ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACTORS INFLUENCING THE IMPLEMENTATION OF IT SERVICE MANAGEMENT FRAMEWORK IN TELECOM COMPANIES: A CASE STUDY IN ETHIO TELECOM

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January 2015

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A Thesis Submitted to School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Information Science

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Alemeye Seife

Approval of Board Examiners

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Statement of Approval

This is to certify that Alemeye Seife Ali has completed a thesis entitled “Factors Influencing the Implementation of IT Service Management Framework in Telecom Companies: A Case Study in Ethio Telecom” with my advice and follow-up. I also approve that his work is appropriate enough to be submitted as a partial fulfillment of the degree in Master of Information Science.

Workshet Lamnew, Mr. Signature_____ Date_____

Declaration

I, Alemeye Seife declare that this work entitled "Factors Influencing the Implementation of IT Service Management Framework in Telecom Companies: A Case Study in Ethio Telecom", is the outcome of my own effort and study and that all sources of evidences used for the study have been duly acknowledged. I have produced it independently except for the guidance of my Research Advisor.

This study has not been submitted for any degree in this university or other universities. It is offered for the partial fulfillment of Master of Information Science.

Name: Alemeye Seife

Signature:_____

Date:_____

Dedicated To

This paper is dedicated to my late parents Mr. Seife Ali and Mrs. Aselefech Atnafe.

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List of Acronyms

CCTA	Central Computer and Telecommunications Agency
CMMI	Capability Maturity Model Integrated
COBIT	Control Objective for Information Technology
CRBT	Caller Ring Back
CSF	Critical Success Factor
ET	Ethio Telecom
ETC	Ethiopian Telecommunications Corporation
GITIM	Government Information Technology Infrastructure Management
IEC	International Electrotechnical Commission
ISACA	The Information Systems Audit and Control Association
ISD	Information System Division
ITGI	Information Technology Governance Institute
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
itSMF	The IT Service Management Forum
OGC	Office of Government Commerce
VMS	Voice Mail Service

Abstract

While IT organizations attempt to implement Information Technology Service Management (ITSM) frameworks to manage their IT services, their efforts have been influenced by a variety of influencing factors. With regards to disclosing influencing factors to the implementation of ITSM frameworks an attempt or minimal works have been done in some developed countries, but there is scarcity of such researches in developing countries in general and in Ethiopia in particular. Thus, the aim of this study was to explore influencing factors to the implementation of Information Technology Infrastructure Library (ITIL) based ITSM in Telecom companies taking Ethio Telecom as a case.

For this purpose, a single holistic exploratory case study approach was applied. Primary and secondary data were collected via semi-structured interview, document collection, and direct observation. Data was analyzed and interpreted using pattern matching and case description techniques.

The findings identified barriers which were common to most ITIL implementation processes, unique to a single case of the reviewed researches and confirmed by this study, and barriers which were typical to this study. The typical barriers to this study were complexity of integrating ITIL to the existing system, and composition of the ITIL implementation team members. Besides, the study identified eight CSFs. All the CSFs in the theoretical literature were confirmed by this study. Moreover, ITIL aligned organizational structure was identified as a unique or typical CSF in the study.

Better performance on CSF areas could help the company not only solve observed barriers but it also helps to create additional opportunities for success. Thus, to implement ITIL successfully, the case company needs to build its capacity, increase its effort and allocate necessary resources to perform better on critical success factor areas.

Chapter One: Introduction

1.1 Background

With the world getting smaller and flatter day by day, Telecommunications have emerged as one of the strongest driving force and a rapidly growing industry across the world, with a unique set of business requirements and challenges much larger in scale and complexity as compared to traditional businesses (QAI Global Services, 2014). Of the most prominent challenges faced by telecom operators are: the complexity of their IT environment, the ever increasing and dynamic requirements of their customers for quality telecom services with affordable price, and the increasing cost of managing their IT infrastructures and IT services (Weill 2005). Ethio Telecom (ET) has also been sharing these challenges without exception.

Despite all these challenges, to be with the core of customer satisfaction and service quality telecom operators need to make a comprehensive, focused, effective monitoring and management to their network, host, and database systems. To this end, they need to introduce the concept of Information Technology Service Management (ITSM) which is process-oriented (Zhu *et al*. 2009).

Nowadays, IT service providers in general and telecom operators in particular become aware of the importance of ITSM for effective and efficient management of their operation and maintenance systems, and are looking for some sort of ITSM framework.

As a response to the growing demand for ITSM, different ITSM frameworks have been evolving. Of these ITSM frameworks, today Information Technology Infrastructure Library (ITIL) is recognized as the de facto standard for managing enterprise Information Technology (Cater-Steel *et al.* 2009, Lamrini and Sebaaoui 2012, Mohamed *et al.* 2014). As a result, many telecom operators have implemented ITIL based IT service management framework for the management of their telecom business. In the same fashion ET has also been implementing ITIL since Decmber 2011.

1.2 Statement of the Problem

In order to achieve good performance for the service provider and satisfy customers, it is necessary to develop and improve the practices involved with the services (SEI 2010). In such a context, maturity models and IT service management frameworks have been developed to guide organizations in the definition and improvement of service management processes. For instance, some of the already known and disseminated approaches are: ITIL, Control Objectives for Information and Related Technology (COBIT), ISO/IEC 20000, and CMMI (Cater-Steel *et al.* 2006).

Several research papers (Cartlidge *et al*. 2007, ICASA 2012, SEI 2010) have pointed out a series of benefits derived from adopting and implementing service management processes; for example: an increase in satisfaction with the services for both clients and users, higher productivity, improvement in economy by reducing workload and increasing the use of management resources, improvement in decision making, greater alignment between IT and the business goals, and appropriate management of the IT.

However, there are organizations that suffer difficulties during the implementation of projects related to ITIL, and consequently they did not succeed (Jäntti 2010, Pollard and Cater-Steel 2009, Sharif *et al.* 2008).

According to Tan *et al.* (2007, 2009), and Pollard and Cater-Steel (2009), critical success factors positively influence the success of project implementation in relation to the improvement of IT service processes. These critical success factors are key aspects that must be achieved in order for the business to succeed, and, if not well performed, will make the achievement of the missions and goals unlikely within a business or project (Cater-Steel et al. 2009, Ghayekhloo 2009). On the contrary, barriers or negative risk factors can put the improvement of the IT service processes at risk, resulting in implementation failure (Ghayekhloo 2009, Wan *et al.* 2008).

With regards to implementation success and failure, Stienberg (2008) explained that ITIL implementation can reap enormous benefits for successful companies or it can be disastrous for organizations that fail to manage the implementation process. Hence, without understanding the major barriers and critical success factors to ITIL implementation, many organizations might have implemented the framework without any significant performance improvement; without measurable return on investment; without service quality improvement; or they might have given up the implementation process itself and cause significant problem to their company as well as to their customers.

Therefore, to gain value from their investment on ITIL, organizations which are currently implementing ITIL as ET, and/or those which have planned to implement ITIL in the

future need to identify and actively deal with the major barriers and critical success factors to successful implementation of ITIL. However, there has been little academic research published to date about ITIL adoption and implementation (Ahmad and Shamsudin, 2013), and none of the researches were done in developing countries like Ethiopia (Iden and Eikebrokk 2013). As a result, it was found necessary to conduct an empirical research to investigate and disclose the barriers and critical success factors to the implementation of ITIL in Telecom companies in the context of Ethiopia.

Thus, the goal of this study was to identify barriers and critical success factors to the implementation of ITIL in telecom companies in the Ethiopian context. The motivation for this study was the desire to learn from past challenges or difficulties, and implement ITIL successfully in the future by avoiding or managing the barriers and giving due attention to critical success factors.

1.3 Purpose of the Study

The main purpose of this study was to explore or identify factors that influence successful implementations of ITIL in Telecom Companies.

Under this objective the study has addresses the following specific objectives:

1. To realize the concepts, theories, models, current knowledge about ITSM, and implementation process of the ITIL IT service management framework.

2. To identify barriers and critical success factors to successful implementation of ITIL in the case company.

3. Validate the identified barriers and critical success factors by further discussion with interviewees.

4. Give some recommendations that could help organizations implement ITIL successfully.

1.4 Research Questions

As mentioned on 1.3, the main purpose of the study was to explore factors which influence the implementation of ITIL in Telecom companies. For this purpose, the researcher has formulated the following main research questions:

1. What are the barriers to implementation of ITIL in ET?

2. What are the Critical success factors to the implementation of ITIL in ET?

1.5 Significance of the Study

The study has explored barriers and critical success factors to the implementation of ITIL in ET. The findings of this study could support ET by determining barriers and critical success factors which are valuable steps toward increasing the chance of implementing ITIL successfully. Better understanding of the barriers of ITIL implementation enables IT decision makers formulate appropriate strategies to mitigate or manage the barriers beforehand. Similarly, better understanding of critical success factors enables IT decision makers identify which elements of the implementation process most emphasis should be placed upon, and permit the company to focus its efforts on some areas to meet the CSFs, or even allow them to decide if it has the capability necessary to meet CSFs requirements (Alaskari *et al.* 2012).

Moreover, the findings may help other IT service providers to think about ITIL implementation influencing factors in relation to the context of their organization. Besides, the result of this study can be used as an input for future studies on related topics.

1.6 Scope and Limitation of the Study

The scope of this study was delimited to investigate ITIL implementation barriers and critical success factors in ET. Because ET is the sole Telecom company in Ethiopia. The focus of the study was identifying barriers and critical success factors of ITIL implementation from the perspective of ITIL implementation project members, ITIL process owners, and ITIL process executors who have been active participants of the ITIL implementation of the company. Although information from the top management of the organization is useful to enrich the data, it was not possible to conduct interview because of their tight work schedule.

1.7 Organization of the Thesis

The thesis is organized into five chapters. The first chapter presented the background to the research, the research problem, the research objective, the research question, and the scope of the study. The second chapter reviewed the related literature on ITSM, ITIL, ITIL implementation, and IT services. The third chapter presented the methodology of the study, i.e. the research philosophy, the research approach, the research design or strategy, and the data collection and analysis procedures and techniques. In the fourth

chapter results and the relationship of the result with reviewed literatures were presented. Finally, in the fifth chapter conclusions and recommendations were presented.

1.8 Definition of Key Terms

Barrier: A problem, rule or situation that prevents somebody to do something or that makes something impossible (Oxford University 2001).

Critical Success factors: "…limited number of areas in which results, if they are satisfactory, will ensure successful…performance of the organizations. They are the few key areas where things must go right for the organization to flourish. If results in these areas are not adequate, the organization's efforts…will be less than desired." (Rockart 1979).

Implementation: A specified set of activities designed to put into practice an activity or program of known dimensions (Fixsen *et al.* 2005)

ITIL: A set of Best Practice guidance for IT service management (OGC 2007).

ITSM:- Specialized set of organizational capabilities for providing value to customers in the form of services, these specialized organizational capabilities include all of the processes, methods, functions, roles, and activities that a service provider uses to enable it to deliver services to its customers (OGC 2007).

Chapter Two: Literature Review

The purpose of the literature review was to understand: concepts, theories, and current knowledge on ITSM in general and ITIL in particular, the implementation of ITIL, and factors influencing the implementation of ITIL. This helped the researcher identify influencing factors that organizations around the world experienced while implementing ITIL.

2.1 Information Technology Services and Information Technology Service Management (ITSM)

In order to discuss about the barriers and critical success factors to the implementation of ITIL based ITSM it is logical first to know or understand what Information technology services are, and what ITSM is.

2.1.1 Information Technology Services

For the purpose of this study the definition of service given by OGC (2007) was used. According to OGC (2007, p-5), "a *service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risk*". Based on this definition of service, Peppard (2003) defined Information Technology Services as *"Services in and around the Processing, Provisioning and Stewardship of Information"*. On the other hand, Diirr and Santos (2014) defined Information Technology (IT) service as a set of resources, whether IT or non-IT, perceived by the client as whole, and maintained by an IT service provider. Such services aim to satisfy one or more needs of a client and support the strategic goals of his business (Magalhães and Pinheiro 2007).

IT services exhibit different attributes, raise different issues, and require to be managed differently. Hence they are categorized into four broad categories (Peppard 2003).

Application Services: refer to those services delivered via software applications. These services are derived from the 'information handling' abilities of technology. These services include information processing, sharing, storage and access services.

Operational Services: are those services that relate to assembling and operating the core IT environment. Such services include installation of hardware and software, maintaining the communications network and servers.

Value enabling services: are services that are provided to enhance the value of information assets or identify opportunities provided by IT to better manage information.

Infrastructure services: are those services that are derived directly from the infrastructure investment, essentially the technology itself.

There is high level of dependency between these categories of IT services. This dependency is depicted by Fig 1.

