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ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

DEPARTMENT OF BUSINESS ADMINISTRATION AND INFORMATION SYSTEM

ASSESSMENT OF FACTORS IMPACTING KNOWLEDGE TRANSFER SUCCESS IN ETHIO TELECOM: THE CASE OF INFORMATION SYSTEMS PROJECTS

BY

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Statement of declaration

I, Digis Weldu, declare that this research entitled “ASSESSMENT OF FACTORS IMPACTING KNOWLEDGE TRANSFER SUCCESS IN ETHIO TELECOM: THE CASE OF INFORMATION SYSTEMS PROJECTS” is the outcome of my own effort and study. All sources of materials used for the study have been duly acknowledged. This study has not been presented for a degree in any university or college.

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Contents

List of Figures

List of Tables

List of Abbreviations

CBS	Convergent Billing System
CIO	Chief Information Officer
CRM	Customers Relationship Management
Email	Electronic mail
ERP	Enterprise Resources Planning
ET	Ethio telecom
ETC	Ethiopian Telecommunications Corporation
F-2-F	Face to Face
IPCC	Internet Protocol Call Center
IS	Information Systems
ISD	Information Systems Division
IT	Information Technology
OSS	Operational Support Systems
PAT	Project Acceptance Test
R&D	Research and Development
SECI	Socialization, Externalization, Combination, and Internalization
ZTE	Zhongxing Telecom Enterprise

Abstract

Knowledge transfer success is not often given attention as much as project completion success in many countries such as in Ethiopia. The aim of the research is to assess factors impacting knowledge transfer success at Ethio telecom in the case of Information System Division (ISD) projects particularly focusing on the Telecom Expansion Project (TEP). In doing so, four main factors were identified based on their impacts on project knowledge transfer success in outsourced projects: client factor, vendor factor, knowledge factor and relationship factors. The research is descriptive in nature and the data was collected using closed-ended questionnaires. The results were presented and analyzed using SPSS 25.0 tool. The research results revealed that Ethio telecom has the capability, motivation and commitment to obtain and absorb knowledge from its contracted projects. Vendor related factors such as language fluency, vendor trustworthiness and credibility should be given emphasis in order to successfully transfer knowledge in IS projects. Level of project knowledge complexity, ambiguity, tacitness and explicitness were also found to be equally important factors that impact knowledge transfer success. Cultural background and language difference were very important findings that both the vendor and client organizations should emphasize too. However, Factors such as geographical distance and knowledge's tacit behavior did not affect knowledge transfer success in a project environment. Key findings also yielded that identified knowledge transfer success in IS projects were highly impacted by all the client, vendor, knowledge and client-vendor relationship factors. Though the research output showed that Ethio telecom is trying to obtain good knowledge from its projects, the recommendation is Ethio telecom or any other project organization should plan, design, implement, monitor and control knowledge transfer success on their projects in the same way that they plan, design, implement, monitor and control their project undertakings.

Key words: IS Projects, Ethio telecom, Knowledge transfer factors, and Project success.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In today's frequently changing business and technological needs of organizations, project undertakings are almost part and parcel of their day to day activities of organizations. The telecom sector have been under great pressure to seek out methods to manage, control and deliver information systems (IS) products and services more effectively and efficiently. Organizations are highly financing in innovative IS Projects (Tseng, Yen, Hung, & Wang, 2008) to improve their internal efficiency, to provide better services to nations and businesses (Tseng et al., 2008) and to improve transparency and trustworthiness (Armstrong, 2011).

In developing countries, IS projects have become even important elements for development (Asorwoe, 2014) by increasing efficiency, effectiveness, transparency and accountability (Smith, 2011). Most organizations in developing countries such as Ethiopia outsource their projects to external vendors and contractors (Mesfin, 2017). Because not many organizations have sufficient internal knowledge, capabilities and expertise to develop, implement and maintain such sophisticated systems (Ko, Krisch, & King, 2005) and common response from decision makers is outsourcing (Lee & Choi, 2011).

Additionally, IS projects need advanced time and cost management knowledge and skills because, the technological and information systems advancements are changing every minute of time. While the key driving force for IS Project outsourcing was cost saving (Khan, Currie, & Desai, 2003), in recent years high attention has been paid by clients building successful partnerships with vendors (Lam & Chua, 2009). In moving away from adversarial relations towards greater cooperation and strategic IS outsourcing relationships, client organizations have started relationship building to a common understanding through which the transfer of knowledge becomes possible (Rai & Tang, 2010). Such close relationships provide a fertile platform for knowledge transfer and learning, creating opportunities for client organizations to access new knowledge, skills and competencies of the vendors (Valorinta, 2011). For example, (Ko, Krisch, & King, 2005) state with regard to transferring knowledge from an Enterprise Resource Planning (ERP) vendor, "organizations typically have goals that go beyond the successful implementation

of a new system; they also have the less tangible goal of acquiring new implementation, operational, maintenance and training knowledge". In the same way, (Tiwana & Bush, 2007) preserve that the IS projects outsourcing decisions "should be motivated by the need to access and exploit specialized technical knowledge that is not readily available in the client firm". The success of knowledge transfer from vendors to clients is serious for attaining the desires of the client organizations Xu and Ma (2008).

In Ethiopia, the most cited reasons behind information technology (IT) projects outsourcing according to the survey done by (Meresea, 2007), are improving service level, acquiring innovative ideas, allowing more focus on core business, increase flexibility to meet changing business conditions, and lack of internal expertise, while cost savings was the least expressed reason for outsourcing information technology services. (Muluneh, 2009) Argues the reason as "lack of internal expertise". The study conducted by Daniel (2010) reported that the reason for IS outsourcing was that lack of critical in-house IT skills.

Ethio telecom is the only company that is providing telecommunications service in Ethiopia. The company has been in existence for more than a century by taking various forms. Through the years the name and the organization of the company have changed a couple of times. Ethio telecom was named as such after the former Ethiopian Telecommunications Corporations (ETC), which was the name of the telecommunication company starting from 1996, ceased to exist in November 2010.

Ethio telecom started outsourcing of its infrastructure and IT application development projects to vendors or contractors through vendor financing to improve the quality of services (Lishan, 2010), which also helps to introduce world class business processes including the implementation of new systems and to bring in latest telecommunication technologies into the company. In the meantime, the company had been working with different international companies from America, China, India, and France in the form of outsourcing of projects, benchmarking and consulting services (Engidayehu, 2014).

As one of the public sectors striving for success, currently Ethio telecom is under the deployment of latest telecom infrastructures, process-based tasks and development of human skills in order to give world class telecom services (Shewanawel, 2015). With the introduction of vendor project

financing and outsourcing, Ethio telecom not only built a huge telecom systems and services; but also strives to establish inter-organizational strategic alliances with these companies to maintain competitive advantage, successful strategy, effective management and efficient use of resources, transfer of new knowledge and skills and learn from their experiences (Lishan, 2010).

From the analysis of the researches conducted on Ethio telecom, Ethio telecom has been engaged in outsourcing and contracting projects from the day of its establishment and creating close links and building connections with outside organizations and business partners in order to gain economic, technological and strategic benefits (Yetnayet, 2016); (Shewanawel, 2015); (Engidayehu, 2014)). Transfer of knowledge is one of the main issues in these processes, which many other factors depend on.

Many organizations suffer knowledge transfer problems from project contracting and vendor financing during project implementation using outsourcing to external vendors and contractors. Ethio Telecom's most IS projects are implemented through outsourcing to an outside vendor or contractor. The factors impacting knowledge transfer process during outsourcing of IS projects are assessed in this work.

1.2 Background of the Organization

Knowledge management in a project environment faces many challenges. Projects differ substantially from one another and significant gaps in personnel, material, and information flows often occur. Frequently, personnel changes occur during the project, involving individuals with diverse backgrounds, cultures, and languages. Projects become temporarily limited and people involved are often dispersed when the project ends. It becomes difficult to develop steady routines that maximize knowledge flow and capture learning, both within a project and from one project to the next. Creating, transferring, and sharing knowledge is a central challenge (Karlsen & Gottschalk, 2004) to both organizations and project environments. Management of knowledge becomes even more challenging because of the diverse content of the concept. When considering the transfer of knowledge, the managers have to deal with facts (know-what), cause and effect relationships (know-why), skills (know-how) (Lee & Choi, 2011)

Ethio telecom is a sole telecom company in Ethiopia which is responsible for the telecommunications industry. As it is observed in many companies in developing countries, Ethio

telecom has no sufficient internal knowledge, capabilities and expertise to develop, implement and maintain projects which need advanced technologies and skills (Mesfin, 2017). As a result, it outsources most of its mega projects to external vendors and telecom contractors. One of them is a multi-billion Birr project which was outsourced to international vendors and contractors through an international bidding and selection processes. This project was well known as the Telecom Expansion Project (TEP) which was started in January 2014 and completed at the beginning of 2018.

It was a huge project which was contracted to three telecom vendors namely; Huawei Technologies Co. Ltd, ZTE Corporations and Ericson. All the three companies had brought their own engineers, consultants, designers and even sometimes daily workers who are hired locally or globally to implement the project in collaboration with the client company, Ethio telecom.

The reason IS projects are chosen for assessing the transfer of knowledge success in IS Projects is because IS has become an important element for development. Secondly, it involves huge projects such as Convergent Billing System (CBS), Customer Relations Management (CRM), and Internet Protocol Call Center (IPCC) and IS Security projects where a significant amount of knowledge is considered to be shared between the vendors and the client of the project during the TEP project implementation period.

1.3 Statement of the Problem

Despite the fact that IS outsourcing provides client organizations access to vital knowledge and superior competencies of the vendors, the activity of transferring knowledge successfully is far from straightforward. In spite of many of the firstly asserted knowledge transfer benefits, IS project outsourcing does not always attain the desired results and knowledge transfer across organizational boundaries is often challenging and time-taking (Mesfin, 2017). It is vital to study the obstacles to knowledge transfer, so as to make the process more effective and efficient and the outcomes more favorable.

The success of knowledge transfer doesn't only depend on the capability of the vendors to offer the required knowledge, but also on the capability of the client to absorb and utilize the transferred knowledge. Furthermore, differences in cultures, structures and goals between the client and the vendor may inhibit partnership and subsequently hamper knowledge transfer. In practice, without

a comprehensible understanding of the key factors that contribute to effective knowledge transfer, managers are left in the dark as to what they can do to foster knowledge transfer when undertaking IS projects by contracting with external vendors or contractors (Mesfin, 2017).

Previous empirical studies were conducted that were useful in identifying some of the factors which impact knowledge transfer. However, in order to develop an adequate and in-depth understanding of such a complex phenomenon involving multiple set of factors which facilitate or inhibit knowledge transfer success; it is important to conduct a further study and contribute to it.

Even though some research on knowledge transfer exists, the researcher believes they are not sufficient in assessing the factors affecting knowledge transfer success in Ethiopia and particularly to Ethio Telecom IS projects outsourcing. There is also a shortage of interpretive research that can fully capture the factors that can impact knowledge transfer in projects. It needs attention to the type of knowledge transferred, the source of knowledge and the recipient of knowledge transferred in IS Projects.

In IS division, managers and employees often raise the concern of knowledge transfer in outsourced projects to external vendors. This problem is clearly observed when projects are closed and the operational staff could not properly operate, fix and maintain the systems under their respective departments and work units. Consequently, most problems are solved by contracting organization or vendor at an additional cost of the operating organization or client organization i.e. Ethio telecom.

1.4 Objective of the Study

The aim of the research is to assess knowledge transfer success in ETIS projects

1.4.1 Specific Objective

The research addresses the following specific objective:

- To assess knowledge transfer practices employed to acquire knowledge in IS project.
- To identify the factors that impact knowledge transfer success in IS projects.
- To recommend which factors should be given emphasis during IS project implementations

1.5 Research Questions

The paper addresses the following questions.

1. What are the current practices of knowledge transfer success?

1. What are the factors that impact knowledge transfer success?

2. Among the factors, which ones have greater impacts on knowledge transfer success?

1.6 Significance of the study

This research helps Ethio telecom to make knowledge transfer more effective and successful in IS project implementations with due consideration to the fundamental factors which are identified by this survey. According to (Mesfin, 2017), acknowledging the comprehensive sets of elements that impact knowledge transfer success not only increases the understanding of the knowledge transfer process, but also ensure effective outsourcing management by allowing practitioners to pay attention on specific ranges that are vital to partnering.

