኝ ግብዓቶች አሉኝ					
2	ERP ሲስተሙን ለመጠቀም የሚያስችለኝ እውቀት አለኝ					
3	ERP ሲስተሙ ሌላ ከምጠቀመው ሲስተም ጋር አይጣጣምም					
4	ከ ERP ሲስተሙ ክብደት ጋር በተያየዘ እገዛ የሚሰጠኝ የተወሰነ ሰው ወይም ከፍል አለ					

በራስ የመተማመን ብቃት		**1**	**2**	**3**	**4**	**5**
1	ምን ማድረግ እንዳለብኝ የሚነግረኝ ሰው በዙርያዬ ባይኖርም ስራዬን ማከናወን እችላለሁ					
2	የሆነ ቦታ ብቸገር የምጠራው ሰው ካለ ስራዬን ማከናወን እችላለሁ					
3	ስራዬን ለመጨረስ በቂ ግዜ ካገኘሁ ስራዬን ማከናወን እችላለሁ					
4	ከሲስተሙ እራሱ እርዳታ ማግኘት ብችል ስራዬን ማከናወን እችላለሁ					
ጭንቀት		**1**	**2**	**3**	**4**	**5**
1	ERP ሲስተሙን መጠቀም ያሳስበኛል					
2	የተሳሳተ ቦታ ነክቼ መረጃ እንዳላበላሽ ያሳስበኛል					
3	የማላስተካክለውን ስህተት እንዳልፈጽም ስለምሰጋ ሲስተሙን ለመጠቀም አመነታለሁ					
4	ይህ ሲስተም በተወሰነ መልኩ ያስፈራኛል					
ውስጣዊ ቅቡልነት		**1**	**2**	**3**	**4**	**5**
1	ERP ሲስተሙን ለመጠቀም ጉጉት አለኝ					
2	በስራ ቦታዬ ሲስተሙን ለመጠቀም እነቃቃለሁ					
3	ሲስተሙ ሙሉ በሙሉ አገልግሎት ላይ እንዲውል ምኞቴ ነው					
አሁን ላይ ያለው አጠቃቀም		**1**	**2**	**3**	**4**	**5**
1	ስራዬን ለመደገፍ በድርጅቴ ውስጥ የተዘረጋውን የ ERP ሲስተም በከፍተኛ ሁኔታ እጠቀማለሁ					
2	ስራዬን ለመደገፍ በድርጅቴ ውስጥ የተዘረጋውን የ ERP ሲስተም ሁልግዜ እጠቀማለሁ					
3	በአጠቃላይ ፤ ERP ሲስተሙን በደንብ ነው የምጠቀመው					