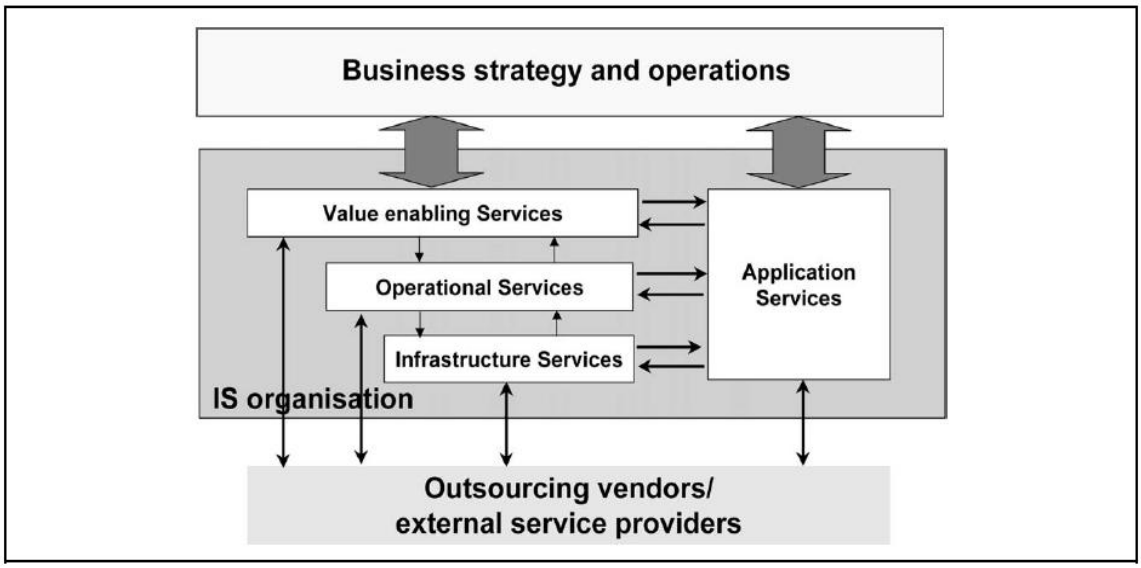


Figure 1. Relationships between the Four IT Service Categories, Business Strategy and Operations (Peppard, 2003)

Companies are increasingly and critically becoming dependent on IT services to perform their day to day businesses, and gain competitive advantage. As a result, they spend larger share of their IT budget on the development and management of IT services. To further elaborate this fact (Orlove 2005, cited by Marrone and Kolbe 2010) stated that IT services account for an estimated 70% to 80% of the expenditure of an IT organization.

This critical dependency of organizations on IT services has resulted in an imperative need for the quality of the IT services provided (Chen and Chou 2010). With this in light, IT organizations started to look for a typical management system which ensured the development and provision of quality and customer focused IT services in efficient and cost effective approach. That interest triggered the emergence and development of Information Technology Service Management (ITSM) as a distinct discipline. With this respect (Pollard and Cater-Steel 2007, cited by Conger *et al.* 2008) indicated that ITSM

has grown out of the increasing complexity of IT and the growing maturity of IT management.

IT has got various frameworks, standards, and guidelines which are being adapted by several enterprises in recent years; among these are ITIL, CMMI, COBIT, ISO 9000, ISO/IEC 17799, Malcolm Baldrige, Six Sigma and many more (Soomoro and Hesson 2012). Of all these, ITIL, CMMI, COBIT, and ISO 9000 are the four frameworks currently often mentioned in practitioner press (Cater-Steel *et al.* 2006). As Cater-Steel et al. (2006) adopted from Ratcliffe (2004), Fig 2 depicted the relationship between the four frameworks (COBIT, ITIL, CMMI, and ISO 9000) and the IT functions.

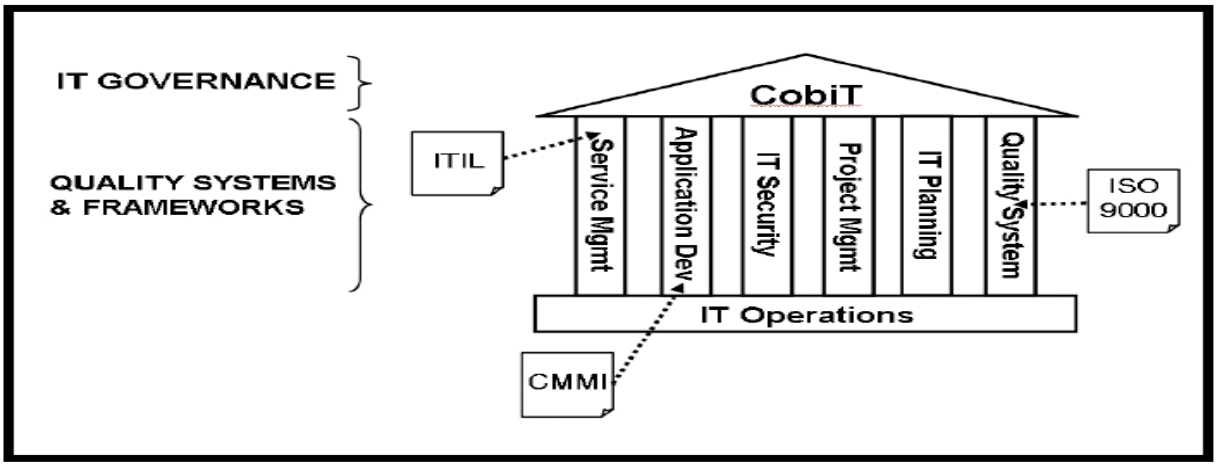


Figure 2. The relationship of the four frameworks to IT functions (Cater-Steel et al., 2006)

COBIT

The Control Objectives for Information and related Technology (COBIT) is a set of best practice for information technology governance created in 1992 by the Information Systems Audit and Control Association (ISACA), later renamed the IT Governance

Institute (ITGI) (Shekipour and Modiri 2012). It is a comprehensive IT governance framework for management to operate at a higher level; it is not a pure technology standard for IT management (Cater-Steel 2006). COBIT provides senior management, auditors, and users with a set of generally accepted objectives to assist them in developing appropriate IT governance (Cater-Steel et al. 2006). It can be applied to any organization. It ensures linkage of business and IT plans and track & monitor strategy implementation, project completion, resource usage, process performance, and service delivery (Soomoro and Hesson 2012).

CMMI

The Capacity Maturity Model (CMM) was developed by the Software Engineering Institute (SEI) and describes the principles and practices underlying software development process maturity (Soomoro and Hesson 2012). A suit of models developed by SEI includes the software CMM, the system engineering CMM, and the integrated product development CMM have been merged and extended into CMM integration (CMMI) (Cater-Steel *et al.* 2006). CMMI is a collection of best practices specific for software development (Soomoro and Hesson 2012).

ITIL

The Information Technology Infrastructure Library (ITIL) is a framework of best practice documents; its main focus is on processes, customers, and cost equation (Soomoro and Wahba 2011). ITIL is specific to IT service management and it is not prescriptive (describes what to implement but not how to implement), and it orders the processes in

sets (Soomoro and Hesson 2012). To explain the relationship between ITSM and ITIL, Iden and Eikebrokk (2013) stated that ITSM is the concept and ITIL is the framework IT functions can apply to adopt ITSM to IT operations. ITIL is the widely implemented ITSM framework in the world. In a more specific research ITGI (2008) estimated that IT framework with a largest adoption rate is ITIL 24% followed by COBIT 14% (Marrone and Kolbe 2010).

ISO 9000

ISO 9000 is sponsored by the International Organization for Standardization (ISO) and refers to a set of quality management standards that enable an organization to fulfill the customer's quality (Cater-Steel *et al*. 2006). It is generic quality management software emphasizing on auditing and its main focus is on processes, customers, quality & audits (Soomoro and Hesson 2012). Its management systems direct and control the organization with regards to its quality.

2.1.2 Information Technology Service Management (ITSM)

ITSM was defined by many scholars and practitioners in different ways, but almost to express similar concepts and ideas. For example, Chen and Chou (2010) defined ITSM in general terms as a discipline for managing IT systems and it was also indicated that its aim is to contribute to the quality of IT services. Similarly, Cartlidge *et al.* (2007) defined ITSM as the management of all people, processes and technology that cooperate to ensure the quality of live IT services, according to the levels of service agreed with the customer. Besides, OGC (2007) defined ITSM as *"specialized set of organizational capabilities for providing value to customers in the form of services",* these specialized

organizational capabilities include all of the processes, methods, functions, roles, and activities that a service provider uses to enable it to deliver services to its customers.

Function: is a team or a group of people and the tools they use to carry out one or more processes or activities (OGC 2007).

Process: a process is a structured set of activities designed to accomplish a specific objectives. Process takes one or more defined inputs and turns them into defined outputs (OGC 2007).

Role: is a set of responsibilities, activities and authorities granted to a person or a team. A role is defined in a process, and it describes what an individual or team actually does/do (OGC 2007).

Resources: a generic term that includes IT infrastructure, people, money or anything else that might help to deliver IT service (OGC 2007). Resource represents the tangible assets of an organization.

Capabilities: Is the ability of an organization, people, process, application, configuration item or IT service to carry out an activity (OGC 2007). Capability represents the intangible assets of an organization.

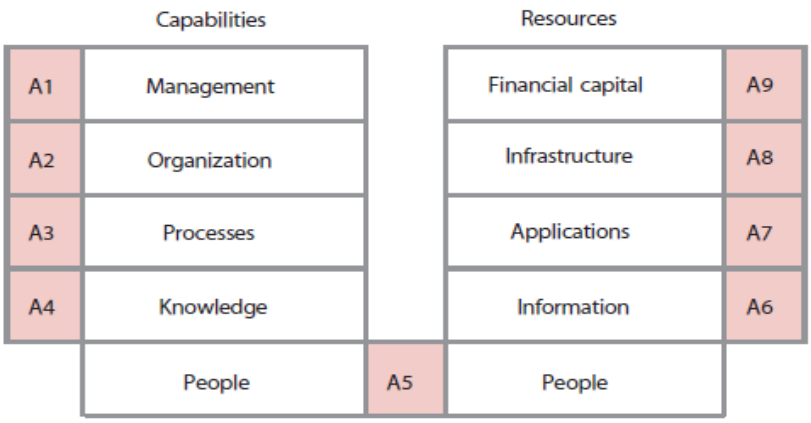


Figure 3. Service Provider Capabilities and Resources (OGC 2007)

2.2 The Evolution of ITIL

General recognition of service management needs in the late 1980s in the United Kingdom (UK) resulted in the definition and rise of ITIL. ITIL is a set of descriptive guidance documents that was originally developed in the 1980s by the UK Government agency, Central Computer and Telecommunications Agency (CCTA) which is now the Office of Government Commerce (OGC), to promote efficient and cost-effective IT operations within government controlled computing centers (Cater-Steel *et al.* 2009). The initial version of ITIL consisted of a library of thirty one associated books covering all aspects of IT service provision (Lamrini and Sebaaoui 2012, Pollard and Cater-Steel 2009). ITIL framework was developed through research into successful organizations and interviews with experts (Shang and Lin 2010). It consists of the best practices verified in practical use (Nenickova 2011).

The first version of ITIL was called the Government Information Technology Infrastructure Management (GITIM). The first ITIL books were published after the CCTA consulted with many industry experts. Each book focused on a particular process that would aid in delivering high quality IT Services. SEI (2010) stated the need for the first version of ITIL as it was an attempt to replace the duplication of effort as every IT organization learned by trial and error how to implement and use IT for meaningful work.

Later on, in 2004 the initial version was then revised and replaced by seven, more closely connected and consistent books (ITIL V2) consolidated within an overall framework, viz., Service Support, Service Delivery, and ICT Infrastructure Management, Planning to Implement Service Management, Application Management, The Business Perspective, and Security Management. ITIL V2 framework as a whole is depicted by Fig 4. The two books that received the most attention in ITIL V2 were Service Delivery, and Service Support, which together encompassed the Service Management part of the framework (Rudd 2004). This version is known to be primarily process based.

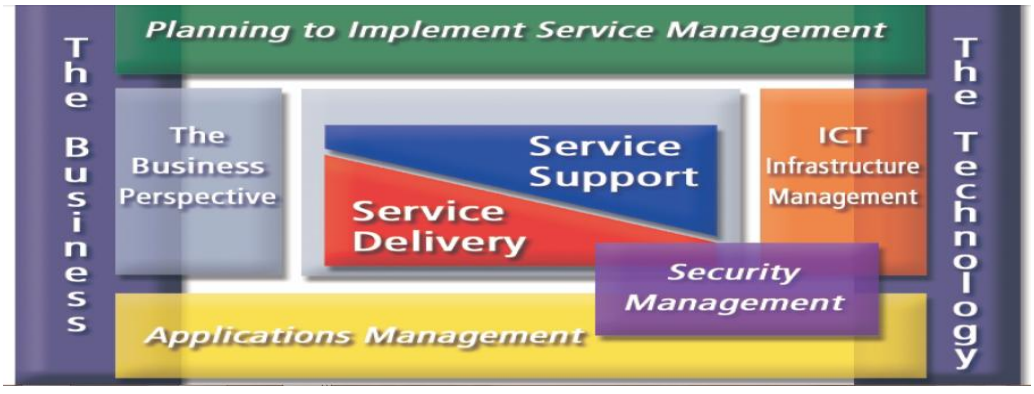


Figure 4. ITIL V2 Framework (Rudd 2004)

Within these books were multiple processes that helped IT organizations deal with daily activities involved in the delivery, support, and management of IT services.