This work contributes towards improving the way knowledge is transferred from vendors to Ethio telecom in outsourced IS projects by identifying the major factors that impact knowledge transfer success.

1.7 Scope of the Study

This work assesses the factors that affect knowledge transfer success from vendors (project contractors) side to Ethio telecom (client) side, but not from Ethio telecom (client) to vendors' direction. It takes only one way of knowledge flow from the external organization to Ethio telecom staffs. So, the study considers Ethio telecom's IS division as the knowledge recipient while the vendors (Huawei, ZTE and Ericson) are the knowledge sources and follows the definition by (Lee, Miranda, & Kim, 2004).

The scope of the research is also mainly delimited to Ethio telecom project called Telecom Expansion Project (TEP). This specific project was undertaken in the time duration between 2014 and 2018 G.C.

1.8 Limitation of the Study

This work explores the client's perspective which is unidirectional knowledge transfer process, and the results obtained from the case study might not be generalizable to vendors. The assessment process employs only client perspective research questions, but not both vendor and client perspectives to incorporate both client and vendor viewpoints. The result has limitations in providing a bidirectional understanding of knowledge transfer in a client-vendor environment.

TEP projects vendors (ZTE, Huawei and Ericsson) might have different capability and capacity in knowledge transfers, but for the purpose of this research, they are classified as one category i.e. vendors.

1.9 Organization of the Research Report

The whole paper consists of five chapters:

- Chapter one is an introductory part containing discussions on background of the study, research problems, objective of the study, significance of the research, limitation of the research and organization of the research report.
- Chapter two discussed literature relevant to the study which includes theory and empirical evidence related to the research topic.
- Chapter three discussed about the research design and methodology which was applied in the study.
- Chapter four presents results/findings of the study and interprets the findings.
- Chapter five is all about the summary of the findings, conclusions and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Review

Organizations are highly financing in innovative IS projects (Tseng, Yen, Hung, & Wang, 2008) to improve their internal operational efficiency and effectiveness. In developing countries, IS have become even an important element for development; improving communications, recording, storing and decision making (Asorwoe, 2014). (Smith, 2011) Also describes that IS projects are thought to bring increased efficiency, effectiveness, transparency, and accountability to organizations through an automation of existing manual operations.

Organizations are increasingly outsourcing IS projects to external specialized vendors or contractors that have acquired experience and knowledge bases (Al-Qirim & Bathula, 2003). Today, IS project outsourcing are among the top agendas of IS executives ((Atescia, Bhagwatwara, Deoa, Desouzaa, & Baloh, 2010) and is regarded as one of the "most discussed topics in both the academic and practitioner media" (Rustagi, King, & Kirsch, 2008).

The amount and value of IS project deals have raised, with client organization ready to outsource a wide range of IT and IS projects, increasing the scope and value of knowledge being transferred (Yang & Huang, 2000).

There are a wide variety of IS projects that are outsourced and they range from simple back office systems to fully integrated enterprise systems (Waheed & Molla, 2004).

2.1.1 Knowledge Definition

Knowledge is defined by (Slaughter & Kirsch, 2006)as "information possessed by an individual that, when aggregated with other personal dimensions such as experience and reflection, becomes a basis for action". (Kogut & Zander, 1996) On their part described knowledge in such a manner that it consists of skills and competencies, and defined it as "accumulated practical skill or expertise that permits one to do something smoothly and efficiently". In the perspective of project, therefore, knowledge can be realized as appropriate, information that is built on experience and often increases an individual's capacity to take effective action (Alavi & Leidner, 2001).

2.1.2 Knowledge Dimensions

In acquiring an understanding of the knowledge transfer, it is important to start with a brief discourse of the dimensions of knowledge. There are two primary dimensions of knowledge: explicit and tacit (Nonaka, 19991). Table 1 illustrates the differentiation between these two topologies.

Table 1: knowledge Dimensions

Tacit Knowledge	Explicit Knowledge
Inexpressible in a modifiable form	Codifiable
Subjective	Objective
Personal	Impersonal
Context-specific	Context-independent
Difficult to share	Easy to share

Explicit knowledge can be articulated, codifiable and communicable that exists in words or written format and stored in readily accessible media such as manuals, documentations, procedures and program codes (Kumar & Ganesh, 2009). Welch and Welch (2008) that explicit knowledge can be expressed in conventional language with grammatical statements, mathematical rules, specifications, and technical drawings. Similarly, (Inkpen A. C., 2000) advocates that explicit knowledge can be said in the schemata, diagrams, and charts, and thus it is comparatively easy to transfer and gain.

Tacit knowledge, on the other hand, exists in the intellects of people and comprises perceptions, intuitions, thoughts, emotional feelings, expertise and experience (Liyanage, Elhag, Ballal, & Li, 2009). (Irani, Sharif, & Love, 2005) Mention that tacit knowledge is "profoundly rooted in the behaviors and actions of people, who sustain a commitment to a specific setting such as a peculiar area of expertise or a series of work practices". This sort of knowledge is learned through long periods of familiarity and repetitive performance of projects. (King, 2009) Suggests that tacit knowledge "is laboriously developed over a long period of time through trial and error". Tacit knowledge often requires very close and extensive individual collaboration between the source and the recipient in order for it to be effectively transferred (Chen & McQueen, 2010). As stated

by (Foos, Schum, & Rothenberg, 2006), tacit knowledge is generated from accumulative personal experience acquired over time and is often learned through shared and cooperative experience. It is "highly context specific and has a personal quality" (Inkpen A. C., 2000). Tacit knowledge is also termed sticky knowledge because it may be relatively difficult to isolate it from its source (Szulanski, 2003) particularly in the event of inter-organizational knowledge transfer. As (Schulz, 2001) state it, tacit knowledge "travels, particularly poorly between organizations".

Consequently, tacit knowledge is difficult speak to or even in some situations difficult to express (Hackney, Desauza, & Loebbecke, 2005). Such knowledge may not be simply transferred, either orally or through a printed document, and yet it is very important and valuable. (McManus & Snyder, 2003) Argue that tacit knowledge is responsible for more than 70% of organizational knowledge. Moreover, Cooper and Schindler (2011) consider tacit knowledge to be more valued and important in realizing a competitive advantage.

2.1.3 Importance of Knowledge

The importance of knowledge has been discussed widely in the literature. In today's knowledge-based society, knowledge has become gradually accepted as the most valued and strategically important resources within an organization (Park, 2011). (Nonaka, 19991) Highlight that, "in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge". Similarly, (Hackney, Desauza, & Loebbecke, 2005) also state that "knowledge possessed by an entity, whether it is an individual, group, organization, or an inter-organizational network, is a source of power".

Nowadays, knowledge plays a dynamic role in organizational performance and business success (Kuo, 2011). Moreover, it has been considered as a dominant tool to take better decision-making and a vital source of innovation (He & Wei, 2009) maintains that knowledge is potentially predictive and may lead to diagnoses and better understanding of business concerns, processes and objectives. Increasingly, knowledge is also recognized for its significance as a critical resource for firms' competitive advantage (Wang & Neo, 2010).

Based on the above discussion, it is worth noting that knowledge has become the source of power for modern organizations and has been accepted as the key to competitive advantage. While

explicit knowledge can be articulated, expressed and transferred formally and easily, tacit knowledge needs direct communication between individuals, networking and face-to-face social interaction to be effectively transferred. The next section presents the definition of knowledge transfer and addresses how knowledge is transferred within and between organizations.

2.1.4 Knowledge Transfer

There is an increasing body of academic and empirical research addressing knowledge transfer and its significance for organizational success. The next sub-sections define knowledge transfer and discuss how knowledge is transferred within and across organizational boundaries.

2.1.5 Knowledge Transfer Definition

(Ko, Krisch, & King, 2005) Define knowledge transfer as "the communication of knowledge from a source that is learned and applied by a recipient". (Kumar & Ganesh, 2009) Also describe knowledge transfer as "a process of exchange of explicit or tacit knowledge between two agents, during which one agent receives and uses the knowledge provided by another". It is thought as an exchange method in which a source avail knowledge to be acquired by the recipient (Slaughter & Kirsch, 2006). Therefore, knowledge may be deliberately transferred or it may happen as the unplanned outcome of other activities, social exchanges and unintended meetings (Welch & Welch, 2008). There are numerous other terms used in the literature to describe the knowledge transfer such as 'knowledge flows' (Rothaermel & Thrsby, 2005), 'knowledge sharing' (Lilleoere & Hansen, 2011) and 'knowledge acquisition' e.g. (Tsang, 2002). For terminological clarifications, it has been decided to merge these definitions under the term knowledge transfer as it is more recognized in several literary works. Fig. 1 provides a graphic illustration of knowledge transfer.

Knowledge transfer can take place within an organization (i.e. intra-organizational knowledge transfer) or across organizational boundaries (i.e. inter-organizational knowledge transfer) (Ahmad & Daghfous , 2010). The next sections briefly discuss intra-organizational knowledge transfer and inter-organizational knowledge transfer.

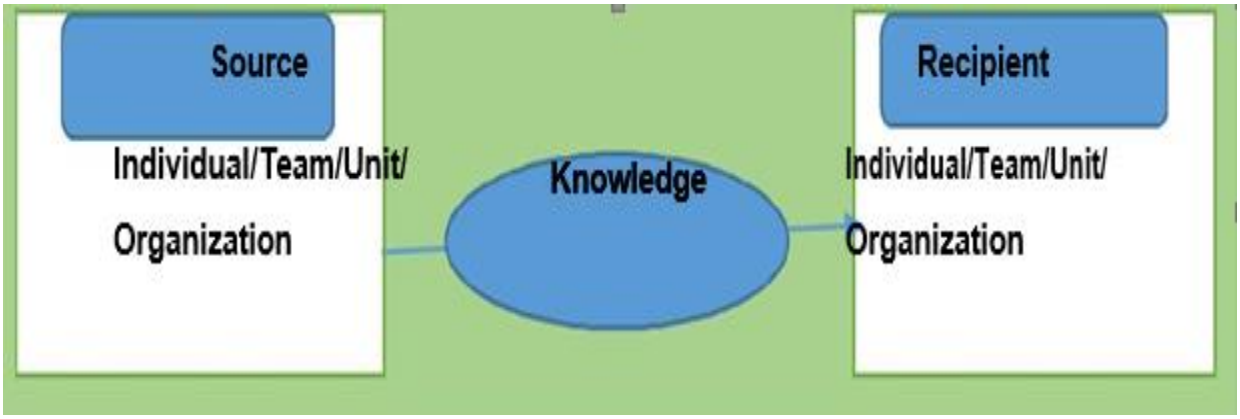

Figure 1: Graphic illustration of knowledge transfer (Kumar & Ganesh, 2009)

2.1.5.1 Intra-organizational Knowledge Transfer

Intra-organizational knowledge transfer is the sharing of important knowledge between units or individuals within the same organization (Ipe, 2003). It is the method by which knowledge held by a unit or an individual is accessible to others within the same organization (Kalling, 2003). Evidence is accumulating that knowledge transfer across organizational units within firms offers viable benefits. Organizations which are able to transfer knowledge successfully between one unit and another are more productive and more likely to persist than organizations which are less adept at knowledge transfer (Lee & Ahn, 2007). (Renzl, 2008) States that intra-organizational knowledge transfer is "of vital importance to organizations, enabling them to develop skills and competencies, increase value, and sustain their competitive advantage". Furthermore, intra-organizational knowledge transfer often leads to the distribution of vital knowledge and innovative concepts which are considered critical to creativity and subsequent innovation in organizations (Ipe, 2003). (Lilleoere & Hansen, 2011) Study knowledge transfer in a pharmaceutical R&D and propose that it improves the creation of new knowledge, possibly allowing new innovative products to be developed at better speed. Many organizations have already realized significant benefits of transferring knowledge across units, for example, Toyota (Dyer & Nobeoka, 2000), IKEA (Jasimuddin, 2007) and Tata (Oshri, Fenema, & Kotlarsky, 2008). (Cabrera & Cabrera, 2005) State the significance of intra-organizational knowledge and argue that the knowledge, understandings and best practice held by an individual or a unit must also be handed to others in the same unit or other units within the organization in order to be assumed and leveraged to the overall business units.