The core of ITIL version 2, as released in 2004 comprised of five service delivery processes (service level management, financial management, capacity management, IT service continuity management, and availability management), five service support processes (incident management, problem management, change management, release management and configuration management), and one service support function (service desk) (OGC 2004). Service support processes apply to the operational level of the organization whereas the service delivery processes are tactical in nature. This second version became universally accepted and is now used in many countries by thousands of organizations as the basis for effective IT service provision (Lamrini and Sebaaoui, 2012).

The ITIL framework further evolved and ITIL version 3 was released in 2007 and it comprised of five core modules: IT Service Strategy, IT Service Design, IT Service Transition, IT Service Operations, and IT Continual Service Improvement (OGCa 2007). The major difference with ITIL V3 is that it moves from major operational view of ITSM to a more business lifecycle view of ITSM. ITIL V3 was simply referred as ITIL (OGC 2007), and it was lastly updated in 2011. Hence, the subject of this study specifically is referred to what we call ITIL hereafter.

2.3 ITIL

OGC (2007) defined ITIL as a public framework that describes best practice in IT service management. Best practices evolve as leading practitioners drive new innovations to

solve newer and more complex problems. ITIL provides a framework for the governance of IT, and the management and control of IT services. ITIL is the result of years of experience and reflection on the problems posed by information technology (Lamrini and Sebaaoui 2012).

The primary objective of ITIL is to establish the best practices, and improve the standard of IT service quality that customers demand, and IT service providers supply with target cost constraints (itSMF 2006, Talla and Valverde 2013). On the other hand, to show its relation with value creation, Sultana (2013) stated that ITIL describes the organization of IT resources to deliver business value, and further elaborated that the focus of ITIL today is the integration of IT into the business, assuring the delivery of business value and the treatment of services as business assets. In other words, it referred to as IT-business alignment.

Furthermore, ITIL documents processes, functions, and roles in ITSM. Besides, it provides a systematic, process based approach for key ITSM processes, and it is supported by a comprehensive qualification scheme and accredited organizations (Sultana 2013).

To show the nature and role of ITIL, Talla and Valverde (2013) explicitly stated that ITIL is not a software or hardware; rather it is a technique to manage the technology and communication of IT organizations in an optimal way. It is a cohesive best practice framework, drawn from the public and the private sectors internationally (Sultana 2013). Being a framework it is completely customizable for application for any type of business organization. It is intended to be non-prescriptive, expecting that organizations will have

to engage ITIL processes with their existing process model (itSMF 2006, Talla and Valverde 2013). Hence, it is to be adopted and then adapted upon by an organization as per its purposes and needs (Sultana 2013).

Nowadays, IT has become an increasingly strategic part of an organization—and managing IT is not just about implementing processes and one function. It is about understanding and meeting business needs through the provisioning of IT services at every stage of their lifecycle, encompassing everything from strategy to daily operations. With this new view of IT and ITSM in mind, ITIL V3 is structured according to the stages of the service lifecycle and the business outcomes they support (OGC 2007).

Besides, ITIL has a number of distinctive features. From among many, the following five concepts are considered as its pillars (Sultana 2013).

- The service life cycle.
- Quality of service.
- Customer care.
- Communication
- The process concept.

2.3.1 The Service Lifecycle

ITIL follows a lifecycle approach to IT service management. In other words, ITIL describes the management of IT in the context of the lifecycle of the services from inception to retirement (Sultana 2013). While explaining the benefits of this approach to service management, OGC (2007) stated that lifecycle approach gives an improved, holistic structure with which to describe all the functions, processes, roles and

responsibilities that constitute ITSM best practice. Each process has a home in the lifecycle where it is most active.

ITIL is based on the idea that delivering IT services is of strategic value to the business and strategic goal to the IT organization (OGC 2007).This statement indicates that service strategy is the basis around which the service lifecycle revolves (Service Design, Service Transition, Service Operation, Continual Service Improvement) as depicted in Fig 5.

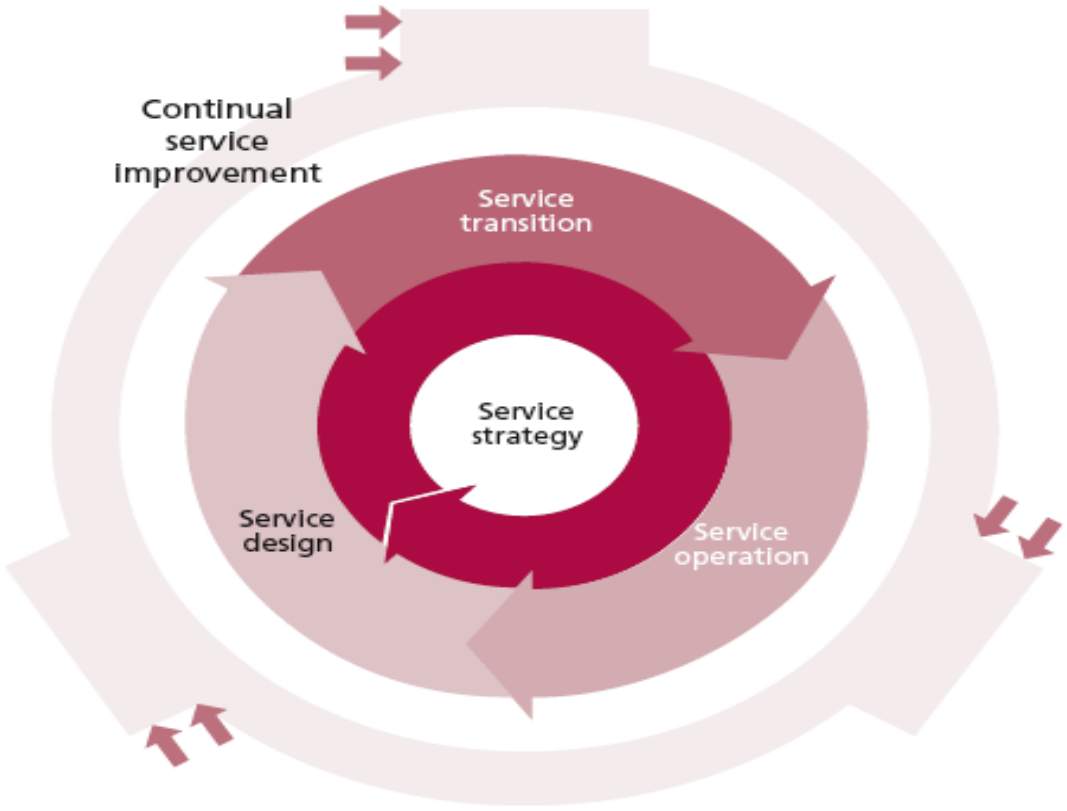


Figure 5. ITIL Service Lifecycle (OGCd 2007)

2.3.2 Customer Care

Organizations depend on their customers. They should understand and do hard to meet and exceed their customers need and expectations. This concept is paramount for managing IT services. It involves making the customer's needs the primary concern of the IT service provider (Himi *et al.* 2011). It should not focus on new technologies or power infrastructure. The important thing is to meet the functional needs of the customer with the most accurate and optimal solution. Considering the business needs of the customer and placing them at the heart of the IT service management solution, should be the rationale of computing entities. It is then essential to fully assess the customers' needs, which means listening to their requirements and establishing a relationship that supports the customer in the expression and monitoring of these needs.

2.3.3 The Process Concept

The process concept has demonstrated its robustness in quality within the industry. ITIL has adopted this approach to structure the philosophy of its practice as multiple interacting processes (Himi *et al.* 2011). The process concept answers questions about the sequence of activities while undergoing inspections and performance indicators to measure program output for which the process was designed (OGC 2004). The process owner is responsible for the design of process and ensures that the process meets the need defined. The process manager is responsible for implementation of the process, as it has been defined by the process owner.

2.3.4 Quality of Service

This concept is the rationale for good practice. Quality of service can be defined as being the opportunity to respond to the customer needs exactly as required (Himi *et al*. 2011) The customers' belief in their suppliers is based on their appreciation of their needs, delivered within the time expected, while respecting the defined specifications. In this respect, ITIL is seeking to improve services perpetually in a manner based on the philosophy of the Deming Wheel: Plan, Do, Check, Act (Himi et al. 2011). Regarding quality, Sultana (2013) stated that ITIL is the cornerstone of quality ITSM and a necessity for quality assurance.

2.3.5 Communication

One of the contributions of ITIL is good communication. It harmonizes the language between customers and suppliers (Himi *et al.* 2011). This language removes any ambiguity when providers talk about service level agreements (SLA), incident, problem, change, etc. Good communication is an important component of quality of service. Business managers must understand the issues of IT, their constraints and their commitments. The communication also facilitates the negotiation of budgets, as projects arise directly from business requirements (Himi et al. 2011).

2.4 The ITIL Library

The ITIL library has the following components (OGCa 2007, p-23):

1. The ITIL Core: Best practice guidance applicable to all types of organizations who provide service to businesses. It provides five publications:-

- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement

2. The ITIL Complementary Guidance: a complementary set of publications with guidance specific to industry sectors, organization types, technology architectures, and operating models.

The ITIL service lifecycle comprised of five modules. These are: - Service Strategy, Service Design, Service Transition, service Operation, and Continual Service Improvement (OGCa 2007). A key principle within ITIL and across the service lifecycle stages are alignment of IT with the business (es) it supports. That means, all service solutions and delivery should be driven by business needs and requirements, while reflecting the strategies and policies of the service provider organization, as indicated in Figure 6.

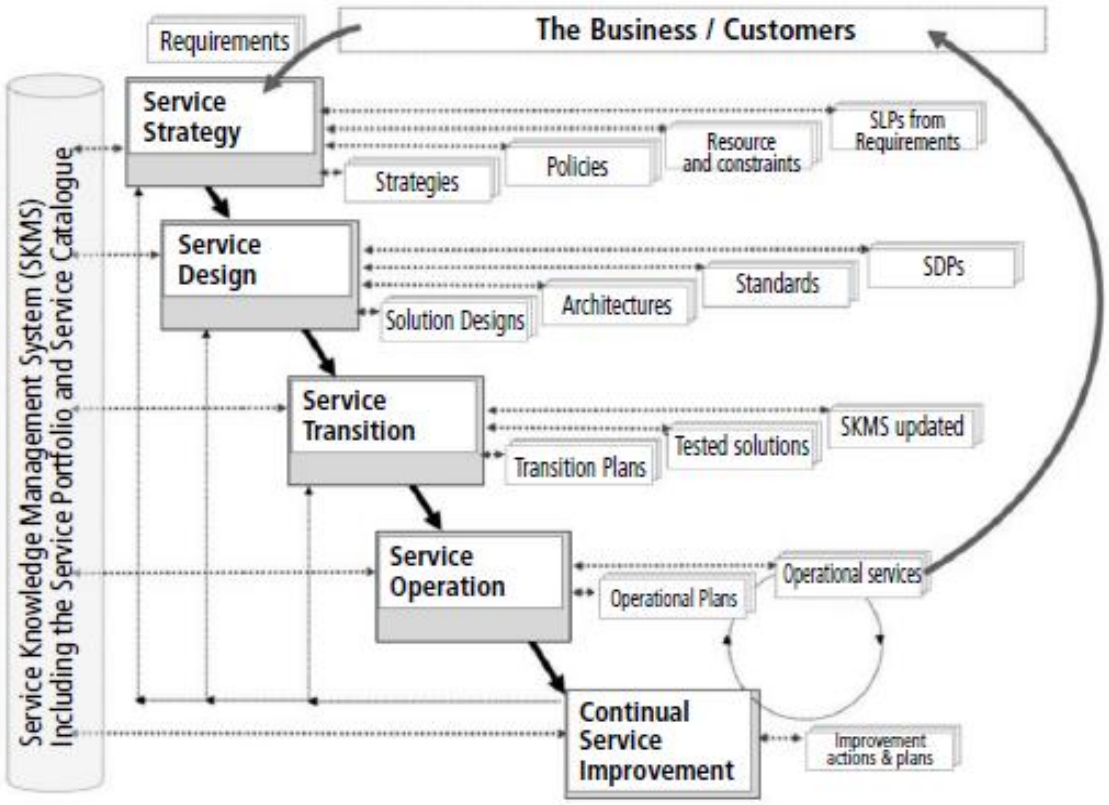


Figure 6. Key links, inputs & outputs of the service lifecycle stages (Cartlidge *et al.* 2007).

The above figure shows links and input-output relationships among the service lifecycle modules shown in Figure 5 and the service knowledge management system. The high level input-output of the modules is that: Service strategy module takes business/customer requirements and continual service improvement requests as an input and defines and delivers service level packages as output to the service design module. Through this process, service strategy module considers factors such as strategies, policies, procedures, and resources and constraints. The service design module in its part

takes service level packages as input and works to deliver service design package as an output. In this process the module considers solution design, architectures, standards, and service design improvement requests from continual service improvement module. Similarly, the service transition and service operation modules create links and perform similar input-output relationship by considering relevant factors. The continual service improvement module interacts with all modules and provides improvement proposals accordingly. The improvement proposals could be on strategic, design, transition and/or operational issues

2.4.1 IT Service Strategy

Service Strategy provides guidance on how to design, develop and implement a good management of services, making it a strategic asset and not only just an organizational capacity (Lyra and Dugue 2012). This means, Service Strategy guidance is useful in the context of Service Design, Service Transition, Service Operation, and Continual Service Improvement (OGCa 2007). Service Strategy defines a unique approach for delivering value. A sound service strategy is essential in the creation of high quality IT services (Sultana 2013). It provides a base upon which to build a successful service management function and ensures that best value is delivered to business customers (Sultana 2013).

2.4.2 IT Service Design

The main purpose of the service Design (SD) stage of the lifecycle is the design of services and service management processes for introduction into live environment (OGCb 2007). The scope of service design is not limited to new services. It includes the changes

and improvements necessary to increase or maintain value to customers over the lifecycle of services, the continuity of services, achievement of service levels and conformance to standards and regulations, and it guides organizations on how to develop design capabilities for service management (OGCb 2007). Service design stage of the lifecycle starts with new or changed business requirements and ends with the development of a service solution designed to meet the documented needs of the business.

2.4.3 IT Service Transition

Service transition provides guidance for the development and improvement of capabilities for transitioning new and changed services into operations. It's a set of guidance on how the requirements of service strategy encoded in service design are effectively realized in service operations while controlling the risks of failure and disruption. It provides guidance on managing the complexity related to changes to services and service management processes, preventing undesired consequences while allowing for innovation (OGCc 2007).

2.4.4 IT Service Operation

Service operation includes guidance on achieving effectiveness and efficiency in the delivery and support of services so as to ensure value for the customer and the service provider. Guidance is provided on how to maintain stability in service operations, allowing for changes in design, scale, scope and service levels. Organizations are provided with detailed process guidelines, methods and tools for use in two major control perspectives: corrective or reactive, and preventive or proactive modes (OGCd 2007).

2.4.5 Continual Service Improvement

Continual Service Improvement (CSI) is an integral component of the ITIL service lifecycle. It is intended to measure and improve processes and services. IT organizations have been making service improvements for many years, but they have often been in a reactive mode and in many cases, the improvement effort has used cost reduction (rather than improving service value) as the driver for the initiative (Probst and Case 2013). Continual Service Improvement is a formal proactive practice that addresses improvement opportunities for IT services, service management processes and the service lifecycle (OGCe 2007). Probst and Case (2013) further explained that the proactive nature of CSI as anticipating service-related issues and addressing them before they become an issue for the customer.

Additionally, Continual Service Improvement can identify areas for increased service or process efficiency and effectiveness, which increase the value to the customer and/or reduce the cost of delivering the service. It combines principles, practices and methods from quality management, change management and capability improvement. Organizations learn to realize incremental and large-scale improvements in service quality, operational efficiency and business continuity (OGCe 2007). CSI should be a permanent goal for any organization that wishes to stay in business.

The integration of the five service lifecycle stages of ITIL is shown on Appendix-D, and the Summary of ITIL Services and their corresponding processes is presented on Table 1.

Table 1: ITIL Services and their corresponding processes (Mohamed et al. 2014).

ITIL Services	Service Processes
Service Strategy	1. IT service management 2. Service Portfolio Management 3. Financial management for IT services 4. Demand Management 5. Business relationship management
Service Design	1. Design coordination (Introduced in ITIL 2011 Edition) 2. Service Catalogue 3. Service level Management 4. Availability Management 5. Capacity Management 6. Information Security Management System 7. Supplier Management
Service Transition	1. Transition planning and support 2. Change management 3. Service asset and configuration management 4. Release and deployment management 5. Service validation and testing 6. Change evaluation 7. Knowledge management
Service Operation	1. Event management 2. Incident management 3. Request fulfillment 4. Problem management 5. Identity management
Continual Service Imrovement	

2.5 Benefits of ITIL

The justification for implementing ITIL framework for managing IT services is normally based on the benefits it generates to the organization. A good implementation can reduce the occurrence of IT failures, improve service levels and customer satisfaction, and reduce both fixed and variable costs. It allows IT service to gain credibility, improve performance, reduce cost and maximize efficiency in the company by a more productive

use of information system (OGC 2007). Similarly, Marrone and Kolbe (2010), by reviewing conference papers and peer reviewed articles, identified the following benefits of ITIL:

Table 2: Summary of benefits of ITIL (Marrone and Kolbe 2010)

Improvement of…	Hochstein et al., 2005	Potgieter et al., 2005	Kießling et al., 2009	Cater-Steel et al., 2006	Cervone, 2008
Service Quality	X	X	X	X	X
Standardization of Service	X		X	X	
Customer Satisfaction		X	X	X	
Return on Investment			X	X	X
Reduction of Downtime				X	X
Best Practice	X				
Financial Contribution Control				X	
Call Fix Rate				X	
Morale of IT				X	

Table 2 revealed that from among the listed benefits of ITIL, improving service quality was taken as a major benefit in all of the reviewed researches. Besides, standardization of services, customer satisfaction, and return on investment were considered as second important benefits in most of the reviewed researches.

2.6 ITIL Implementation

Despite the existence of researches dealing about ITIL implementation, none of them have defined the term implementation explicitly. Hence, to have a clear understanding of the barriers and critical success factors to successful implementation of ITIL it is important to have the definition of implementation. Hence, for the purpose of this study, the definition of implementation given by Fixsen *et al.* (2005) was used.

"Implementation is defined as a specified set of activities designed to put into practice an activity or program of known dimensions."

Goggin, 1986, cited by Fixsen et al. 2005 stated that the purposes and outcomes of implementation might be categorized as:

1. Paper Implementation- putting into place new policies and procedures.

2. Process Implementation- putting new operating procedures in place.

3. Performance implementation- putting procedures and processes in place in such a way that the identified functional components of change are used with good effect.

In more contextual terms, Iden and Eikebrook (2013) defined ITIL implementation as the process of adapting to ITSM principles and or introducing the best practice recommendations prescribed by ITIL.

Measuring Success of ITIL Implementation

ITIL success is ill-defined and highly subjective concept. With regards to this, Iden and Eikebrokk (2013) stated that as there is no single tangible output from an ITIL implementation project whose value can be measured in isolation; and there is no established evaluation standard, ITIL success is difficult to measure. However, Iden and Eikebrokk (2013) proposed two types of independent variables which can be used as a measure for ITIL Implementation success:-

1. Actual implementation Status of the whole ITIL processes. This can be implemented using a five-point ordinal scale: not started (1), early (2), halfway (3), advanced (4), and completed (5)

2. Perceived benefits from a stakeholders perspectives:- ("improved service quality", "improved customer satisfaction", "improved response and resolution time", "reduced downtime," "standardized processes," improved processes," "reduced IT costs," "improved IT resource utilization," "improved business/IT alignment," and "improved IT governance."). (5).

2.7 Barriers to ITIL Implementation

There is broad agreement that implementation is a very complex endeavor more complex than the policies, programs, procedures, techniques, or technologies that are the subject of the implementation efforts (Fixsen *et al* 2005). Every aspect of implementation is fraught with difficulty, from system transformation to changing service provider behavior and restructuring organizational contexts (Fixsen *et al.* 2005). Besides, a number of ITIL researches have confirmed that the implementation of ITIL is very difficult (EMA 2006, Sultana 2013, Mohamed *et al* 2014, Pereira 2010).

Implementation of ITIL means changing the way IT organization does business. Hence, Implementing ITIL is not a quick fix nor will it be easy to implement (Sultana 2013). Mohamed *et al.* (2014) added that ITIL adoption or changing the ITIL framework into the context of an organization is a very complex activity as it calls for the thorough reengineering of ITSM processes, involving many staff and systems. Implementation of ITIL requires a challenging balance between pragmatism and theory and a detailed

understanding of both the business and ITIL (EMA 2006). Similarly, Pereira (2010) stated that because ITIL doesn't describe how to implement the framework, ITIL implementations are usually long, expensive and risky. Information Services Group (ISG) analyses suggest that ITIL initiatives often fail to meet expectations largely because of the way they are designed and implemented, and how their impact is measured (ISG 2009). If it is not appropriately planned and budgeted then it will fail through lack of resources and will be very difficult to revive (Mohamed *et al*. 2014).

From the above discussions it is revealed that the implementation process of ITIL is somehow difficult and complex and requires consideration of a number of factors such as restructuring, cost, risk, resources, design, etc. in order for the implementation to be successful.

In existing researches on ITIL implementation barriers, lack of top management commitment and support (Chen and Chou 2010, Marrone and Kolbe 2010, Cater-Steel and Tan 2005, Fujitsu 2007, Sharif *et al.* 2008, Mohamed *et al.* 2014), lack of IT staffs ITIL expertise (Chen and Chou 2010, Marrone and Kolbe 2010, Fujitsu 2007, Mohamed *et al.* 2014, Cater-Steel *et al*. 2009), lack of resource (Chen and Chou 2010, Marrone and Kolbe 2010, Fujitsu 2007, Mohamed *et al.* 2014, Cater-Steel *et al*. 2009), failing to maintain momentum (Marrone and Kolbe 2010, Sharif *et al.* 2008), difficulty in gaining support from technical staff (Cater-Steel and Tan 2005, Pollard and Cater-Steel 2009), and difficulty in measuring return on investment (Cater-Steel and Tan 2005, Pollard and Cater-Steel 2009) were found more common to two or more researches. However, other researchers (TechRepublic 2005, Pereira 2010, Shang and Lin 2010) also reported a lot of barriers that are typical to a

specific study. The summary of barriers extracted from literature review is shown on Table 3.

Table 3: Theoretical Pattern for ITIL Implementation Barriers

Barrier	**References**
Lack of management commitment/support	[5],[1],[17],[162],[10],[100]
Lack of resources	[5],[1],[15],[17],[100],[10]
Lack of IT staff's ITIL knowledge and expertise	[5],[1],[15],[17],[100]
Lack of communication and cooperation	[7], [10], [22], [3]
Difficulty in measuring ROI, and the contribution to continual service improvement	[10],[22], [135]
Resistance to change	[10], [100],[135]
Lack of awareness	[7], [1], [3]
Failing to maintain momentum	[1][162]
Not engaging the right people	[22], [15]
Conducting the ITIL project in a business as usual approach	[15]
Crucial change management issues arising from the reorganization of the IT function	[15]
Unable to satisfy customers need in time	[3]
Time lag between investment on ITIL project and performance outcome	[3]
Conflicts between needs for quality improvement and cost consideration	[3]
Not creating work instructions	[162]
Not assigning process owners	[162]
Being too ambitious	[162]
Rigid organizational structure	[162]
Anonymity of process managers	[100]
Uncertainty about which process to implement first	[100]
Lack of commitment	[7]
Difficulty of process governance	[17]
Spending too much time on complicated process diagrams	[162]
Fear of ITIL	[100]
Not creating work instructions	[162]
Misalignment between processes	[5]
Difficulty of process governance	[17]
Inappropriate management tool	[5]

Key: [5]- Chen and Chou (2010), [1]- Marrone and Kolbe (2010), [10]- Cater-Steel and Tan (2005), [17]- Fujitsu (2007), [162]- Sharif *et al.* (2008), [100]-Mohamed *et al.* (2014), [15]- Cater-Steel *et al*. (2009),

[22]- Pollard and Cater-Steel (2009), [7]- TechRepublic (2005), [135]- Pereira (2010), [3]- Shang and Lin (2010)

2.8 Critical success factors to the Implementation of ITIL

The concept of Critical Success Factors (CSF) was first introduced by D. Ronald of McKinsey & Company in 1961 (Daniel 1961), and later refined and made popular by Jack F. Rockart in 1986. According to Rockart (1979), Critical Success Factors are:

> "…limited number of areas in which results, if they are satisfactory, will ensure successful…performance of the organizations. They are the few key areas where things must go right for the organization to flourish. If results in these areas are not adequate, the organization's efforts…will be less than desired."

In the context of this study, critical success factors are factors which are critical or decisive for successful implementation of ITIL in such a way that each CSF is used to solve or minimize a given category of barriers, and /or help to create additional opportunities for success. The fulfillment of these factors is crucial not only for successful implementation of ITIL into practice, but also for its effective and efficient maintenance in case of ICT services delivery (Nenickova 2011). These critical success factors are key aspects that must be achieved in order for the business to succeed, and, if not well performed, will make the achievement of the missions and goals unlikely within a business or project (Cater-Steel *et al.* 2009, Rockart 1979).

Iden and Eikebrook (2013) carried out a research entitled "Implementing IT Service Management: A Systematic Literature Review" reviewing 13 research articles on ITIL

implementation critical success factors. The result revealed that top management support, project champion, staff expertise, broad involvement, ongoing information, ITSM aligned culture, willingness to change, external consultant, ITSM software, and firm size were found prevalent. Though researches in the area of ITIL are very limited, in the existing researches critical success factor has been mentioned most frequently (Iden & Eikebrokk 2013). The summary of CSFs extracted from the review of literature is presented on Table 4.