However, not all organizations own all the knowledge and competences required to accomplish each activity internally, and so they need to search knowledge, understandings and skills externally, and learn from the experience of other organizations (Chen C. , 2004). In today's business environment, organizations can no longer rely only on their own knowledge and competencies to advance their business. Since knowledge is continuously varying and growing, most organizations cannot own all needed knowledge within their boundaries. (Chen & McQueen, 2010) Also indicate that "since no single firm has the full range of knowledge and expertise needed for timely and cost-effective product and service innovation, firms are increasingly setting up various forms of collaborative arrangements in order to access knowledge and capabilities unavailable internally". Similarly, (Rai & Tang, 2010) propose that in today's business situation, it is unusual for an organization to be able to create and develop all knowledge internally and introduce effective competitive actions independently. Instead, an organization's competitive actions are embedded in the knowledge that is learned through an alliance of inter-organizational relations (Hackney, Desouza, & Leobecke, 2008). (Chen C. , 2004) supports that effective organizations are those "that not only are able to create knowledge within their boundaries, but also can expose themselves to a variety of new knowledge from outside in order to prevent rigidity and to encourage the reshaping of their competencies".

2.5.1.2 Inter-organizational Knowledge Transfer

Inter-organizational knowledge transfer has been broadly acknowledged in current works as dominant and critical to an organization's existence and competitiveness (He, Gallear, & Ghobadian, 2011). It has been debated that companies enjoy a competitive advantage if they identify how to effectively and efficiently transfer vital knowledge from their business allies. (Easterby-Smith, Lyles, & Tsang, 2008), for example, explain that "while such knowledge is normally developed within the firm, it is important that firms possess the ability to learn from others in order to meet the increasing pace of competition". Likewise, (Wijk, Jansen, & Lyles, 2008) state that "transferring knowledge from external parts has become vital to a company's success. Inter-organizational knowledge transfer takes place when precise knowledge is delivered on from one firm to the other (Buckley, Glaister, Klijn, & Tan, 2009). (Vaara, Sarala, Stahl, & Bjorkman, 2012) State inter-organizational knowledge transfer as the valuable practice of knowledge, capabilities, or skills initially exist in another organization. Inter-organizational

knowledge transfer is the method by which an organization recognizes and acquires precise knowledge which exists in another organization (Oshri, Fenema, & Kotlarsky, 2008). (Hamel, 1991) Defines inter-organizational knowledge transfer as a method that involves of two vital steps. First, knowledge needs to be revealed by the 'expert partner' or the organization that owns the knowledge. Secondly, the revealed knowledge needs to be attained and adapted by the 'novice partner', the organization that requires the knowledge.

Transferring knowledge across organizational boundaries can produce huge benefits, particularly for organizations that are unable or have difficulties developing in-house knowledge (Easterby-Smith, Lyles, & Tsang, 2008). Nowadays, inter-organizational knowledge transfer is seen, as critical to guaranteeing effectiveness and efficiency (He, Gallear, & Ghobadian, 2011). As (Squire, Cousins, & Brown, 2009) State, "firms that can successfully transfer and absorb knowledge across boundaries accumulate a range of performance benefits, including reduced failure rates and increased productivity". Correspondingly, (Perez-Nordtvedt, Kedia, Datta, & Rasheed, 2008) propose that inter-organizational knowledge transfer contributes to an increase in an organization's stock of knowledge and has been found to influence main organizational outcomes, including human resource development and performance. According to (Darr & Kurtzberg, 2000) new knowledge can encourage innovations in new approaches and practices, which can then be absorbed into the routines and culture of an organization.

A main driver of many inter-organizational knowledge transfer activities has been the need to acquire and attain valuable resources, including knowledge, capabilities and technologies possessed by the source firms (Ranft & Lord, 2002). Previous inter-organizational studies note that organizations acquire by cooperating with other organizations, transferring knowledge and by observing and introducing best practices. (Renzl, 2008) Suggests that inter-organizational knowledge transfer empowers organizations to develop new skills, increase value, and extend their knowledge base. A study by (Renzl, 2008) of the senior executives of forty international companies covering numerous industries out that 45% of their innovations came from external sources.

Extant literature has studied inter-organizational knowledge transfer in diverse activities, including strategic partners, joint ventures, supply chain, and research and development. Table 2.3 provides

a summary of certain studies which explore inter-organizational knowledge transfer within various affairs. These studies advocate that the act of introducing new external knowledge and combining it with existing knowledge offers recipient organizations with capabilities to improve their performance and decision making.

2.1.6 Knowledge Transfer in IS Projects

The rising importance of knowledge transfer in IS projects stems from the acknowledgement that organizations can no longer be exclusively qualified to internal features, but also depend on knowledge and capabilities learned from external vendors (Xu & Ma, 2008). IS project is a practical organizational structure and a productive environment that provides client organizations with a platform for transferring knowledge that is not existing or hard to develop in-house. (Leavy, 1996) Claims that the paramount benefit of outsourcing is "the opportunity to harness the complementary core competencies of an array of sophisticated suppliers". (Tafti, 2005) States that, "one of the key reasons organizations outsource their IT activities is to rap into the broad knowledge and technical experience that a vendor may provide". Knowledge transfer in IS projects empowers clients to use complementary technical know-how and expertise provided by vendors to resolve difficult technical problems, manage complex projects, apply new ways of doing things, improve IS staff expertise and performance and improve actions (Oshri, Fenema, & Kotlarsky, 2008).

There are two key kinds of knowledge which are transferred from sources to recipients in IS projects, "technical knowledge and business knowledge" (Goles, Hawk, & Kaiser, Information technology workforce skills: the software and it services provider perspective, 2008). Technical knowledge is described by (Tiwana & Bush, 2007) as "knowledge that is used to translate business needs into a software based solution". Technical knowledge is recognized as "being more specialized and closely tied to the IT artifact" (Rong & Grover, 2009). This includes knowledge, such as programming, operating, configuring and testing (Rong & Grover, 2009).Technical knowledge is elaborated cumulatively and enhanced over time through involvement in various IS projects (Harrington & Guimaraesb, 2005). Business knowledge is described by (Bassellier & Benbasat, 2004) as a set of knowledge that "enables IS professionals to understand the business domain, speak the language of business and interact with other business partners". This includes

knowledge, such as planning, project management, contract negotiation, risk assessment and business process re-engineering ” (Rong & Grover, 2009).

Part of the technical and business knowledge which is transferred from vendors to clients in IS outsourcing is explicit and well-documented (Narteh, 2008). This form of knowledge can be simply passed in or transferred in files to the client organizations. This kind of knowledge, usually includes routine work processes, standard rules of operations, well-defined product specifications and project plans. Some other part of knowledge is more tacit and must be described, placed in context, or elaborated on, often via two-way communication. Such knowledge is frequently transferred through on the job training programs, face to face meetings, or other collaborating and shared means.

2.1.7 Factors Affecting Knowledge Transfer Process

In the IS projects context, the client tries to transfer, obtain and apply the external knowledge from the vendor (Mesfin, 2017). Furthermore, knowledge transfer and acquisition allows client organizations to develop skills and competencies, increase value, and sustain their competitive advantage (Karlsen & Gottschalk, 2004). Literature recommended that, the success of knowledge transfer and acquisition in IS projects relies on the result of four sets of factors such as, knowledge factors, client factors, vendor factors and relationship factors. In this study, the vendor is the source of knowledge and the client is the recipient of knowledge. The conceptual framework in the knowledge transfer process is shown in the diagram shown in Fig. 2 below.

2.1.7.1 Knowledge Factors

The ease of knowledge transfer and acquisition is affected by the nature and the characteristics of the fundamental knowledge (Narteh, 2008). The knowledge management works identified several dimensions by which knowledge is described. The two most referred magnitudes are complexity and Tacitness (Gosain, 2007). Knowledge complexity is stated by (Simonin, 1999) as “the number of interdependent routines, individuals, technologies and resources linked to a particular knowledge”. Knowledge Tacitness is described by (Gosain, 2007) as “how easy or difficult it is to codify and articulate the information that needs to be transferred for specific knowledge”. (Renzl,

2008) States that knowledge that can be articulated and codified can be documented and then transferred more easily than non-codifiable knowledge.

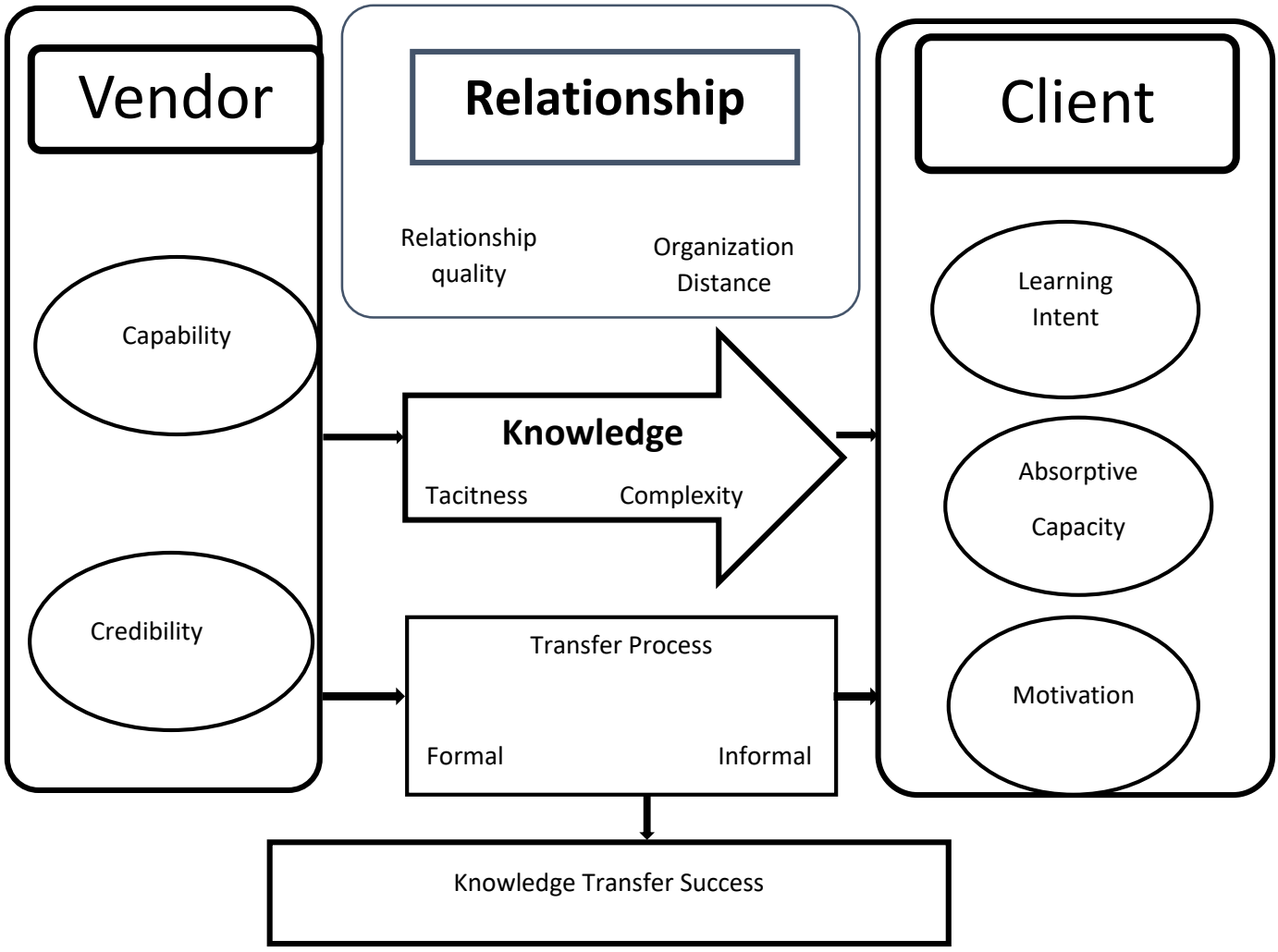

Figure 2: Knowledge Transfer Framework (Al-Salti (2011)