Table 4: Theoretical Pattern of ITIL Implementation CSFs

Critical Success Factors	**References from Literature**
Project management and governance	[83],[22],[145],[10],[3],[15],[146],[148]
Top management support and commitment	[83],[22],[145],[10],[146],[15],[144]
Training and competencies of involved stake holders in ITIL project	[83],[22],[11],[3],[146],[144],[147]
ITIL process implementation and applied technology	[83], [22], [145],[146],[15],[148]
Organizational Change Management	[83],[22],[145],[10],[3],[16]
Communication and Cooperation	[83],[22],[3],[146],[15],[144]
Monitoring and Evaluation	[83],[22]

Key: : [10]- Cater-Steel and Tan (2005), [15]- Cater-Steel *et al.* (2009), [22]- Pollard and Cater-Steel (2009), [3]- Shang and Lin (2010), [11]-Addy (2007), [14]-Lamrihini and Sebaaoui (2012), [16]-Winter (2012), [146]-Iden and Langeland (2010), [145]-Pederson *et al.* (2010), [144]- Cater-Steel (2006), [147]-Kabachinski (2010], [148]-Marquis (2006) , [83]- Mehravani, S. , Hajiheydari, N. (2011)

Project Management and Governance

Combining the ITIL framework and the project management framework allows executing the ITIL implementation project with a higher level of quality. Rice (2000-2008), while explaining the relationship between ITIL and project management stated that:

> *The ITIL framework, a lifecycle approach that addresses the way an IT organization operates, is first and foremost business driven and answers the question "Are we doing the right things?" While the project management framework addresses the implementation of projects, requiring that companies ask "Are we doing things the right way?"*

According to Rice (2000-2008) project management is organized into nine key knowledge areas: project integration, scope, time, cost, quality, human resource, communications, and procurement management. ITIL framework and project management framework support each other in a way that propels services and operations to a greater level of proficiency. Thus, project management and governance is crucial for successful ITIL implementation.

Top Management Support

Top management support or commitment is the degree of interest for process improvement and the degree to which the resources make available for ITIL implementation. Top management support is the most frequently cited critical success factor in the available ITIL implementation literature (Kush 2013, Lamrini and Sebaaoui 2012, Shang and Lin 2010, TechRepublic 2005, Talla and Valverde 2013, Winter 2012). These researchers used different key words to define the "Top Management support"

term , for instance, higher management commitment, executive support, top down commitment etc. However, all of the researchers tried to share their findings about the role of senior management commitment and its importance for successful implementation of ITIL.

ITIL project must receive approval and support from top management before it can be implemented (Mehravani and Hajiheydari 2011). Without senior management support progress cannot be granted. The criticality of top management support has been justified by different researchers mentioning some basic issues: guarantees funding needed for hardware, software, consultancy and training (Winter 2012), triggers communication between stakeholders (Lamrini and Sebaaoui 2012), and endorses policy and enforces compliance to following newly implemented standard processes (Lamrini and Sebaaoui 2012). Lack of senior management support and engagement by the project team could create a "them and us" atmosphere in which resistance to new service processes built up (Mehravani and Hajiheydari 2011).

Training and Competencies of Involved Stakeholders in ITIL project

All employees which are involved in ITIL implementation require general training in core topics appropriate for personnel to be able to talk and work together with various ITIL processes (Nenickova 2011). Training allows users to interact with ITIL, allows the sharing of common problems, increases communication & cooperation in ITIL, help users understand how using ITIL framework could impact their jobs (Mehravani and Hajiheydari 2011) and reduces employees resistance to change (Pollard and Cater-Steel 2009).

ITIL Process Implementation and applied Technology

ITIL process implementation and applied technology is also among the most frequently cited critical success factors of ITIL implementation. It is critical in that it provides proper applications of implementation strategy (Addy, 2007), ensures a step-by-step close eye analysis of the implementation process of ITIL (Cater-Steel and Tan 2005), helps determine process priority, and allows to choose appropriate tools for easier configuration, integration, and automation of processes (EMA 2006), and to increase perceived usefulness (Lamrini and Sebaaoui 2012). With regards to this, Nenickova (2011) stated that:

> *ITIL is an externally developed best practice; it could be moderate to good practices according to actual conditions in a company. There is always a gap existing requiring more intensive use of tools to adopt the frameworks. The best practices should be integrated through the internal tools and techniques.*

Organizational Change Management

Adoption of any IT service management or IT governance framework like ITIL is a challenge in itself. It is not just about technology change, it is about the whole organizational change acceptance. Understanding the context of change would be instrumental in showing whole stakeholders how their interests aligned with the interest of ITIL (Cater-Steel 2006). Specifically, change management is critical in situations with big bang (revolutionary) approaches (Shang and Lin 2010). Besides, Shekipour and Modiri (2012) strongly emphasized that the implementation of ITIL will not be effective before handling the cultural aspects.

With regards to this, Ahmad and Shamsudin (2013) stated *"when well-executed, ITIL can shift an IT organizations culture and focus from technology to business strategy… but culture change is probably the hardest type of change to manage, and ITIL's process are only as effective as the degree to which your staff adopt them".*

Communication and Cooperation

Communication must be present at the core of any change. Iden and Langeland (2010) explicitly stated that organizational restructuring and development of new roles and processes in the organization, as ITIL implementation, must be accompanied by appropriate communication that provides justification for change, establishing a context and involving people. According to (Mehravani and Hajiheydari 2011) an open and honest information policy communicated to the users can satisfy their need for information and highly reduces the chance of ITIL implementation failure. Communication increases cooperation, communication as the main activity to realize ITIL adoption expectations and to decrease its implementation problems is considered by organizations. Effective coordination and cooperation of stakeholders is critical to the success of ITIL implementation (Mehravani and Hajiheydari 2011).

Monitoring and Evaluation

Monitoring and evaluation is the core aspect of continuous service improvement, which is one component of the ITIL framework. Through monitoring and feedback from the IT staff, the performance of implementing ITIL framework can be reviewed and evaluated to see whether it is achieving business goals and objectives ultimately (Mehravani and Hajiheydari 2011). During ITIL implementation there is recognizable change from

technology focus to customer centric metrics that need to be recorded and reported (Pollard and Cater-Steel 2009).

2.9 Review of Research Methods and Techniques

To explore the influencing factors to the implementation of ITIL in ET it was found necessary to review the methods and techniques used by previous researchers to study the same issue. Thus, Iden and Ekiebrook (2013) on their systematic literature review of researches about ITIL implementation issues they have identified 37 relevant researches (21 Journal articles and 16 conference articles) which had been published between January 2000 and August 2012. The study revealed that most of the studies were from Australia, North America, and other European countries. No research from Africa was reported on their study. The research contributions on this study were grouped into two broad categories: conceptual and empirical.

Of the 37 articles revised by Iden and Ekiebrook (2013) 29 of them were empirical studies. From among the 29 empirical researches 17 of them were conducted through case studies, followed by surveys accounting for 8 studies. From this statistical evidence about research designs applied on ITIL implementation researches, it is clear that case study is the most extensively applied research design.

When we look into the techniques or procedures used to determine critical success factors there is no one best way, and they differ among industries and for individual enterprises within a particular industry (Olszak and Ziemba 2012). As a result, many researchers used different techniques to identify critical success factors to the implementation of ITIL and other IT frameworks. To mention some, qualitative Meta synthesis- a technique

which takes multiple qualitative researches on the same topic and combine and synthesize to reveal the best evidence that could be taken as CSF (Mehravani and Hajiheydari 2011). The other technique used was Likert scale for judging the importance of influencing factors to determine the CSF(Cater-Steel and Tan 2005, Cater-Steel *et al*. 2009). Delphi method- formalized method of communication between researchers and a panel of experts, where data collection is anonymous and is conducted in several rounds, was also another method to identify CSF (Iden and Langeland 2010), analytic Hierarchy Process had also been used to identify CSFs based on the nature of the identified barriers (Norita and Shamsudin 2013). Moreover , Olszak and Ziemba (2012) had applied inductive reasoning technique to determine CSFs. This later technique was considered appropriate for the identification of CSF in an exploratory qualitative research with inductive approach.

Inductive Reasoning

Reasoning refers to the process of drawing conclusion or inference from information, and always requires going beyond the information that is given (Bruner 1973). Inductive reasoning is a method of reasoning from particular to the general. It involves extending knowledge from known instances to novel instances and is a central component of human learning and reasoning, and is therefore thought to be critical to people's encounter (Heit and Hayes 2011). Many believe that inductive reasoning is the most important component of human thought because "inductive reasoning is the only process … by which new knowledge comes into the world" (Fisher 1951, cited by Heit and Hayes 2011).

Chapter Three: Research Methodology

According to Saunders et al. (2009), research methodology is a comprehensive concept that encompasses research philosophy, research approaches, research strategies, choices, time horizons, and data collection and analysis techniques and procedures, totally represented by a "research onion" as shown on Figure 7.

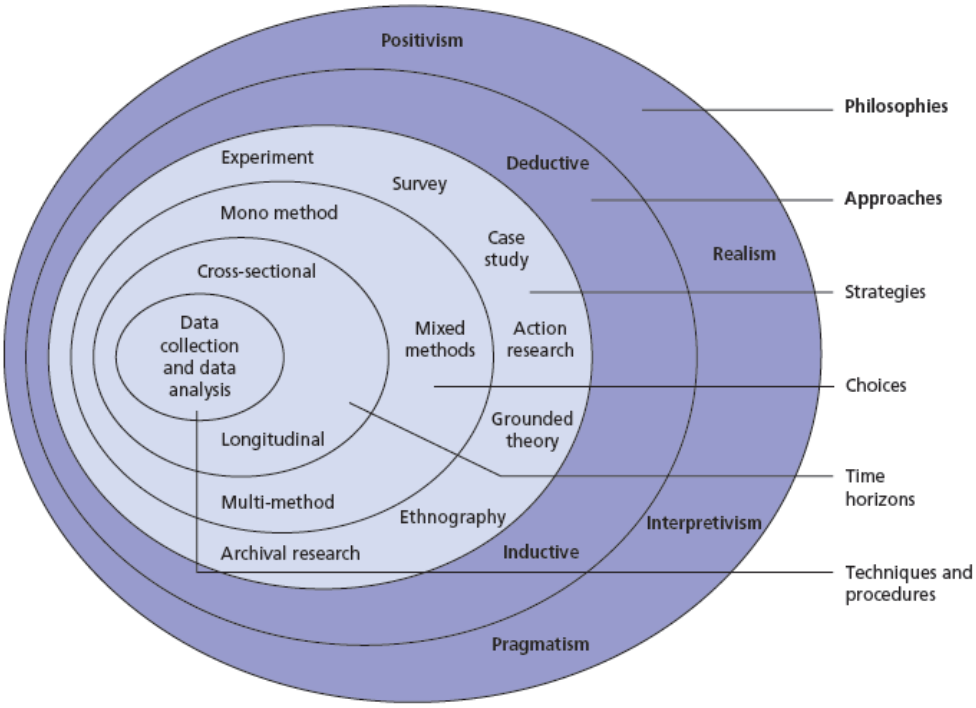


Figure 7. The research 'Onion' (Saunders et al. 2009)

3.1 Research Philosophy

This overarching term relates to the development of knowledge and the nature of that knowledge. The research philosophy we adopt contains important assumptions about the way in which we view the world (Saunders et al. 2009), and they are broadly framed in

terms of choice between either the positivism or the interpretive (phenomenological) research philosophy (Saunders et al. 2009).

1. Positivism- uses quantitative and experimental methods to test hypothetical deductive generalizations.

2. Phenomenological (Interpretive)-uses qualitative and naturalistic approaches to inductively and holistically understand human experience in context specific settings.

Thus, for the purpose of this study the researcher implemented phenomenological philosophical thinking as it was suitable to have a holistic understanding of the experience of people participated in the ITIL implementation process of ET from its natural setting. This helped the researcher explore what barriers and critical success factors they faced in their ITIL implementation, and address the research questions, and ultimately achieves the research aim.

3.2 Research Approach

Broadly there are two types of research approaches, namely inductive approach and deductive approach as shown on Figure 7. In the inductive approach the researcher collects data and develops theory as a result of the data analysis. On the other hand, in the deductive approach the researcher develops a theory or hypothesis (hypotheses), and designs a research strategy to test the hypothesis (hypotheses) (Saunders *et al.* 2009). Induction approach gives less concern to the need for statistical generalization to population. Besides, this approach gives a chance to gain:

- Understanding of the meanings humans attach to events.
- Understanding of the research context through collecting and analysis of qualitative data.

Because the purpose of the study was to explore the experience and perception of individuals involved in the implementation process of ITIL in ET with regards to barriers and critical success factors, the research approach used in this study was inductive approach.

3.3 Research Design

As mentioned in section 1.3, the main purpose of this study was to empirically identify or explore the barriers and critical success factors to the implementation of ITIL in ET. Every type of empirical research has an implicit, if not explicit research design. According to Yin (2003), Research design is *"the logical sequence that connects the empirical data to the study's initial research questions and, ultimately, to its conclusions, and its main purpose is to avoid the situation in which the evidence doesn't address the initial research questions."*

Our choice of research strategy is guided by our research question(s) and objectives, and the control an investigator has over actual behavioral events Yin (2003). Thus, in this study, since the phenomenon being evaluated is a contemporary practice & less researched, and has no clear & single set of outcomes, an exploratory case study strategy was applied to explore ITIL implementation influencing factors in an empirical form Yin (2003). Case study is defined by Yin (1994) as an "empirical inquiry that investigates a

contemporary phenomenon within a real-life context: when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used."