2.1.7.2 Client Factors

The transfer of knowledge depends not only on the characteristics of the knowledge transferred, but also on the learning capability, absorptive capacity and motivation of the recipient of knowledge. Learning capability is the extent to which the receipt has the potential to learn and acquire new knowledge and skills proposed by the source (Tsang, 2002). Learning capability is found to improve the quantity of knowledge transferred (Narteh, 2008). If the recipient has the good learning capability and is self-motivated to gain knowledge possessed by the source, it will

be well organized mentally to understand and adapt the knowledge (Easterby-Smith, Lyles, & Tsang, 2008). (Bandyopadhyay & Pathak, 2007) Discovered knowledge sharing in outsourcing projects and identified that knowledge sharing success depends on the learning capability of the recipient and the time and efforts given to gain the knowledge. Another factor that identified to impact knowledge transfer success is absorptive capacity. Absorptive capacity is defined as the ability of the recipient to distinguish the value of the new knowledge provided by the source, adapt it and apply it new and untested business situations (Schmidt, 2010). The study of (Ko, Krisch, & King, 2005) explained how knowledge transfer success is much related to that capacity of the clients (recipient) to absorb the transferred ERP knowledge from the consultants (source) and effectively apply it to commercial ends. (Zahra & George, 2002) On the other hand, found that lack of absorptive capability is one of the primary factors that hamper knowledge transfer success. The underlying premise is that a recipient's stock of prior related knowledge and experience is essential to effectively absorb and utilize external knowledge (Srivardhana & Pawlowski, 2007). An important factor that has been identified by the literature to impact knowledge transfer success is the motivation of the recipient to explore and acquire valuable knowledge (Ko, Krisch, & King, 2005). (Xu & Ma, 2008) Investigated the key determinants of ERP implementation knowledge transfer and found that the stronger the motivation to learn, the more likely it is that individuals will attempt to master and use new external knowledge. Motivations for transferring knowledge range from extrinsic incentives such as bonuses to intrinsic motivations such as praise and public recognition (Chua, 2008)

2.1.7.3 Vendor Factors

The third category is related to the source of the knowledge. The two factors that are identified in this set are called source capability and source credibility. Such capability is the extent to which the recipient views the source as skilled and expert and has a rich technical and business knowledge-base (Joshi, Sarker, & Sarker, 2007). Capable and committed source tends to devote time and resources to support the transfer of knowledge to the recipient (Gregory & Prifling, 2009). They examined the factors affecting IS outsourcing success and identified that vendor capability is vital as a skilled vendors tend to retain excessive reservoirs of knowledge, skills and expertise. A study by (Wang & Neo, 2010) on knowledge transfer in ERP implementation highlighted the importance of consultants' (i.e. source) capability "to offer related and needed knowledge, to

mobilize various skills, and to help the client configure and derive value from the ERP package". Source credibility is also identified to simplify knowledge transfer. (Joshi, Sarker, & Sarker, 2007) Defined source credibility as "the extent to which a recipient perceives a source to be trustworthy and reputable". Trust is the confidence that the source' expression is dependable and that it will satisfy its duty as specified in the agreement (Timbrell, Andrews, & Gable, 2008). (Lee & Ahn, 2007) Explored the effect of trust on IS outsourcing success and identified that mutual reliance simplifies knowledge transfer between vendors and clients. The Reputation has been viewed as vital for knowledge transfer success because it is often used in selecting and evaluating the significance of the source of knowledge (Joshi, Sarker, & Sarker, 2007). Initiating a knowledge transfer from a reliable and dependable source tend to be less challenging (Lander, Purvis, McCray, & Leigh, 2004). However, in the absence of trust, recipient perceives a source's knowledge to be less valuable and not much persuasive (Ko, Krisch, & King, 2005).

2.1.7.4 Relationship Factors

The nature of the relationship and the interaction between individuals of the client and the vendor organizations found to impact the effectiveness and the success of knowledge transfer in IS projects (Ko, Krisch, & King, 2005). (Ranft & Lord, 2002) Argued that many of the knowledge transfer difficulties stems from organizational issues and human resource conflicts between the source and the recipient of knowledge. The two key factors that have been identified are: organizational distance and social ties. Organizational distance measures the degree of organizational combination between the source and the recipient of knowledge (Cummings & Teng, 2003). The knowledge transfer literature identified three main types of organizational distance, namely physical distance, organizational culture distance and national culture distance.

Geographical distance refers to the trouble, time requirement and expense of communicating and coming together face to face (Cummings & Teng, 2003). (Nicholson & Sahay, 2004) Studied knowledge transfer in software offshore outsourcing project between a British firm and an Indian vendor and found that geographical departure negatively impacts knowledge transfer, resulting in misunderstanding. Organizational culture distance is the extent to which the source and the receipt of knowledge possess different work values, ideologies, norms and, problem-solving approaches (Ko, Krisch, & King, 2005). Difficulties in knowledge transfer tend to arise when there are

differences in organizational culture. (Krishna, Sahay, & Walsham, 2006) Explored the impact of organizational culture distance in IS offshore projects between a Japanese client and an Indian vendor. The study discovered that Japanese takes much longer time to reply to emails as related to Indians, and this had a negative effect on knowledge transfer between the two countries employees. National culture distance has been widely recognized as a major inhibitor for knowledge transfer between the source and the recipient in IS projects, particularly when it comes to offshore outsourcing (Imsland & Sahay, 2005). National culture distance is when the source and the recipient of knowledge, lack a shared language, ethics, views and cultural background understanding (Narteh, 2008). (Goles & Chin, 2005) Investigated the key relationship factors that impact IS project knowledge transfers and found that cultural background difference and language incompatibility can be a major stumbling block for outsourcing relationships in general and knowledge transfer in particular. Therefore, it can be concluded that insufficient background about one another, lack of a common language and cultural misunderstanding restricts the capacity of the client to transfer knowledge from the vendor in IS projects.

Social links have received a great deal of attention in inter-organizational collaboration literature (e.g. (Jasimuddin, 2007)), particularly in knowledge intensive works such as IS projects (e.g. ((Kotlarsky & Oshri, 2005). (Oshri, Fenema, & Kotlarsky, 2008) Conducted a qualitative case study to discover how globally dispersed information systems development work is impacted by socialization and face-to-face meetings. The study identified that face-to-face meetings allow IS professionals from the client and vendor organizations to develop interpersonal relationship and therefore share knowledge informally. Other knowledge transfer studies emphasized the importance of personal ties in facilitating the communication of no-codified knowledge. For example, (Blumenberg, Wagner, & Beimborn, 2009) suggested that frequent face-to-face interaction is crucial for transferring technical tacit knowledge in IS outsourcing projects. However, this demands a close partnership between the client and the vendor (Goles & Chin, 2005).

2.2 Empirical Literature: Knowledge Transfer Practices at Ethio telecom in the case of TEP Projects

The following project management related practices were found from Ethio telecom documents that were learned from its projects. Some of the points might not be directly related to knowledge transfer success and one can generalize from having a look at the general project management practices.

Early involvement of project staffs in upstream planning enables the timely accessing of essential information. But the project office was formally established later at the execution stage. For installation, debugging and Preliminary Acceptance Test (PAT) necessary trainings should have been given for the project core team members before execution so that they can assure the quality of acceptance of the network. In most cases the trainings were given during the project execution period which creates delay on the implementation of knowledge transfer process.

Basic project management trainings had been given for project staffs. It would have been better to consider some of the core team members. Project templates (dash board) and monitoring tools should have been agreed and used from the early stage of the execution. In our case, this was done during the project execution period.

2.2.1 Scope Management

Further decomposition of projects was also good, such as CBS (Convergent Billing System), CRM (Customer Relationships Management) and IPCC (Internet Protocol Call Center) etc. Although initially each project was treated separately, ZTE and Huawei were expected to integrate the projects.

2.2.2 Time management

On both Ethio telecom and the project vendors (ZTE, Huawei and Ericsson) sides, there was clear schedule, resources and technical integration with in their groups. Time management wise, the developed schedule by ZTE and Huawei were based on work package and activity with clear resource requirements. There were clear sequencing and critical path mapping by the project vendors (ZTE, Huawei and Ericsson). The high level negotiation (technical and financial) on the scope and deliverables of each projects was very time taking, stressful and time consuming.

2.2.3 Cost Management

Initially, the cost reference was made from the previous Ethio telecom projects; however the reference was felt that it was not up to date. There was considerable efforts to receive cost references from various operators and negotiations were performed to gain price reductions. The hardware part was a bit easier to find references. The software and license part was a bit difficult to find any reference for some vendor quotes although the general terms the price of most of the packages were to Ethio telecom's advantage. It is advisable to have a business intelligence unit for such activities in future.

2.2.4 Human Resources Management

Some who were assigned from Ethio telecom on the negotiation and project team were push over's by their functional team members. There were many staffs who did not want to take part in the negotiations in the Ethio telecom side. There was lack of knowledge and understanding of the technical and cost details on both Ethio telecom and vendors side during negotiation.

Ethio telecom folks that stayed in the projects got a learning experience that they will never forget in their lifetime and they became near experts at the end. Although the technical knowledge of some of ZTE staffs participating in the implementation of the projects was questionable, there were some good and knowledgeable ZTE, Huawei and Ericsson engineers. But ZTE had problems keeping good people around the projects. This would have an impact on knowledge transfer success due to frequent team rotations leading to frequent team rebuilding.

2.2.5 Project Execution/Implementation

A large number of new technical and non-technical graduates had been assigned during the implementation of the projects and they had learned a lot and work hard for the success of the projects.

There was a team forming and storming periods before performing. This period of forming and storming was also where people get to know each other and consumed a lot of time on project schedule with few delays.

Most of the trainees went with proper prerequisite and target of achievement, few were not. Some post training assignments were also misplaced in relation to what people were trained for. There was hardly any team building activity in order to create cohesion and collaboration. Future team building activity and motivational methods should be thought about. Some staff and team leaders' assignments were also questionable as to the criteria and qualification of the members.

2.2.6 Communication Management

The misunderstanding was exasperated partly due to language barriers between Ethio telecom and vendor staffs. Reports to stake holders were really good due to the formation of the steering committee, headed tirelessly by the board chairman and the CEO. This was due to the diligence of the chairman. Stakeholders were formed in a timely manner and problems were presented for quick resolutions.

Collocation where teams met and resolved issues were necessary and there was a heavy reliance on report rather than face-to-face meetings with team members. Some folks brought their laptops and start working remotely and email their reports using the company email.

2.2.7 Integration management

As the projects progressed, there were too many amendments that took too long, some caused scope creep beyond the framework. Similarly, there was formal change control board to approve or disapprove change requests. It was usually decided by the negotiating teams. The idea of putting all civil work under Ethio telecom instead of the vendors (Huawei, ZTE and Ericsson) was a clever idea of cost saving, but not of time saving; because managing the three constraints (time, cost and scope) was essential.

Project schedule plan was just a paper that most of the time the vendors but Ethio telecom teams did not much. So, it needed to be checked against plan on weekly basis whether or not there was any slippage of deliverables. These problems were caused mainly for not having a clearly defined time and resource management plan. Ethio telecom relied on the vendor's wisdom. The delay of civil works was a bottleneck on the critical path for the projects.

2.2.8 Risk Management

Vendors (Huawei, ZTE and Ericsson) and Ethio telecom had a correct risk management plan and when risks occurred there were risk response and mitigation plans with some response delays. The delay were caused by passive acceptance of risks or by delaying the whole project. The main risk were: Civil work were too vast and too wide dispersed but hard to be managed certainly instead of authorized regions, unmatched survey and actual work, not having proper test tools and poor documentation.

2.2.9 Project Monitoring: Scope and deliverable verification and control

The concept of PAT as a proper means of scope and deliverable verification method was very important to Ethio telecom and project vendors.

- PAT preparation took place too long due to lack of conceptual knowledge on Ethio telecom side.
- The PAT for most projects was really good.
- The actual tests were also conducted very well.
- They found the problems that can possibly be found in a test environment.
- Test tools were very hard to get even for vendors but Ethio telecom managed to get few and some simulation software was also used.
- Documentation for some projects was good but for some it was not that good.