Case study is a valuable method of research with distinctive characteristics that make it ideal for exploratory study. Tellis (1997) considers it as a triangulated research strategy which could be used for a single or multi-case. Moreover, it is most often used in exploratory research (Saunders et al. 2009). All the above mentioned capabilities of case study make it very useful to meet the objective of this study.

Thus, the case study, like other research strategies, is a way of investigating an empirical topic by following a set of predefined procedures (Yin 2003). As a result, the case study research procedures were discussed as follows.

3.3.1 Case Study Designs

A case study is a different research strategy that has its own research designs. A case study research design, which can be seen as a "blue print" for the research project, that should address the research questions, relevant propositions/ hypotheses, if any, the unit (s) of analysis, the logic linking the data to propositions, and the criteria for interpreting the findings was implemented to the investigation of ITIL implementation barriers and CSFs in ET (Yin 2003).

As it can be observed in the first chapter of this paper, the research questions were framed with a "what" questions and the writer found it important to restate them hereupon:

1. What are the barriers to implementation of ITIL in ET?

2. What are the Critical success factors to the implementation of ITIL in ET?

Although the "what" study questions are framed in a straightforward manner, they are broad, that means they may not provide enough guidance on which data need to be collected (Yin 2003). Thus, to move in the right direction case studies need to state some propositions (Yin 2003). However, since this study is exploratory, the purpose of the study was stated instead of the proposition as follows (Yin 2003):

The purpose of this study was to explore barriers and CSFs to the implementation of ITIL in ET.

On the other hand, it was important to define the unit of analysis (and therefore of the case) in relation to the way the initial research questions had been defined. The unit of analysis defines what the case is- e.g. an event, a process, an individual, a group or an organization (Yin 2003). Therefore, based on the research questions of the study, ITIL implementation process in Telecom companies is defined in this study as the unit of analysis. Since there is only one Telecom Company in Ethiopia, an exploratory, single case with a holistic unit (single unit of analysis) case study design was employed, and the case company was ET.

According to Stake (1995), a single case study is a case study that only aims at acquiring better understanding of the particular case of interest. The reason for the choice of a single case study was not because it is representative of others; rather it was because of its uniqueness. Hence, the justification to consider ET as unique case lies in that:-

1. It is the sole telecom company of the country.

2. It provides Telecom services (subset of IT services) which are not provided by other companies to internal and external customers.

3. It is a company with more sophisticated IT infrastructure to be managed.

Besides, conducting the study on this company is revelatory in that:-

1. Access to available data.

2. Preliminary evidence that the case has had the experience or situation that the writer is seeking to study.

3. Willingness of knowledgeable individuals to participate on the study.

3.3.1.1 Data Sources

For the purpose of this study both primary and secondary data were collected. Main sources for secondary data were the company intranet portal (http://intranet.ethiotelecom.et), and ITIL project documents. The secondary data retrieved from the intranet portal and from ITIL project documents were mainly used for the description of the case company. The main sources for primary data were individuals who have been active participants in the ITIL implementation process of the case company (ITIL implementation project team members, ITIL process owners, and ITIL process operators). Besides, data collected through direct observation of the researcher was also considered to strengthen the argument.

The selection of interviewees was purposive. Because, to collect relevant data that could help achieve the objective of the study, involving knowledgeable individuals on the subject of the study was crucial. Although the management's feedback as a sponsor of the ITIL implementation project was crucial, because of their tight working schedule, it was not possible to conduct interview with top management body.

3.3.1.2 Data Collection Techniques

Primary data were collected through semi-structured interview and direct observation. According to Yin (2003) interviews are guided conversations that are usually one of the most important sources of evidence, and it is categorized as structured, semi-structured, and unstructured. Direct observation refers to the situation where the observer watches or listens to the events directly Yin (2003).

The rationale for choosing semi-structured interview was that it is flexible and allow the researcher understand the perspective of the interviewees, it gives the researcher the chance to refocus the questions, or prompt for more information, if something interesting or novel emerges. Besides, it overcomes the drawbacks of structured interview and unstructured interview. The drawback of unstructured interview is data overload which could be difficult for analysis. On the other hand the problem with structured interview is that the research is most likely biased towards the researcher's experience and perception.

Similarly, direct observation is considered useful for the following advantages Paton (2002):

- Enables the observers understands and capture the setting within which people interact.
- Enables the observer see and understand things that people in the location pay no attention.
- Enables the observer get things that people will be reluctant to talk about in an interview.
- Has the advantage of getting the information from natural or unplanned events Thomas (2003).

In collecting empirical data through semi structured interview, interviewees were informed about the purpose of the research and about the interview questions beforehand. This helped them to get prepared for the interview. After conducting one interview and taking notes, the process of writing complete transcript from the note was done on the same date. This helped the researcher memorize main points of the interview, and minimize loss of information. Then, before conducting the next interview the analysis of the previous interview transcript had to be completed. This had given the researcher a chance to stop the interview when the data became redundant or saturated. Following this procedure five face-to-face interviews were conducted: with one project manager, two process owners, and two ITIL process operators.

With the presupposition that communication with one's first language is simple and useful for an in-depth discussion, the interview was conducted in Amharic. Thus, after taking short notes form the interview in Amharic, the transcript was written in English.

Because interviewees were not willing to be audio recorded, and not advisable to do so as it might discomfort the interviewees (Yin 2003), no recording device was used. During the interview short notes were taken carefully so as not to miss important points. During transcript writing points which were found incomplete or ambiguous were further elaborated by the interviewee through telephone discussion. Besides, data collected by direct observation of the researcher in the form of field notes were also organized and transcribed on the same date as the observation.

3.4 Data Analysis and Interpretation

According to Yin (1994), data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study. The first aim of case study data analysis is to find any observed pattern, which is non-random but describable.

Yin (1998) identified three dominant modes of analysis for case study: pattern matching, explanation building, and time series analysis. Among these modes, pattern matching developed by Trochin (1989) is the most desirable mode for analyzing case study data (Yin 1998). This is because it allows the researcher to match the observed patterns with their theoretical patterns, and to provide explanation of the results (Trochin 1989).

According to Trochim (1989) a pattern is "any arrangement of objects or entities. The term arrangement is used here to indicate that a pattern is by definition nonrandom and at least potentially describable".

This study used pattern matching as mode of data analysis. Pattern matching mode involved two steps. The first step is pattern identification or finding the observed pattern based on the research questions. The second step was matching the observed patterns with their theoretical patterns.

3.5 Quality of the Research Design

Regarding the quality of a case study design, Yin (2003) has organized four widely used tests. The four tests are: Construct validity, internal validity, external validity, and reliability. For the purpose of this study, since the study is single and exploratory case study, from among the four case study design tests mentioned by Yin (2003) the writer found two of them applicable. These are construct validity and reliability.

1. Construct validity- establishing correct operational measures for the concepts being studied.

2. Reliability- demonstrating that the operations of the study- such as the data collection procedures can be repeated, with the same results.

With regards to construct validity, data triangulation was done by collecting data from different sources. They are from project management, from process owners, and from process operators. To determine the observed patterns for barriers and CSFs data from the different sources were triangulated and reached at a final result as shown in Appendix I and Appendix J. The reason for taking the data from those working at different levels was to have an in-depth understanding of the issue under discussion. Besides, the draft case study report was revised by four of the interviewees: PM, one of the process owners,

and two of the process operators. But it was not possible to include one of the process owners due to tight work schedule. Those who reviewed the draft report have confirmed that there is no misunderstanding or misinterpretation of their ideas.

On the other hand, to check the reliability of this study, interview guide and a flat case study database were developed. The purpose of the interview guide was to conduct the interview in a uniform manner for all the interviewees, and not to miss interview question during the interview session. The Microsoft Word database was used to compile interview transcripts of all interviews, and transcripts from the direct observation of the researcher. The database was taken as an organized source of data during pattern identification in the data analysis stage of the study.

Chapter Four: Result

In this chapter, the results of the empirical data collected through semi-structured interview, direct observation, and analysis of company documents were presented. The first part presented the background of the case company, and profile of interviewees, and the second part dealt with overall ITIL implementation. Finally, the interviewees' experience of ITIL implementation in ET- focused on barriers and critical success factors were discussed.

4.1 Background of the case Company

Ethio Telecom (ET) is the sole telecom operator in Ethiopia. It was established on November 29, 2010 by "Ethio-Telecom Establishment Council of Ministers Regulation No . *197/2010" shown on Appendix-A , and* took over all the duties and responsibilities of Ethiopian Telecommunications Corporation (ETC). The main purposes for the establishment of ET were:

1. Development and expansion of World class telecom infrastructure capable of supporting data, audio and video.

2. Providing world class telecom services to its customers.

As of June, 2014 ET has a total of more than 12,000 permanent employees (Source: ET Human Resource Division), and it is providing mobile, fixed line, and internet services to its residential and enterprise customers. Additional services that are provided by the company are webhosting service, email service, and datacenter service. Some of the value added services are Short Message Service (SMS), Voice Mail Service (VMS),

Caller Ring Back Tune (CRBT), Roaming, Call Waiting, Call Forwarding, etc… (http://www.ethiotelecom.et).

Table 5: ET subscribers' statistics as of June 2014 (2013/2014 GTP report)

ET Subscribers Statistics		
Core Services	Plan to be achieved at the end of GTP (2007 E.C) (in millions)	Actual number of customers as of June (2006 E.C) (in millions)
Mobile	40	30
Fixed line	3.05	0.738
Internet	3.6	6.7

The company is organized into six zones and eight regions. The six zones are found in Addis Ababa, and the eight regions are distributed throughout the country. Functionally the company is organized into thirteen divisions as shown on Appendix-B. Besides, Women, Children and Youth Affairs department, and Ethics and Anticorruption Department are directly accountable to CEO (Chief Executive Officer) and COO (Chief Operation Officer) respectively.

Since its establishment on Nov 2010, ET has been engaged in various activities. Of these activities, the completion of the 1.5 Billion Dollar next generation network project signed between Ethiopian Telecommunications Corporation (ETC) and ZTE, a 1.6 Billion Dollar telecom infrastructure development and expansion project signed between ET and the two Chinese companies (ZTE and Huawie), the management contract with French Telecom, the implementation of Enterprise Resource Management system (ERP), and the implementation of ITIL IT service management framework are some to mention.

However, despite its success in: telecom infrastructure development and expansion, increasing the customer base, increasing the revenue of the company, implementation of ERP, ET is still under strong criticism about the quality of the services it provides. The company has also admitted its problems related to service quality on ET press conference (Appendix-E).

Thus, the main focus of this study was on the implementation of ITIL framework that was mainly intended to improve the quality of the services: special attention given to barriers and CSFs. The implementation of ITIL in ET has been performed by the Information System Division (ISD) of the company.

The ISD of the company has a total of 314 staff, and it encompasses six departments, namely:

1. IT Service Design
2. IT Service Transition
3. IT Service Operation
4. Office Automation
5. IT & Network Security
6. IT Service Strategy & Program Management

Since December 2011, ISD has been implementing ITIL IT service management framework with the main objectives of providing managed services, and thereby increasing service quality and return on investment. To this end, currently process owners are assigned to all processes as shown on Appendix-C.

4.2 Profiles of Interviewees

Although the intention was to involve seven people (one project manager, two process owners, two process operators, and two people from the top management), it was not possible to involve top management members due to their tight work schedule. Thus, in the semi-structured interview five individuals with broad involvement in ET ITIL implementation process participated separately. These were one person from the ITIL implementation project, two persons from ITIL process owners, and two persons from process operators as shown on Table 6.

Table 6: Profile of Interviewees

Responsibility	**Educational Background**	**Certification on ITIL**	**Gender**
ITIL Implementation Project manager (PM)	M.Sc in Information Science	ITIL Fundamental	M
ITIL Service Process Owner (PO)	B.Sc in Electrical and Computer Engineering	ITIL Fundamental	F
ITIL Service Process Owner (PO)	B.Sc Computer Science	ITIL Fundamental	M
Process Operator (POP)	M.Sc in Computer Science	Not certified	F
Process Operator (POP)	B.Sc in Computer Science	Not certified	M

Key: PM-Project Manager, PO-Process Owner, POP-Process Operator

As can be observed from the above table, the large majority of the informants were IT graduates and it seems a particular field of study is dominant. On the other hand, when we relate the ITIL requirement of certification level all the informants were below

standard. This means, the process operators were working without ITIL certification although the requirement needs ITIL Fundamental level certification. Similarly, the process owners are working with a Fundamental level, (were not certified when the project was kicked off), while the minimum requirement at this level looks for ITIL Expert. The project manager also works with ITIL fundamental even though the requirement is ITIL Master.

Thus, this implied that there is a variation between ITIL requirement levels and the practical implementations in relation to ITIL certification level. This in turn, most likely has adverse effect on their performance and on the success of the ITIL implementation thereby.

4.3 The ITIL Implementation Process

4.3.1 Overview of the ITIL Implementation Process

Before the variables which answered the basic questions of the study were asked, to get the bird's eye view of the ITIL implementation process in ET the project manager was asked general questions in relation to the driving forces to the ITIL implementation, its initiation, ITIL project team composition, and the process implementation approaches.