2.2.10 Project Closing

The closure templates for all projects were prepared with due consideration ahead of time. The psychological readiness to close the project did not really go in favor of Ethio telecom as well as some vendors. There were so some pending issues without proper closure plan. The adversarial relationship between task force and project team had been a problem in looking at verified and validated deliverables.

The vast majority of companies do not use all the intellectual capital that could be made available to employees, this knowledge is usually concentrated in a small part of the organization. Without the formal sharing of knowledge the company can suffer bad consequences like loss of intellectual

capital when an employee leaves the organization and lack of documentation of important processes, in a research (with 2,800 people) published by PMI *Pulse of Profession*® in 2015, they found out that companies with a formal knowledge transfer process among their projects achieve project objectives in 80 % against 60 % of the companies that do not have a formal knowledge transfer process. In a recent article by Nelson J. Rosamilha, Regiani Salvatico (2016), there are 13 best practices which project managers should adopt as shown in the Table 2, below.

Table 2: knowledge transfer best practices Nelson J. Rosamilha, Regiani Salvatico (2016)

Autor	**Best Practice Identified**
Joshi	• The trust and reputation of the person who performs the transfer of knowledge to an individual or team is a precondition in the receptivity of the content • Frequent communication among those physically installed in the same location provides a more effective transfer of knowledge.
Liyanage	• Performance metrics to track the effectiveness of knowledge transfer • Ensure the correct identification and monitoring of the intrinsic and extrinsic influencing factors of the environment • Strong social interaction within the network of stakeholders in the process of knowledge transfer
Knudsen	• Adoption of supplementary knowledge transfer
Goffin & Koners	• Project reviews after project delivery by the team • Reviews should be done in an animated way, using metaphors and through stories.
Ajmal & Kosksnen	• Organizational culture must prepare, accept, and adopt knowledge transfer activities. • Facilitating and encouraging the creation, sharing and use of knowledge should be promoted by the organizational culture. • Project managers should blend organizational and professional culture into the project culture to foster and engage the culture of knowledge management
Rottman & Lacity	• Knowledge multipliers through prior training of project managers

Reading those best practices, it is very clear to the author of this research that the trust and reputation of the individual influence the listeners. So, project managers need to recruit, retain and

motivate insightful individuals. In this sense one can make a relationship with employees who have the knowledge and are willing to share it.

2.3 Conceptual and Logical Framework

2.3.1 Knowledge Transfer Process

This category characterizes the channels that are used to transfer knowledge from the vendors to the clients. The literature proposes a range of knowledge transfer processes that are used to transfer explicit and tacit knowledge from the source to the recipient. (Jasimuddin, 2007) Employs the term 'appropriateness' to describe the "extent to which a mechanism is useful and convenient to post out the transport of knowledge". Knowledge transfer scholars identify various related approaches to classify knowledge transfer process, but the most usual method is separating the processes into structured and unstructured.

There are many structured processes in transferring knowledge from the source to the recipient (Hong & Nguyen, 2009). (Easterby-Smith, Lyles, & Tsang, 2008) Suggest that knowledge is often transferred through documents, blueprints or electronic media that embody the knowledge transferred to the recipient organization. The authors argue that well-documented knowledge, such as repetitive work practice, standard guidelines of operations, precise product specifications and project plans can be transferred simply from one organization to another.

According to Slaughter and Kirsch (2006) knowledge is transferred structurally through organized training, observation of experts, tooling and formal meetings. However, (Strach & Everett, 2006) debate that working in the same field (i.e. learning-by-doing) yields more knowledge transfer and learning than typical classroom training. In their study of IS projects outsourcing, (Chua, 2008) highlight that seminar presentations offered by vendors to internal IS staff within the client organizations during the outsourcing projects are one of the common processes for one-to-many knowledge transfer. The study further points out that oral presentation often offers larger quantities of information and therefore are more suitable for raising awareness of a particular new topic or technology and giving a broad overview of key concepts.

Earlier inter-organizational studies have recognized the importance of utilizing unstructured processes for transferring knowledge, mainly with tacit aspect (Blumenberg, Wagner, &

Beimborn, 2009) indicates, “Tacit knowledge transfer generally requires extensive personal contact and extensive socialization”. With similar vein, (Hoegl, Parboteeah, & Munson, 2003) advocate that when individuals have unstructured and rich communication interfaces, the transferability of critical knowledge facilitated, and individuals consume less resources to acquire and utilize the required knowledge.

Social bonds have been increasingly viewed as important and effective channels for knowledge transfer (Easterby-Smith, Lyles, & Tsang, 2008), especially in knowledge intensive works such as IS outsourcing (Kotlarsky & Oshri, 2005). For example, (Blumenberg, Wagner, & Beimborn, 2009) indicate that frequent F-2-F interaction is essential for transferring technical tacit knowledge in IS outsourcing projects. In a like vein, it can be pointed out that repeated interactions between people with strong ties facilitate knowledge acquisition. The findings of (Carlile, 2004) show that effective knowledge transfer needs social linkages over which individuals improve a common language, understanding, and interests.

However, there has been some debate as to whether the two modes (structured and unstructured) are substitutes or complements, but there is a general consensus that both are instrumental in transferring knowledge (Slaughter & Kirsch, 2006). (Argote & Ingram, 2000) Note that transferring knowledge with a combination of task and tool elements can be effectual. Other researchers observe similar findings about the usage of multiple varieties of operations. (Galbraith, 1990), for instance, points out that effective knowledge transfers utilize a combination of structured and unstructured processes.

2.3.2 Knowledge Transfer Success

The definition of knowledge transfer success varies somewhat in the literature. At the most basic level, knowledge transfer success is defined as the quantity of knowledge transfers engaged during a certain time period (Hakanson & Nobel, 2000). Likewise, (Schulz, 2001) contends that knowledge transfer success depends on the “aggregate volume of know-how and information transferred per unit of time”. A second definition is from the project management literature that defines a successful knowledge transfer as the one that is on time, on budget and creates a satisfied recipient (Szulanski, 1996). A third approach to knowledge transfer success definition is offered by (Easterby-Smith, Lyles, & Tsang, 2008) who found out the knowledge transfer success of the

change in knowledge, level of innovativeness or performance of individuals in the recipient organizations. A fourth approach is conceptualized in terms of usefulness of the knowledge transferred, or the level to which the knowledge transferred is relevant and salient to organizational success. Some other approach was suggested by (Perez-Nordtvedt, Kedia, Datta, & Rasheed, 2008) who see knowledge transfer success in terms of both the effectiveness and efficiency of knowledge transfer.

This work adopts the definition of knowledge transfer success provided by (Perez-Nordtvedt, Kedia, Datta, & Rasheed, 2008). It advocates that the effectiveness of knowledge transfer is the degree of comprehensiveness and usefulness of knowledge that was transferred from the vendor by the client. That is, the point to which the transfer of new knowledge satisfied the client and was relevant, useful enough and has a positive outcome for the staff in the IS division. The efficiency of knowledge transfer is the degree to which the transfer of knowledge was done in a timely fashion and with the least amount of resources possible. That is, the rate by which the client acquires the new knowledge from the vendor with the minimal amount of resources.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The methodology part of the study contains, research design, data collection methods, sampling design, data analysis using a descriptive survey questionnaire and ethical issue considerations.

3.2 Research Design

The most commonly used research designs are exploratory, descriptive and explanatory which are classified based on the purpose of the research (Saunders et.al, 2009). Descriptive studies are aimed at finding out "what is,". It involves gathering data that describe events (Glass and Hopkins, 1984). The major purpose of descriptive research is description of the state of affairs as it exists at present (Kothari, 2004). Descriptive statistics is used to analyze the collected data in which the SPSS is also applied to find Measures of tendency of respondents that replied specific points in the questionnaires. This design is chosen because this study is aimed to assess and describe the practices impacting knowledge transfer success in the case of Ethio telecom IS projects.

3.3 Target population, Sampling design and Sample Size

3.3.1 Target Population

The purpose of this study is to describe the practice of knowledge transfer success in the case of IS projects more focusing on the Telecom Expansion Project (TEP). The target population of the study is Ethio telecom's IS Division employees that are stakeholders of the project. The target population consists of Chief Officer, project directors, project managers, project specialist, project professionals and Experts. The distribution of the individuals with respect to their organizational position and responsibility is shown in the table below; this data was obtained from the organization document that shows head count as of June 2016.

Table 3: IS Division Project Staff Head Count

Role	Head count
Chief Information Officer(CIO)	1
Project officers(Director)	6
Project Managers	30
Project Specialists/Professionals/Experts	387
Total Population	**424**

(Source: Ethio telecom)

3.3.2 Sampling Design

The main purpose of this study is to get reliable information to assess the practices within Ethio telecom in knowledge transfer of projects. Hence, a stratified random sampling is used to gather the primary information. The participants are grouped based on organizational positions and responsibilities as shown in Table 3, above. Then proportionate stratified sampling technique was deployed to get information from across each stratum. Since the thesis work focuses mainly on TEP Project's knowledge transfer success, the proportion of samples is based on IS Divisions' organizational structure and involvement in the project.

(Cooper & Schindler, 2011) Define sample as a part of a larger body called population, specially selected with the primary objective being to make inferences about the larger population or to represent the whole. Samples that are too large may waste time, resources and money, while samples that are too small may lead to inaccurate results. Hence, it should be optimum; an optimum sample is one which fulfills the requirements of efficiency, representativeness, reliability and flexibility (Mohammed, Denu, & Ensermu, 2014).

The researcher used (Yount, 2006) rule of thumb as a guide to determine Sample Size of the study which is shown in the table below.

Table 4: Yount's "Rule of Thumb" for Sample Size (Yount, 2006)

Rule of Thumb	Range of Population Size(N)	Sample Size as a Percentage of Population(S)
RT-1	The larger the population size, the smaller the percentage of the population required to get a representative sample	
RT-2	0-100	100%
RT-3	101 – 1000	10%
RT-4	1001 – 5000	5%
RT-5	5001 – 10000	3%
RT-6	Above 10000	1%

As depicted in the table of IS Division in the Head Count Population size below, the total number of individuals (N) is 424. Then sample size of the specified population is 44 according to (Yount, 2006) rule of thumb (44=0.1*424). The sample has increased from the 43 up to 44 because I used upper line approximation.

The distribution of the sample size across each stratum according to proportionate stratified sampling is shown in Table 5 in the next page.

3.3.4 Research Instrument

The information required to assess the practice within the project was a primary data. And the instrument applied to collect data was questionnaires adapted from (Prinsloo J.W., van Waveren C.C. & Chan K.-Y., 2017). The questionnaires containing 31 knowledge transfer practice assessment items that contains closed-ended questions was distributed to the sample.

There is one division chief (CIO) and it is included in the sample. There are six Officers/directors of project departments, and using Yount's Rule of thumb, (Yount, 2006), only one director is included in the sample. From the 30 project managers, using the same rule, 3 managers were included in the sample. Finally, the majority of the samples were taken from the staff

(expert/specialist). In total 387 people were participating in the IS Division and using the Yount's Rule of thumb for this population, the sample calculated was 39 staff. From the strata, individuals were selected based on their accessibility or convenience to the researcher.

Table 5: Stratified Sample Size Distribution (Source: own result, 2018)

Role	**Head Count (Ni)**	**Sample size, ni= (Ni/N)*sample size(44)**
Chief Information Officer (CIO)	1	1
Project Officers/Directors	6	1
Project Manager	30	3
Project Specialist/Experts	387	39
Universe Total(N)	**424**	**44**

3.4 Data Analysis

The data is collected with structured questionnaires. The data collected is measured by ordinal scale and analyzed quantitatively by using descriptive statistics in which the SPSS software version 25.0 is used to find percentages of frequencies, central tendencies (means) and measure of dispersions (standard deviations) for tabular illustrations.

3.5 Validity and Reliability

Validity refers to the extent to which a test measures what the researcher actually wishes to measure (Kothari, 2004) whereas reliability refers accuracy and precision of measurements. To obtain acceptable and accurate responses from each question in the questionnaires, the questionnaires were reviewed, commented, and rechecked using peer reviews. In addition to this, the respondents were given clues on the specific items of the questionnaires. On the value of the reliability test using Cronbach's Alpha, many sources say above 0.6 is acceptable; 0.80 or greater is preferred (Cortina, 1993). The reliability of the questionnaire was checked by the Cronbach's-Alpha test coefficient using SPSS version 25.0 software for each factor which is above the acceptable values and the overall value obtained was 0.903 as shown in Table 6, in the next page.