With respect to ITIL implementation process in ET, it was revealed that the major driving forces for the implementation of ITIL were two seemingly contradicting factors: the inability of the existing IT management system to manage the ever increasing complexity of the IT infrastructure of the company on one hand, and the critical dependency of organizations and individuals on IT services and their urgent need to get quality IT services with affordable price on the other. Forced by the above mentioned driving

factors, it was evidenced that ET started to look for a better ITSM system and ITIL was considered to be the best framework for that purpose. This idea was initiated by the company itself as part of its strategic plan.

Evidence supported that after approval of the top management to implement ITIL in December 2011 G.C, key activities performed were: establishing ITIL implementation project and assigning project manager, establishing service desk to act as interface or single point of contact, contracting external consultant to do gap analysis, doing gap analysis based on the long-term vision of the company, planning and creating a road map to provide overview of how implementation will be executed. In relation to this PM mentioned:

> *"According to the road map, our focus was to start with actions that address high priority gaps and quick wins, group the actions by the process they support, and collect metrics on our quick wins so we show progress and justify the project. Then we continued working through action items: schedule was created, project team and process owners identified. The last step for ET's ITIL implementation was to check whether the ITIL implementation met objectives or not. If not, ask why and determine how we improve it, and this practice maps to ITIL continual service improvement."*

The other point that had been addressed was the ITIL process implementation approach that ET followed was found an incremental approach. With this respect PM stated:

"First priority was given to the service desk function and associated IT Service Operation processes: event management, incident management, problem management, request fulfillment mainly because of the need to handle user and customer related problems being a first or single point of contact. Large number of problems coming from customers is solved by service desk staff using knowledge base (a database consisting of a list of known solutions for common incidents). This solves seemingly minor and routine problems, but addresses the problem of significantly large number of customers within a relatively short period of time. This increases customer satisfaction, saves resources and time required to solve a problem, leave out highly skilled IT technician from daily routines. These all advantages help the ITIL implementation project to get support from both internal and external stakeholders."

Composition, skill, and competency of ITIL implementation project team members were other issues of discussion. With this respect, the study revealed that ET's ITIL implementation project team members were mainly from IT background and none of them was ITIL certified at any level, and had no previous ITIL implementation experience when the project was kicked off. Explaining about that PM stated:

"With respect to team members composition we gave great regard to employees from Information Systems Division mainly because it was initially planned to give the overall responsibility to this Division to initiate, execute, follow up, and oversee the project. Hence, the large majority of the team members were from IS background. When we organize the project team, we were highly concerned in selecting the team

members particularly with their job performance, their commitment to change, and their overall attitude to company growth. Thus, basic knowledge of IT was taken for granted. When I say this it doesn't mean that ITIL certification and previous ITIL implementation experience are futile. If they were ITIL certified and had previous experience really they would contribute a lot. But the crux of the matter is a positive attitude and commitment to bring change. If you have a positive attitude to change it is easy to develop your competence through training."

The following table revealed the summary of the result in this section.

Table 7: Summary of results in the preamble of ITIL implementation process

	ITIL Team Members Composition, Experience and ITIL Certification level			
Driving Forces to the Implementation of ITIL	**TILI Project Team Members Composition**	**ITIL Implementation Experience**	**ITIL Certification level**	**ITIL process Implementation Approach**
The inability of the existing IT management system to manage the ever increasing complexity of the IT infrastructure of the company on one hand and the increasing demand for quality services with affordable price on the other	Mainly from the IT background	All of them have no ITIL implementation experience	All of them were not certified when the project was kicked off	Incremental Approach

4.3.2 The Barriers to the Implementation of ITIL

This section presents the barriers identified by the first step of the pattern matching technique. That is identifying pieces of ideas and concepts from the transcript and categorizing to form a matrix that relates barriers to the data sources categories (Project manager, process owner, process operator, direct observation). Based on the cluster of related concepts in the matrix, observed barriers were identified. With this respect,

Appendix I revealed that in each row of the matrix the observed barrier was depicted by the last column of the matrix. In other words, the observed barriers of ITIL implementation were identified (refer to the last column of Appendix I) based on cluster of concepts in the matrix. The following table shows the observed barriers derived from the Appendix I.

Table 8: Observed Barriers to ITIL Implementation

Observed Barriers	**PM**	**PO**	**POP**	**DO**
Lack of top management support and commitment	√	√	√	
Lack of resource	√	√	√	√
Lack of ITIL knowledge and expertise	√	√	√	√
Resistance to change	√	√	√	√
Lack of communication and cooperation	√	√	√	√
Difficulty in engaging the right people to the right position	√	√	√	
Lack of awareness	√	√	√	
Unable to maintain momentum		√	√	
Lack of commitment from those who involved in the implementation of ITIL	√	√		
Difficulty in process governance and management	√	√		
Process misalignment		√	√	
No appropriate measurement and evaluation mechanism to measure benefits of ITIL		√		
Weaknesses in organizational change management		√		
Time lag between investment on ITIL project and performance outcome	√			
Not assigning process owners on time	√			
Being too ambitious to see the outcome from the ITIL investment		√		
Rigid organizational structure		√		
Difficulty in deciding process priority		√		
Complexity of Integrating ITIL to the existing system		√		
Composition of ITIL project team members	√			
Fear of ITIL			√	
Inappropriate process management tools			√	

Key: PM-Project manager, PO-Process owner, POP-Process operator, DO-Direct observation, √: Confirmation

A closer look at the above table revealed that lack of top management support, lack of resources, lack of ITIL knowledge and expertise, lack of communication and cooperation, resistance to change, difficulty in engaging the right people, and lack of awareness were observed barrier agreed by all data source categories.

These barriers were expressed by the interviewees in different terminologies but with similar concepts. For instance, when we look into lack of top management support and commitment, PM explained the problem in terms of lack of continuous follow up and support, PO explained the problem in terms of lack of adequate resources, and POP stated the problem in relation to work load resulted from not assigning the right number and competent employees. This showed that although the problem was stated in different terms, the concepts explicitly indicate the lack of top management support and commitment. For instance, to explain this problem PM said:

> *Another barrier which we faced was "lack of top management support" as it was intended. At the outset the top management was eager to kick off the ITIL implementation project. But in the mean time when we face problems like resources, on time training etc., the top management response was not sufficient.*

Similarly, lack of resource was widely discussed by all data source categories. Almost all informants indicated lack of integration and automation tools, and shortage of budget for training and other resources as resource barriers to ITIL implementation in ET. Here, as it was indicated in Appendix I, the researcher also observed absence of process automating tools as a barrier with this respect.

Similarly, lack of ITIL knowledge and expertise was explained in different phrases with similar concepts or ideas. With this respect, PM stated boldly as "Lack of competent staff in ITIL" to refer to this problem, and further elaborated:

> *Lack of adequate knowledge and ITIL expertise was another major and broad based barrier to ITIL implementation. It impeded core activities of the implementation process like process design, process integration, and process automation. Besides it had also a significant impact on defining roles and responsibilities of actors at different levels of the implementation.*

PO also pointed to the problem by expressing the routine practices to introduce and follow up the ITIL ABC's to employees. From the POP side, the adverse effect of lack of adequate and relevant training before the commencement of ITIL implementation on their performance was indicated. Here, the researcher also directly observed the problem of lack of ITIL knowledge and expertise in some employees while they were performing their task. Difficulty in dispatching alarms to the right person or section by service desk staffs was taken by the researcher as a case in point.

The other widely discussed barrier was resistance to change. This barrier was discussed by all data source categories, and the researcher in different terminologies as shown on Appendix J. With regards to this PO stated *"It was not easy to change the traditional mindset of the IT staff, i.e. their preference was to remain technology focused rather than thinking about end-to-end-service provision to customers".* Similarly, the researcher's direct observation revealed that there was clearly observable resistance among some IT

staffs to use the reporting template and report incidents in a full-fledged manner, i.e. as per the requirement of ITIL.

When we refer to the problem in relation to lack of awareness, different informants have the same concept. For instance, PO mentioned *"Majority of the IT staff didn't understand what ITIL is and what its benefits are to employees and the company"* to explain the problem. By the same token, PM stated *"I am afraid; there is no equal awareness in the organization across the board about ITIL and its benefits"*.

On the other hand, some other barriers such as difficulty to maintain momentum (PO and POP), lack of commitment (PM and PO), difficulty in process management and governance (PM and PO), and process misalignment (Po and POP) were indicated by two of the data source categories. When we further elaborate some of the issue, PO said *"the management, process owners, and the IT staff too didn't exert the necessary effort as was at the beginning"* to indicate the problem of maintaining momentum. POP also said *"the hustle and bustle of the activities at the outset fails to continue"* to reflect the same concept.

Moreover, PO alone identified relatively large number of observed barriers. These are: problem in appropriate measurement and evaluation mechanism to measure the benefits of ITIL, weaknesses in organizational change management, being too ambitious, rigid organizational structure, difficulty in deciding process priority, and complexity of integrating ITIL to the existing system.

PM alone also identified three observed barriers: time lag between investment on ITIL project and performance outcome, not assigning process owners, and composition of ITIL project team members. For instance, with regards to team members' composition PM mentioned:

> *When we start to launch the project the first barrier we encountered was organizing ITIL implementation project team-members with the right competence and experience. There were no competent employees with ITIL certification and previous ITIL implementation experience*

On the other hand, fear of ITIL and inappropriate process management tools were observed barriers identified by POP only.

4.3.3 Critical Success Factors to the Implementation of ITIL

This section presents the CSFs identified by the first step of the pattern matching technique. That is identifying pieces of ideas and concepts from the transcript and constructs a matrix that relates CSFs to the data sources category (PM-Project manager, PO-process owner, POP-process operator). Based on the cluster of related concepts in the matrix, observed CSFs were identified. With this respect, the first column of Appendix J builds the observed CSFs identified by the data source categories. The following table shows the observed CSFs derived from the Appendix J.

Table 9: Observed CSFs to the Implementation of ITIL

Observed CSFs	Data Source Categories		
	PM	PO	POP
Top management support and commitment	√	√	√
Training and expertise of people involved in ITIL implementation	√	√	√
ITIL process implementation and applied technologies	√	√	
Organizational change management		√	√
Communication and cooperation		√	√
Project management and governance		√	√
Monitoring and evaluation			√
ITIL aligned organizational structure	√		

While the interviewees were identifying the CSFs they gave justifications on "why" and "how" they considered the factors vital and critical to the implementation of ITIL. As shown on Appendix J, each data source category justified how these factors are useful/ enabler, or how they are ways to solve the identified barriers.

Based on the way interviewees understood or discussed CSFs, that is as enablers and/or means to solve observed barriers, the writer tried to link the observed barriers to the observed CSFs through inductive reasoning. As a result, the following table depicted how each observed CSF could be a means to overcome the observed barrier/s under it.

Table 10 : A Matrix that Links Observed CSFs and Observed Barriers

	Critical Success Factors							
	Top management support and commitment	Organizational Change Management	Communication and Cooperation	Training and competencies of involved people in ITIL project	ITIL process implementation and applied technology	ITIL aligned organizational structure	Monitoring and Evaluation	Project management and governance
Barriers	Lack of top management support	Resistance to change	Lack of awareness	Lack of ITIL knowledge and expertise	Difficulty in deciding process priority	Complexity of Integrating ITIL to the existing system	No appropriate measurement and evaluation mechanism to measure benefits of ITIL	Time lag between investment on ITIL project and performance outcome
	Lack of resource	Difficulty to manage issues which have resulted from organizational change	Lack of communication and cooperation	Fear of ITIL	Difficulty in process governance and management	Rigid organizational structure		
	Difficulty in engaging the right people to the right position	Complexity of Integrating ITIL to the existing system	Lack of commitment from those who involved	Process misalignment	Inappropriate process management tools			
	Not assigning process owners on time							
	Being too ambitious to see the outcome from the ITIL investment							

As shown on Table 9, top management support and commitment, and training and expertise of people involved in ITIL implementation were recognized as CSFs by all of the interviewee categories. Whereas, ITIL process implementation and applied technologies, organizational change management, communication and cooperation, and project management and governance were discussed and identified by two of the data

sources. The remaining two CSFs such as monitoring and evaluation, and ITIL aligned organizational structure were identified and discussed by POP and PM respectively.

Top Management Support and Commitment

When responding about ITIL implementation critical success factors, top management support and commitment was addressed by all interviewees. PM statement about the importance of top management support for successful implementation of ITIL was quoted as follows:

> *"To begin with, to implement ITIL there should be Top management approval. Then other related issues like finance, infrastructure, human resource, and other necessary resources cannot be fulfilled without the top management willingness. Besides, top management support is crucial in changing the existing organization culture to ITIL supportive culture. It is also the mandate of the Top management to enforce rules and regulations that are related to ITIL implementation. To oversee the overall implementation as well as governance of the project also relies on the top management. Thus, it is difficult to expect successful implementation of ITIL without top management support and commitment."*

Similarly one process owner has addressed the importance of top management support for successful implementation of ITIL as:

> *"Top management support is crucial to the successful implementation of ITIL, because it is the sponsor of the project which allocates the necessary material, financial, and human resources. Besides, top management's commitment is very*

important in advocating ITIL and developing interest on the rest of company members and other stakeholders. Its role is also crucial in enforcing departments and sections to work as per the ITIL framework. And finally it oversees the ITIL implementation project status. "

In the same way, one POP has also discussed the importance of top management support for successful implementation of ITIL as follows:

"From the first approval or go on decision to the end of the implementation process top management support and commitment is vital for successful implementation of ITIL. The support of top management is vital not only in terms of resources but also in enforcing compliance to work according to the defined processes and procedures. Besides, top management support and commitment to a given initiative initiates and enhances the morale and commitment of other stakeholders."