Table 6: Cronbach's-Alpha test coefficient values

	Client Factors	Vendor Factors	Knowledge Factors	Relationship Factor	overall
Number Questionnaire Items	9	8	7	6	31
Cronbach alpha value	0.87	0.775	0.875	0.666	0.903

Source: own survey, 2018.

3.6 Ethical Issues

The study was conducted by adhering to the research ethics. To ensure the ethics of the study, prior clarification about the purpose of the study was given to the respondents. Then the response has been used only for the purpose of the study without making any adjustment and it is kept confidential.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This part deals with the presentation, analysis and interpretation of sample data that is collected from the respondents. As mentioned above, the data was analyzed using quantitative descriptive statistics with the help of SPSS statistical computer software. Questionnaires and semi structured interviews were used to collect data from the officers, project managers and staff for assessing the practice of project knowledge transfer success in the case of Ethio telecom IS projects. The interview was used to triangulate the questionnaire responses.

4.2 Response Rate

The primary data that was collected through questionnaires which consists of 31 closed-ended and open-ended items and was distributed to 44 individuals who are chiefs, project directors, managers and staffs participating in the projects. In the closed-ended questions, the respondents were required to choose their choices from the provided alternatives: the practice questions used Likert scale with strongly Agree (SA) = 1, Agree (A) = 2, Uncertain (U) = 3, Disagree (D) = 4 and Strongly Disagree (SD) = 5. Among the sample size of 44, all the respondents returned the questionnaires with all questions answered i.e. 100% response rate were properly completed and returned. The collected data was analyzed, interpreted and presented as following. The measurement was reliable with the overall alpha of 0.903.

4.3 Respondents' General Information

For the general questions regarding gender, age, level of education, work position, work experience and years they have participated in the projects, the responses of the respondents and the implication are presented here under.

Table 7: Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	34	77.3	77.3	77.3
	Female	10	22.7	22.7	100.0
	Total	44	100.0	100.0	

Source: Own Survey, 2018

As presented in Table 7 above, gender participation is male 77.3% (34) and female 22.7% (10) and totally 44 respondents participated in the research. This shows that three-fourth of the respondents were male.

Table 8: Age of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-29	13	29.5	29.5	29.5
	30-39	24	54.5	54.5	84.1
	40-49	6	13.6	13.6	97.7
	above 50	1	2.3	2.3	100.0
	Total	44	100.0	100.0	

Source: Own Survey, 2018

Age of the respondents fell in between 20 and 59 years; among them 29.5% (13) of them were between 20-29 years; 54.5% (24) of them were between 30- 39 years of age; 13.6% (6) of them were between 40- 49 years of age and 2.3% (1) of the respondents was above 50 years of age.

Table 9: Educational background of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	2	4.5	4.5	4.5
	Degree	25	56.8	56.8	61.4
	Postgraduate	16	36.4	36.4	97.7
	other	1	2.3	2.3	100.0
	Total	44	100.0	100.0	

Source: Own Survey, 2018

Table 9 above, indicates educational level of respondents in which 4.5%(2) were Diploma holders, 56.8% (25) were degree holders, 36.4% (16) of the respondents were second degree holders, 2.3% (1) of the respondents were with higher (doctorate degree) holder. This shows that almost all of the respondents have a first degree or above.

Table 10: Company work experience of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 -5 year	16	36.4	36.4	36.4
	6 - 10 year	16	36.4	36.4	72.7
	11 -20 year	9	20.5	20.5	93.2
	Above 20 years	3	6.8	6.8	100.0
	Total	44	100.0	100.0	

Source: Own Survey, 2018

Table 10 above, depicts the experience of respondents in the organization in which 36.4% (16) of them have 2-5 years of experiences, 36.4(16) of them have 6-10 years, 20.5% (9) of them have 11-20 years and 6.8% (3) of them have above 20 years of experience in the organization. Regarding to the experience of the respondents, the result shows a good mix between junior and senior employees in the company.

Table 11: Telecom project Participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 year	8	18.2	18.2	18.2
	1-3 years	12	27.3	27.3	45.5
	Above 3 years	24	54.5	54.5	100.0
	Total	44	100.0	100.0	

Source: Own Survey, 2018

The above table shows respondents' years of experience in the project and it shows that 18.2 % (8) of them have below 1 year participation the projects, 27.3%(12) have 1-3 years and the rest 54.5% (24) of them have above three years of project experiences. The data shows that most of the respondents have more years of experience and have worked in the project until its completion. As reviewed in the project document of the organization, the project took more than three years to complete.

4.4 Responses on the Factors Impacting Project Knowledge Transfer

The explanations below show summarized responses of the 44 respondents for each question in which the respondents' number is depicted in percentages. Please see the table below:

4.4.1 Responses for Client Factor on Knowledge Transfer Success Related Questions

In the first category, questionnaire respondents were presented with some questions regarding the client factor's impact on knowledge transfer success in Ethio telecom projects. As shown in Table 12, below, their responses were based on the five point Likert-scale closed-ended questions. Each point in the Likert-scale is shown using a percentage and mean values of respondents. The central tendency (mean) and measures of dispersion (standard deviation) for each questions, are in shown as the Table 12, below.

In the Likert-Scale analysis, the nominal scale is designed as: 1=Strongly Agree (SA), 2=Agree (A), 3=Uncertain (U, 4=Disagree (D, 5=Strongly Disagree (SD).

Table 12: Responses for Client Related Questions

S.N	Client Factor	Frequency of Responses in percent (%)					Mean	SD
		SA	A	U	D	SD		
1	ET knowledge obtaining capability	6.8	54.5	18.2	18.2	2.3	2.55	.951
2	ET knowledge assessing capability	11.4	36.4	34.1	18.2	2.3	2.59	.923
3	The impact of project or the task priority	9.1	45.5	29.5	15.9	0	2.52	.876
4	Project performance	18.2	54.5	20.	6.8	0	2.16	.805
5	ET motivation to acquire knowledge	31.8	40.9	18.	9.1	0	2.05	.939
6	ET commitment to acquire knowledge	29.5	40.9	22.7	6.8	0	2.07	.900
7	The technology and tools used in projects.	31.8	38.6	20.5	9.1	0	2.07	.950
8	Frequency of knowledge	25.0	47.7	18.2	9.1	0	2.11	.895
9	ET Project organizational restructuring	6.8	59.1	18.2	15.9	0	2.43	.846
						Grand Mean	**2.28**	

Source: own survey, 2018

Regarding the impacts of Ethio telecom (client organization) in knowledge transfer success in IS projects, the responses of the respondents for each question has a grand mean value of 2.28. As it is shown in Table 12, the individual values are also very close to the grand mean value. As described in the Likert-Scale labelling, considering the decimal to a whole number approximation rule 2.28 is closer to the Likert-Scale 2 (2=Agree).This grand mean value shows that the respondents agreed that Ethio telecom has an impact on knowledge transfer success in IS projects.

The results also revealed that Ethio telecom has good capability to obtain and assess knowledge from its project vendors in IS projects. The priority given to projects and project performance in respect of time, cost and quality has also an impact on knowledge transfer success in projects. The findings of the results for motivation and commitment of Ethio telecom to acquire knowledge revealed that majority of the respondents agreed that Ethio telecom's motivation and commitment to its projects has an impact on project knowledge transfer success. Ethio telecom has also the motivation and commitment to acquire knowledge from its project vendors during project implementations.

According to the respondent's responses to whether technology and tools are frequently used, knowledge absorption capability and team structuring has an impact on knowledge transfer success in projects, the results showed that all these factors have a great impact on knowledge transfer success in projects.

4.4.2 Responses for Vendor Factor on Knowledge Transfer Success Related Questions

When respondents were quizzed regarding the vendor factor's impact on knowledge transfer success in Ethio telecom projects, their responses are shown in Table 13 below. The answer for each question is also briefed as following.

Table 13: Responses for Vendor Related Questions

S.N.	Vendor Factor	Frequency of Responses in percent (%)					Mean	SD
		SA	A	U	D	SD		
1	Vendors' language capability.	0	15.9	38.6	36.4	9.1	2.30	.970
2	Vendors' knowledge transfer clarity	6.8	31.8	27.3	34.1	0	2.89	.868
3	Vendor's priority of the project or task	4.5	54.5	27.3	13.6	0	3.39	.792
4	Trust b/n Ethio telecom & vendors	27.3	45.5	9.1	18.2	0	2.50	1.040
5	Vendor credibility	25.0	45.5	22.7	6.8	0	2.18	.868
6	The vendor project commitment.	27.3	47.7	3.6	9.1	2.3	2.11	.993
7	Project size	13.6	54.5	18.2	11.4	2.3	2.11	.939
8	Vendors' ability to transfer knowledge	20.5	47.7	15.9	13.6	2.3	2.34	1.025
						Grand Mean	**2.47**	

Source: own survey, 2018

Coming to the impacts of vendor factors in knowledge transfer success in projects, the responses of the respondents for each question has a grand mean value of 2.47. The individual values are also very close to the grand mean value i.e. the respondents have agreed that all the points raised regarding to the vendor factor are generally applicable for Ethio telecom's IS projects. As it can also be seen in Table 13, only the vendor's knowledge transfer clarity (mean value of 2.89=uncertain) and the priority given to the project or task by the vendors (mean value of 3.39=uncertain) have an individual value different from the grand mean value. In the same manner

, the grand mean value of 2.48(agree) shows that the points raised with regard to the vendor factor should be considered to implement a successful knowledge transfer practices in Ethio telecom.

For vendor related factors such as vendors' communication language ability, most of the respondents revealed that vendors do not have language fluency and sometimes the respondents could not understand the language the vendor teams are using in the project implementation time. The analysis of the results to whether trust between Ethio telecom and vendors, and the extent to which the client perceives the vendors to be trustworthy has an impact on knowledge transfer success; The majority of the respondents noticed both points have great impacts on knowledge transfer success. With regard to the project teams involved from the vendor companies and the amount of knowledge to be transferred at a time has an impact on knowledge transfer success, the majority of the respondents responded that project teams involved and the amount of knowledge to be transferred at a time has an impact on knowledge transfer success.

4.4.3 Responses for Knowledge Factor on Knowledge Transfer Success Related Questions

Coming to the third factor selected to impact knowledge transfer success in Ethio telecom projects i.e. knowledge factor. The results for each five-point Likert-Scale is shown on Table 14 below. The discussions on results of the respondents are provided just as following.

Table 14: Responses for Knowledge Related Questions

S.N.	Knowledge Factor	Frequency of Responses in percent (%)					Mean	SD
		SA	A	U	D	SD		
1	Knowledge Tacitness	6.8	27.3	31.8	29.5	4.5	2.98	1.046
2	Knowledge complexity	15.9	50.0	20.5	13.6	0	2.27	.827
3	Knowledge difficulty	13.6	59.1	13.6	13.6	0	2.32	.761
4	Knowledge's explicitness.	25.0	45.5	15.9	9.1	4.5	2.23	1.156
5	Knowledge's codifiability	22.7	50.0	18.2	9.1	0	2.14	.772
6	Knowledge Ambiguity	22.7	47.7	15.9	11.4	2.3	2.23	1.017
7	Knowledge encodability	13.6	22.7	38.6	22.7	2.3	2.77	1.046
						Grand Mean	**2.01**	

Source: own survey, 2018

The overall mean value for the knowledge factor in assessing the impacts of knowledge transfer success is 2.01 which is labelled to mean agreed. Individual responses of the respondents are shown in the form of frequency percentage and mean value as shown in Table 14 above. The values are concentrated around the agreed (2 Likert-scale labelling). From this, one can conclude that the points raised to study the knowledge factor are important towards improving the knowledge transfer successes in Ethio telecom's IS projects.

However, respondents were not sure that project knowledge can easily move from tacit (unspoken) to explicit (spoken) knowledge in projects. Almost equal number of respondents agreed or were uncertain or disagreed to this question. From this, it was a bit difficult to draw a conclusion. However, in regard to whether the level of knowledge complexity has an impact on knowledge transfer success, a whopping number of the respondents agreed that the level of knowledge complexity has an impact on knowledge transfer success. Here is the findings of whether the difficulty of knowledge to speak to (knowledge's explicitness), knowledge's ability to be easily codified (organized), knowledge's ambiguity (Vagueness) and knowledge's encodability and decodability has an impact on knowledge transfer success. The results showed that three-fourth of the respondents agreed that both knowledge's explicitness and codifiability easiness has an impact on knowledge transfer success. The majority of the respondents agreed that knowledge's ambiguity has an impact on knowledge transfer success. Nevertheless, from the respondents' data, it was difficult to conclude that knowledge's encoding capability can be considered as a factor in knowledge transfer success in projects.

4.4.4 Responses for Client-Vendor Relationship Factor on Knowledge Transfer Success Related Questions

The fourth factor in assessing the factors impacting knowledge transfer success in projects was the relationship between Ethio telecom and project vendors. The related questions for this factor were distributed to the same respondents and responses are shown in the following Table 15 below.

Table 15: Responses for Client & Vendor Relationship Related Questions

S.N.	Relationship Factor	Frequency of Responses in (%)					Mean	SD
		SA	A	U	D	SD		
1	Alliance B/n the vendors and Ethio telecom.	15.9	43.2	22.7	18.2	0	2.98	.974
2	Cultural background differences	13.6	61.4	9.1	15.9	0	2.32	.899
3	Language differences	29.5	59.1	4.5	4.5	2.3	2.27	.858
4	Geographical distance	6.8	36.4	31.8	22.7	2.3	2.23	.961
5	Ability to avoid conflicts via emotional control	6.8	65.9	18.2	6.8	2.3	2.14	.800
6	Common understanding b/n vendors and ET	25.0	45.5	45.5	11.4	0	2.23	.939
						Grand Mean	**2.36**	

Source: own survey, 2018

Here, the impacts of Ethio telecom (client) and project vendors' relationship and alliance is also important as it can be observed form the Table 15 above in effective transfer of knowledge from the vendors to the client of the project (in this case, Ethio telecom). The responses of the respondents for each question has a grand mean value of 2.28 which is also interpreted as agreed as shown in Table 15 above. The individual values are well around the grand mean value. Actually, the client and vendor (contractor) relationship in a project environment is very important to the success of the overall project whether it is small or big. In the process, there is always, knowledge transfer mostly conducted through individual and/or team interactions. There is no doubt that interactions need good relationships and friendships among team members from both the client and vendor organizations.

In a similar manner, the points raised were whether there is a formal relationship and alliance between Ethio telecom and its project vendors, and if the language and cultural background difference between the vendors and Ethio telecom has an impact on knowledge transfer success. A large number of the respondents approved that there was a formal relationship and alliance between the vendors and Ethio telecom. They also agreed that language and cultural background differences have impact on knowledge transfer success.

The majority of the respondents did not agree that geographical distances between the vendor and client organizations has impact on knowledge transfer success in projects. This might be due to the communication technologies such as the Internet are enabling teams from a remote area to share their knowledge on the projects they are involved. This result shows that almost all of the respondents agreed that project members' ability to control one's emotions and avoiding conflicts among themselves has an impact on knowledge transfer success in projects. The overall result for the common understanding among team members shows that the majority of the respondents agreed that it has an impact on knowledge transfer success.

4.4.5 Assessing the Factors based on their Degree of Influence on knowledge Transfer

After filling each questions regarding to the knowledge transfer success in projects, respondents were asked to rank the four factors according their degree of impacts on project knowledge transfer success in IS projects from highest(one) to lowest (fourth) ranks.

Based on the responses obtained in Table 16, from a total of 44 respondents who were asked to rate the factors from the highest (1) to the least (4), the relationship between project client and vendors is the highest ranked factor in impacting knowledge transfer success in IS projects. 13 out of 44 respondents chose the relationship factor as the highest ranked factor with a means of 2.95.

Table 16: Responses for the impacts of each factor from highest to lowest ranking

	N	Minimum	Maximum	Sum	Mean	SD
Relationship Factor	44	1	4	130	2.95	.914
Knowledge Factor	44	1	4	119	2.70	1.268
Client Factor	44	1	4	104	2.36	1.123
Vendor Factor	44	1	4	87	1.98	.927
Valid N (list-wise)	44					

Source: own survey, 2018

The second ranked factor was knowledge factor with 12 respondents choosing it as the next highest factor impacting knowledge transfer success in project outsourcing with a mean value of 2.70. The third factor considered by the respondents was the client factor with 10 out of 44 respondents giving their choices and it has got 2.36 mean values. The least ranked factor rated by the respondents in impacting knowledge transfer success is the vendor factor with only 9 people rating it with a mean value of 1.98.

From this, the researcher thinks that Ethio telecom should prioritize each factor in its project practices that the relationships among its project staffs and vendor's project teams should be given the highest consideration in order to successfully acquire project knowledge and earn a good lessons learned from its projects.

Secondly, Ethio telecom should give a good focus to the type of knowledge being transferred during project implementations and a higher emphasis on the knowledge's own characteristics to successfully gain knowledge and build its own project undertaking capability. The third and fourth factors i.e. Ethio telecom's knowledge acquiring capability and motivation as well as the vendors knowledge transfer capability, creditability and trustworthiness should also be considered in conducting successful knowledge transfer during IS project outsourcing.

Finally, the research results showed that all selected factors to influence project knowledge transfer success were found to be important. Because grand mean of the responses of the respondents showed that they all agreed with the factors presented to them. Ethio telecom and other similar firms should give their maximum emphasis to client, vendor, knowledge and project relationship factors if they want to gain enough knowledge from their outsourced projects and develop competitive advantages from their in-house knowledge bases.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the findings

This study attempts to assess the factors impacting knowledge transfer success in IS projects, mainly focusing on the practices of Telecom Expansion Project (TEP) in Ethio telecom. According to the responses of the respondents on the client factors impacting knowledge transfer success practices, the analysis revealed that Ethio telecom has good capability to obtain and absorb knowledge from its project vendors in IS projects. The findings of the result revealed majority of the respondents agreed that Ethio telecom's motivation and commitment to its projects has an impact on project knowledge transfer success.

Ethio telecom has also the motivation and commitment to acquire knowledge from its project vendors during project implementations. The results of this study support (Argote, McEvily, & Reagans, 2003) who found that it is critically important to provide individuals with incentives and motives to participate more actively in the knowledge transfer process. This is because members of IS staff, same as all individuals expect acknowledgement and encouragement of their accomplishments including for their successful knowledge transfer during projects. In addition to this, the result showed that technologies such as teleconferencing and tools such video recording have great impact on knowledge transfer success in projects.

The findings of the responses for vendor related factors such as vendors' communication language ability and knowledge transfer clarity, the respondents revealed that most of the vendors' project teams have common language fluency problems and this results sometimes Ethio telecom project members could not sometimes hear the vendor teams communications. The majority of the respondents noticed that trust between Ethio telecom and the vendors' teams has an impact on knowledge transfer success.

The transfer of knowledge is highly impacted by the vendors' greater willingness to be trustworthy, language clarity and the vendors' commitment in supporting the knowledge transfer process**.** The findings, here, are consistent with scholars, (Barthelemy, 2003); (Lee & Choi, 2011) who argue that vendor trustworthiness plays a pivotal role in the success of knowledge transfer in projects.

These findings also support many of the inter-organizational knowledge transfer studies which have indicated that the credibility of the source of knowledge is vital in increasing the amount of knowledge acquired by the recipient.

Taking to knowledge's own characteristics as a factor, results revealed that respondents were not sure whether project knowledge can easily move from tacit (unspoken) to explicit (spoken) knowledge in projects easily. However, in regard to whether the level of knowledge complexity and difficulty to speak it has an impact on knowledge transfer success, results showed that these are very important characteristics of knowledge in impacting the transfer of knowledge from the source of knowledge to the receiver of knowledge in IS projects. Knowledge's codifiability, encodability and decodability characteristics need great care when taking knowledge as an influencing factor in knowledge transfer success in Ethio telecom's IS projects.

This finding is consistent with the findings of previous researchers such as (Szulanski, 2003) who argues that tacit knowledge is having 'sticky' characteristics, which makes it difficult to be transferred from the source to the recipient. Additionally, the findings confirm the argument of (Inkpen & Pien, 2006) who explain that explicit knowledge can be transferred relatively easily through formal learning and written documents such as manuals and operating instructions. However, tacit knowledge is often context specific and its transfer is much slower, costly, and uncertain**.**

The fourth and last factor selected to impact project knowledge transfer success was the relationship between Ethio telecom and the project vendors. Respondents approved that there were formal relationship and alliance between the vendors and Ethio telecom. Results revealed that there were obvious language and cultural background differences among the project teams of the vendors and Ethio telecom. The results showed that that geographical distances between the vendor and client organizations have no feasible impact on knowledge transfer success in projects. This might be due to the communication technologies such as the Internet are enabling teams from a remote area to share their knowledge on the projects.

However, the ability to control one's emotions and avoid conflicts among project team members has an impact on knowledge transfer success in projects. This is managed by developing a good team building process and by building a common understanding among team members of the

project. This finding is consistent with the empirical results offered by (Poppo & Zenger, 2002) and (Barthelemy, 2003) which show that using formal relationships and alliances as complements (and not as a substitute) when managing IS outsourcing ventures. Thus, it could be argued that in order to achieve success in knowledge transfer, relationship management is an undisputed and very important factor.

Respondents were asked to rank among the four main factors according their degree of impacts on knowledge transfer success in Ethio telecom's IS projects. The summary of the respondents' frequency responses showed that from a total of 44 respondents who participated on rating the factors from the highest (1^{st}) to the least (4^{th}). The relationship between project client and project vendors was the highest ranked factor with 13 out of 44 respondents choosing it as the first to impact knowledge transfer success in outsourced projects. The second and closest higher factor chosen by the respondents was knowledge factor with 12 out of 44 respondents electing it as the next most important factor impacting knowledge transfer success in project. The third factor ranked by the respondents was the client factor with 10 out of 44 respondents giving their choices. The least or four ranked factor rated by the respondents in impacting knowledge transfer success is the vendor factor with only 9 out of the 44 people rating it to be an important factor in impacting knowledge transfer success in projects.

Finally, the researcher summarized that all the four factors are equally important in impacting the knowledge transfer success of projects in Information Systems Division (ISD) of Ethio telecom.

5.2 Conclusions

The purpose of the study as it was mentioned earlier, is to assess factors impacting knowledge transfer success in Ethio telecom IS projects. Based on the findings revealed from chapter four's analysis part, the following conclusions are drawn about the practices deployed by Ethio telecom's IS Projects.

Key findings yielded that knowledge transfer success in IS projects is impacted by four all sets of factors, namely:

1 Client factors (learning capability, absorbing capability, motivation, commitment etc.),
2 Vendor factors (vendor capability, vendor credibility, vendor openness etc.),
3 Knowledge factors (knowledge Tacitness, explicitness, encodability, complexity etc.),
4 Relationship factors (alliance, language, cultural difference, geographical difference etc.).

It became clear that with a few exceptions, most of the identified factors have significant impacts on knowledge transfer.

Ethio telecom has the capability to obtain and absorb project knowledge from its project vendors in IS projects. During project outsourcing, Ethio telecom and project contractors should give an equal importance to project knowledge transfer success same as the importance given to the project performance. This is because project knowledge might be more important than the project itself in building the client company's competitive advantage to implement its own projects or to even become project implementer (vendor) to other companies.

In doing this, Ethio telecom should focus mainly on the points that were found to impact the knowledge transfer success in projects from the client side. Motivation and commitment to acquire lessons learned and build a knowledge base planning, designing, monitoring and controlling knowledge transfer process properly in all project phases. In doing this, technology and tools can used to manage the rate at which knowledge is frequently.

One important factor that was discovered is that vendors did not have language fluency. This might be taken as a stumbling block in successful knowledge transfer in projects. Trust between Ethio telecom and vendors' teams, and the extent to which the client perceives the vendors to be trustworthy has an impact on knowledge transfer success. This could be developed by establishing

a long term contract agreement with the trustworthy vendors. Continuous follow up and supervisions are also necessary assess the size of project staff involved in knowledge transfer process and the amount of knowledge being transferred during projects outsourcing.

Level of project knowledge complexity, knowledge's ability to be easily codified, knowledge's ambiguity (Vagueness) characteristics, and knowledge's encodability and decodability behavior are important factors that need to be considered in assessing knowledge transfer success in projects. Usually, Ethio telecom and the vendor organizations are located in different geographical regions and there is cultural background difference.

5.3 Recommendations

5.3.1 Recommendation to Ethio Telecom

The recommendation helps to assess the existing practices of project knowledge transfer success in Ethio telecom IS projects and improve and enhance the practices knowledge transfer successes in projects by identifying the key factors.

The research revealed that Ethio telecom has the capability to obtain and assess knowledge from its project vendors in IS projects. The analysis also showed that the priority given to the project and project performance in respect of time, cost and quality has also an impact on knowledge transfer success in the projects. Ethio telecom's motivation and commitment to acquire knowledge and the emphasis given to its projects have also impacts on project knowledge transfer success.

Thus, the recommendation are these practices should be maintained and further improved in order to make Ethio telecom capable of obtaining all necessary knowledge bases from its projects. All necessary technologies and tools have to be employed for systematic knowledge transfer, and an appropriate knowledge based training and follow ups should also be deployed to update and increase project team's skills.

Taking the impacts of vendors (project contractors) in project knowledge transfer success into account, language skills, vendor credibility, trust between the vendor and the client organizations are the main points that can be considered. The researcher's recommendations are, during project vendor selection process, the client organization should incorporate a formal contract agreement by explicitly mentioning the above points as a measurement of project knowledge transfer metrics and make an in-depth assessment during and/or after project implementations.

Knowledge's tacit, explicit and complex behavior and knowledge's difficulty to speak it, and knowledge's easiness to encode it are some of the points that Ethio telecom should give emphasis during project outsourcing to assess knowledge transfer success. Creating formal relationship and alliance to fill the gap on language and cultural background difference among project vendors and Ethio telecom team members are important points that need emphasis too. The researcher's recommendation here is, establishing long term alliances with strategic vendors.

Geographical distance should not be taken as an important factor because communication technologies such as the Internet are enabling teams from a remote area to share their knowledge on projects environments. Project client team members can easily contact the vendor teams to solve their problems and gain knowledge during or post-implementation stages of the project without the need of face-to-face meeting or discussions.

5.3.2 Recommendation for Future Works

Although this research provides new insights and draws valuable lessons with regard to knowledge transfer in IS projects, there are some limitations which are worth noting as they open up paths for future research.

Firstly, this study investigated Ethio telecom's IS Division, which is the project client's perspective and only one side of the knowledge transfer process was considered. A bilateral perspective of the research (i.e. from both client and vendor sides) permits a balanced understanding and complete examination and comparison between the perceptions of the two sides of the project in assessing factors impacting knowledge transfer success. This represents a worthy route of inquiry for future researchers.

Secondly, this study is specific to the telecom sector, future researches conducted in other different environments would verify the findings of this study and may yield additional insights. Conducting future study in different environments would enable researchers to obtain an overall picture of the phenomenon or perform a comparison between telecom and other organizations.

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APPENDIX 1: COVER LETTER

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE MASTERS OF ART IN PROJECT MANAGEMENT

Name: Digis Weldu
Tel: +251911516421
Email: digismit@gamil.com
Addis Ababa, Ethiopia

Dear Participants,

My name is Digis Weldu, I am a graduate student at Addis Ababa University School of Commerce and currently I am conducting a research for the completion of my masters in project management. This research work is a study to assessing of factors affecting knowledge transfers success in IS projects in the case of Ethio telecom.

I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential, please do not include your name anywhere in the questionnaire. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable, please take few minutes of your time to complete the questionnaire.

In case of any question, please contact me via mentioned above.
Thank you in advance for your committed cooperation!

Digis Weldu
(The student researcher)

APPENDIX 2: QUESTIONNAIRE

General Instruction and information:

- Section I includes demographic of general information.
- Section II includes closed-ended questions
- General Opinion open-ended questions

Direction:

This survey asks for your perception and experience about factors affecting the level of knowledge transfer in your TEP Project participation and company experience.

Because it asks for your judgment, there is no right or wrong answers. Please respond based on your own judgment, regardless of what others expect or what is socially acceptable.

- Please attempt to answer all questions.

Section I: General Information

1. Gender: male ☐ female ☐
2. Age (in year) :20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ Above 60 ☐
3. Level of education: Diploma ☐ Degree ☐ Postgraduate ☐
   Others, please specify: _____
4. Working level during the time of TEP project: Officer/Director ☐ Manager ☐
   Expert/Specialist ☐ Other ☐
5. Years of work experience: Below 2-5 ☐ 6-10 ☐ 11- 20 ☐ Above 20 ☐
6. For how many years have you worked on the project:
   Below 1 ☐ 1-3 ☐ above ☐

Section II: closed-ended questions

Please mark(X) for the five-point Likert scale question that best describes how you perceive knowledge transfer is applied in Ethio telecom projects, where:**, Strongly Agree (SA) = 1, Agree (A) = 2., Uncertain (U) = 3, Disagree (D) = 4, Strongly Disagree (SD) = 5.**

Section II: Closed-ended Questions

Please choose the answer by marking (x) on the appropriate checkbox.

A. Client Factor

SN	Client Factor	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
10	Ethio telecom has good capability to obtain knowledge from its projects.					
11	Ethio telecom has the ability to assess knowledge being transferred.					
12	The priority given to the project or the task has an impact on knowledge transfer success.					
13	Project performance in respect of time, cost and quality has an impact on knowledge transfer success.					
14	Motivation to acquire knowledge among team members has an impact on knowledge transfer success.					
15	Ethio telecom's commitment to its projects has an impact on knowledge transfer success.					
16	The technology and tools used within projects to promote and support knowledge transfer from the vendors to the receiver has an impact on knowledge transfer success.					
17	The rate at which knowledge is being used operational staff has an impact on knowledge transfer success					
18	Project organizational restructuring has an impact on knowledge transfer success.					

B. Vendor Factor

SN	Vendor Factor	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
9	Vendors communicate knowledge in a language that Ethio telecom staffs can understand.					
10	Vendors are able to transfer knowledge clearly.					
11	The priority of the project task has an impact on knowledge transfer success.					
12	Trust between Ethio telecom and the vendors' team members has an impact on knowledge transfer success.					

13	The extent to which Ethio telecom perceives the vendors to be trustworthy has an impact on knowledge transfer success.					
14	The vendor organization's commitment to projects has an impact on knowledge transfer success.					
15	Number of project staffs from the vendor companies has an impact on knowledge transfer success.					
16	The amount of knowledge to be transferred at a specific point in time has an impact on knowledge transfer success.					

C. Knowledge Factor

SN	Knowledge Factor	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
8	Project knowledge can easily move from tacit (unspoken) to explicit (spoken).					
9	The level of knowledge complexity has an impact on knowledge transfer success.					
10	The difficulty of knowledge to speak it to the knowledge receiver has an impact on knowledge transfer success.					
11	Knowledge's explicitness (clearly expressiveness) has an impact on knowledge transfer success.					
12	Knowledge's ability to be easily codified (organized) has an impact on knowledge transfer success.					
13	Ambiguity (Vagueness) of the knowledge itself has an impact on knowledge transfer success.					
14	The knowledge being transferred is easily encodable and decodable.					

D. Relationship Factor

SN	Relationship Factor	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
7	There is a formal relationship and alliance between the vendors and Ethio telecom.					
8	The cultural background of the person in the vendor organization has an effect on knowledge transfer success.					

9	The language differences between the vendors' staffs and Ethio telecom's IS project staffs has an impact on knowledge transfer success.					
10	The geographical distance between the vendors and Ethio telecom has an impact on knowledge transfer success					
11	Project members' ability to control one's emotions has an impact on knowledge transfer success.					
12	The common understanding between the project vendor's team and Ethio telecom team members has an impact on knowledge transfer success.					

Section III: General Opinion Questions

1. What other knowledge transfer success factors can you mention in addition to the above factors?

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2. How do you generally evaluate the knowledge transfer success in Ethio telecom Projects?

Section IV: Degree of influence of the factors in knowledge transfer success.

Based on the questionnaires filled above please rate the factors listed below from the highest (1) to the lowest (4).

SN	Factors	Rate
1	Client factor	
2	Vendor factor	
3	Knowledge Factor	
4	Relationship factor	

APPENDIX 3: SAMPLE SPSS OUTPUTS

Descriptive Statistics

Client Factor	N	Minimum	Maximum	Mean	Std. Deviation
ET's Project Knowledge Obtaining Capability	44	1	5	2.55	.951
ET's Ability to Assess, detach,encode&decode Project Knowledge	44	1	4	2.59	.923
ET's Ability to Prioritize Project Tasks	44	1	4	2.52	.876
ET's Perceived Project Performance	44	1	4	2.16	.805
ET's Project Team Motivation	44	1	4	2.05	.939
ET's Project Team Commitment	44	1	4	2.07	.900
ET's Technology and Tools Usage Capability	44	1	4	2.07	.950
ET's Project Knowledge Usage Frequency	44	1	4	2.11	.895
ET's Project Organization Restructuring Ability	44	1	4	2.43	.846
Valid N (list wise)	44				

Descriptive Statistics

Vendor Factor	N	Minimum	Maximum	Mean	Std. Deviation
Vendors' Knowledge Transfer Clarity	44	1	4	2.89	.970
Vendors' Articulability	44	2	5	3.39	.868
Vendors' Ability to Prioritize Project Tasks	44	1	4	2.50	.792
Vendor's Trust between the Vendor and the Client Team Members	44	1	4	2.18	1.040
Vendors' Knowledge Trustworthiness	44	1	4	2.11	.868
Vendor's Knowledge Transfer Commitment	44	1	5	2.11	.993
Vendors' Project Team Size	44	1	5	2.34	.939
Vendor's Amount of knowledge	44	1	5	2.30	1.025
Valid N (list wise)	44				

Descriptive Statistics

Knowledge Factor	N	Minimum	Maximum	Mean	Std. Deviation(SD)
Knowledge Tacitness	44	1	5	2.98	1.023
Knowledge Complexity	44	1	4	2.32	.909
Knowledge Difficulty	44	1	4	2.27	.872
Knowledge Explicitness	44	1	5	2.23	1.075
Knowledge Codifiability Easiness	44	1	4	2.14	.878
Knowledge Ambiguity	44	1	5	2.23	1.008
Knowledge Encodability	44	1.00	5.00	2.7727	1.03122
Valid N (list wise)	44				

Descriptive Statistics

Relationship Factor	N	Minimum	Maximum	Mean	Std. Deviation
ET and Vendors Closeness and Alliance	44	1	4	2.43	.974
ET and Vendors Team Members Cultural Background	44	1	4	2.27	.899
ET and Vendors Language Differences	44	1	5	1.91	.858
ET and Vendors Geographical Distances	44	1	5	2.77	.961
ET and Vendors Teams Emotion Control Ability	44	1	5	2.32	.800
ET and Vendors Common Understanding on the Knowledge	44	1	4	2.16	.939
Valid N (list wise)	44				

APPENDIX 4: ETHICAL CLEARANCE

Addis Ababa University
College of Business and Economics
School of Commerce

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Ref. No. BAJS/33/2018
Date: 18/10/2018

To Whom It May Concern

The Addis Ababa University School of Commerce currently runs for Postgraduate programs: Human Resource Management, Project Management, Marketing Management, Supply Chain and Logistics Management, beside its preparation to embark on launching some more expedient programs very soon.

As an immediate and direct stakeholder to this socioeconomically pragmatic move, we would like you to cooperate with us by way of assisting our students to conduct academic researches and case analyses in our organization. As such, we kindly request your esteemed organization to provide student Digis Weldu ID.No. GSD/6289/08 with information pertaining to Assessment of Factors Impacting Knowledge Transfer Success in EthioTelecom: The case of Information Systems pro. A copy of the paper produced may be provided to you if so demanded.

With Regards

Abraraw Chane (PhD)
Continuing and Distance Education Coordinator
Addis Ababa University, School of Commerce