Training and competencies of involved stake holders in ITIL project

This study confirmed that training and competencies of involved stakeholders in ITIL project is critical to the implementation of ITIL in ET. This factor was discussed by all of the interviewees. PM has discussed this factor as follows:

"Training and competencies of involved stakeholders is crucial to the success of ITIL implementation. Through ITIL training involved stakeholders will develop their ITIL skill and competency. Trained and competent ITIL implementation stakeholders can implement ITIL effectively and efficiently. Since the issue of

training and competency spans throughout the ITIL implementation process it is critical for its success."

Similarly, PO has discussed about this factor as follows:

"Training is an intervention to build skills and capabilities. If sufficient awareness and desire already exists, training is an important part of creating successful change. Roles within ITIL service management all require specific skills, attributes and competencies from the people involved to enable them to work effectively and efficiently. Delivering service successfully depends on personnel in service management having the appropriate education, training, skill and experience. Hence, training and competencies of involved stakeholders in the ITIL project is vital for the successful implementation of ITIL."

About this factor, POP added:

"Skill and competency of involved stakeholders is very important for successful implementation of ITIL. Because ITIL roles at every level require some degree of skill and competence in ITIL and other related areas. No matter how stakeholders are aware of ITIL and willing to work with it, they will be limited by lack of skill and competency and definitely fail to implement ITIL successfully."

ITIL process implementation and applied technology

This study revealed that ITIL process implementation and applied technology was critical for the implementation of ITIL in ET. Discussing about this factor an interviewee from PO stated that to successfully implement ITIL processes a number of things need to be

considered. The most important ones are: organizational readiness, scoping, governance, training, and tools and resources. PO discussed issues related to each of them as follows:

- **Organizational preparedness:** organizational dynamics and discipline must be in place before any framework can help improve organization's performance. Often organizations believe that implementing a framework brings organizational dynamics and discipline required for improvement. But just the opposite is true. Implementation of a framework is just like implementing automation tools and techniques. If you try to automate a mess then you will end up with an automated mess.
- **Scoping:** ITIL is a big framework. Regardless of your ITIL implementation strategy, defining the sub-set of business and IT processes and functions that will provide the best return on investment is critical first step**.**
- **Governance**: initiating an ITIL framework program or implementation without proper governance guaranteed to fail. ITIL is a large framework, and without proper oversight the rollout program or initiative will quickly experience scope drift and cost overruns. Hence building a strong governance team to help guide and support ITIL initiatives is crucial.
- **Training**: is a mechanism that an organization uses to fill the knowledge and skill gaps of its employees. While an organization decided to implement ITIL there might not be employees with required competencies in ITIL and other areas of interest. In this case training is the mechanism to overcome the problem.
- **Tools and resources:** to implement ITIL successfully tools and other resources are crucial. Tools include design tools, integration tools, monitoring tools, etc.

Similarly, PM also discussed the significance of this factor to the implementation of ITIL. With this respect, PM stated its advantages as it helps to group related processes under the same process owner, and its support to automate processes and ensure quality, decrease cost thereby.

Organizational Change Management

According to PO**'s** discussion**,** Organizational change management is a framework for managing the effect of new business process, change in organizational structure, or cultural changes within an enterprise. Simply, organizational change management addresses the people side of change management. Change is the heart and soul of our business environments, yet many change initiatives struggle in achieving success and up to 70% fail for one key reason-a failure to recognize and manage the impact of the changes on their organization. As stated by a number of change management researchers organizational change management or the people (soft) aspect is the hardest to manage. Proper organizational change management helps to ensures successful implementation of ITIL by assessing readiness for change, identifying and closing skill and knowledge gaps through training, and developing communication plans to create awareness and understanding about the change.

Staff, to complement the above discussion stated that:

> *Implementation of ITIL is more of organizational change than technological change. Hence, managing this organizational change, especially the people or cultural aspect of the change, is very crucial for the successful implementation of*

ITIL. Organizational change is the hardest type of change to manage. Hence managing changes and creating ITIL supportive organizational culture is very important for successful implementation of ITIL.

Communication and Cooperation

This study confirmed that communication and cooperation is critical to the implementation of ITIL in ET. Interviewees from Staff and process owner considered this factor vital for successful implementation of ITIL. Their justifications for considering this factor as critical were as shown next.

PO stated that communication is a tool used to build awareness of the need for change and desire to participate and support the change, and help employees understand and internalize change. Communication in ITIL is more than telling something to someone, there is often a missing component: recognizing how communication fits into the larger change process. A structured communication plan based on best practices presents the right message, at the right time, in the right channel, and comes from the right sender. Communication is a critical component of implementing change like implementing ITIL. On the other hand, collaboration or cooperation enhances knowledge sharing and communication; makes management of cross-functional processes smooth, and finally reduces project risks.

Similarly, an interviewee from POP explained that in ITIL implementation, the first thing to do is to communicate and create awareness on what ITIL is and what benefits it can bring to the company, to the employee, and to the customer. After all stakeholders become aware of ITIL, the next thing is working cooperatively towards a common goal.

Hence communication and cooperation enable all ITIL stakeholders work with maximum effort to realize the expected benefits of ITIL. Thus, communication and cooperation are vital for successful implementation of ITIL.

Project management and governance

Project management and governance is factor that was considered critical to successful implementation of ITIL by PO and Staff. Their justifications for considering this factor as critical or vital is shown next.

PO explained that project governance is the management framework within which project decisions are made. The role of project governance is to provide a decision making framework that is logical, robust, and repeatable to govern a project. Good project governance clearly outlines the relationships between all internal and external groups involved in the ITIL project, describes the proper flow of information regarding the project to all stakeholders, ensures the appropriate review of issues encountered within the ITIL project, and ensures that required approvals and decisions for the project are obtained at each stage of the ITIL implementation process. Because of these all factors, project management and governance is vital for the successful implementation of ITIL.

Staff when discussing about criticality of project management and governance for successful implementation of ITIL said:

> *ET ITIL implementation has been performed by ITIL implement project with an earmarked budget and human resource. Without project management and governance principles, managing the day to day operational activities on one*

hand, and trying to implement ITIL on the other hand most probably leads to failure of both activities.

Monitoring and Evaluation

Interviewees from POP have considered this factor critical for successful implementation of ITIL. The factor is considered critical, because the implementation of ITIL requires close follow up of middle and top level management. Without monitoring and evaluation there is no chance of getting feedback on how well or bad the implementation process is going. Monitoring and evaluation is the foundation for continual service improvement.

ITIL aligned organizational structure

This factor was considered critical to successful implementation of ITIL by PM. According to PM, Organizational structure which is supportive to ITIL implementation is decisive. Organizational structure exhibits the duties and responsibilities, and accountability of different functions of an organization and individuals within the organization as well. If the organizational structure is highly complicated and steeply, it is difficult to implement projects like ITIL. ITIL implementation needs strong and timely collaboration and cooperation of various individuals and functions across the organization. Thus, ITIL implementation will be highly impeded if the organizational structure is not ITIL aligned.

Chapter Five: Discussion, Conclusions and Recommendations

In this chapter discussion of results, conclusion based on the basic questions of the study, and some plausible recommendations were made. The discussions were conducted by relating the observed patterns and the theoretical patterns through the pattern matching technique.

5.1 Discussion

This section presents the overall discussion of ITIL implementation process relating the results with the theoretical literature. Hence, the observed patterns of the general ITIL implementation process, barriers, and CSFs were matched and discussed with the theoretical patterns. Here relevant rival theories/explanations were included and different patterns were sufficiently contrasted.

5.1.1 Overview of the ITIL Implementation Process

The result revealed that ET ITIL implementation process was started with the driving forces of difficulty to manage the ever increasing complexity of the IT infrastructure of the company, and customers demand for quality services with affordable price. Realizing these driving forces ET decided to implement ITIL by organizing a dedicated project. To this end, incremental process implementation approach was chosen, and the project team was organized.

ET's choice to implement ITIL with ITIL implementation project (meaning following project management principles), and the incremental approach to ITIL process implementation were as stated by the ITIL guideline OGC (2007).

When we refer to the theoretical literature about ITIL process implementation, to explain the risks of big-bang approach, Sharif *et al.* (2008) stated that many of the organizations attempt to implement all of or many of the ITIL processes at once, that it causes confusion, staff unrest, and poor integration between processes. With regards to ITIL process implementation approach, it seems that ET's choice was safe and appropriate.

Besides, ET's decision to start with processes that could improve quick wins is in complete agreement with the ITIL guideline OGC (2007). Furthermore, Chen and Chou (2010), supporting the idea of quick wins said *"ITIL implementation is a continuous job, setting up quick wins target and showing to the top management can consolidate their confidences and help ensure ongoing support"*.

However, ET's ITIL implementation project team composition, skill and competency have shown a fallacy with ITIL guidelines. According to OGC (2007), ITIL implementation project team need to be from diverse background, such as IT, business, engineering, marketing, etc. Moreover, the ITIL guideline has defined minimum level of skill and competency for each role in the ITIL framework.

Hence, assigning individuals to some role without considering his/ her skill and competency, or without providing the necessary training was an issue for the ITIL implementation process of ET.

5.1.2 Barriers to the Implementation of ITIL

Table 11: A Table that Matches Patterns of the Theoretical and Observed Barriers

Barriers	Theoretical Pattern	Observed Pattern			
		PM	PO	POP	DO
Lack of top management support and commitment	[5],[1],[17],[162],[10],[100]	√	√	√	
Lack of resource	[5],[1],[15],[17],[100],[10]	√	√	√	√
Lack of ITIL knowledge and expertise	[5],[1],[15],[17],[100]	√	√	√	√
Resistance to change	[10], [100],[135]	√	√	√	√
Lack of communication and cooperation	[7], [10], [22], [3]	√	√	√	√
Difficulty in engaging the right people to the right position	[22], [15]	√	√	√	
Lack of awareness	[7], [1], [3]	√	√	√	
Unable to maintain momentum	[1][162]		√	√	
Lack of commitment from those who involved in the implementation of ITIL	[7]	√	√		
Difficulty in process governance and management	[17]	√	√		
Process misalignment	[5]		√	√	
No appropriate measurement and evaluation mechanism to measure benefits of ITIL	[10],[22], [135]		√	√	
Weaknesses in organizational change management	[15]		√		
Time lag between investment on ITIL project and performance outcome	[3]	√			
Not assigning process owners on time	[162]	√			
Being too ambitious to see the outcome from the ITIL investment	[162]		√		
Rigid organizational structure	[162]		√		
Difficulty in deciding process priority	[100]		√		
Fear of ITIL	[100]			√	
Inappropriate process management tools	[5]			√	
Complexity of Integrating ITIL to the existing system	En		√		
Composition of ITIL project team members	En	√			
Not creating work instructions	[162]	x	x	x	x
Spending too much time on complicated process diagrams	[162]	x	x	x	x
Anonymity of process managers	[100]	x	x	x	x
Not creating work instructions	[162]	x	x	x	x
Unable to satisfy customers need in time	[3]	x	x	x	x
Conducting the ITIL project in a business as usual approach	[15]	x	x	x	x

Key: x-Not confirmed, √-Confirmed, En- Endemic to this study

Key: [5]- Chen and Chou (2010), [1]- Marrone and Kolbe (2010), [10]- Cater-Steel and Tan (2005), [17]- Fujitsu (2007), [162]- Sharif *et al.* (2008), [100]-Mohamed *et al.* (2014), [15]- Cater-Steel *et al*. (2009), [22]- Pollard and Cater-Steel (2009), [7]- TechRepublic (2005), [135]- Pereira (2010), [3]- Shang and Lin (2010)

As can be observed on the above pattern matching table, the barriers that were identified and discussed by most of the interviewees also confirmed the result of two or more of the researches reviewed to develop the theoretical pattern. These barriers are lack of top management support and commitment, lack of resource, lack of ITIL knowledge and expertise, resistance to change, lack of communication and cooperation, difficulty in engaging the right people to the right position, unable to maintain momentum, and lack of appropriate measurement and evaluation mechanism to measure benefits of ITIL. This implied that these barriers are most likely prevalent to most ITIL implementation processes. In other words, these barriers most likely are common barriers to the implementation of ITIL irrespective of contextual factors like development, sector, experience etc.

Each barrier can be further elaborated. For instance, lack of top management support was one of the common barriers to successful implementation of ITIL in ET. The finding provides empirical evidence to the argument of Chen and Chou (2010), Cater-Steel and Tan (2005), Fujitsu (2007), Sharif *et al.* (2008), and Mohamed *et al.* (2014). To mention one, Sharif *et al.* (2008) stated that it is possible to achieve isolated wins with ITIL implementation without management commitment and support but those wins will be few and far between.

Another observable pattern was that the study has confirmed many factors that were shown only in one of the reviewed literatures as barriers. These barriers are lack of commitment from those who involved in the implementation of ITIL, difficulty in process governance and management, process misalignment, weaknesses in organizational change management, time lag between investment on ITIL project and performance outcome, not assigning process owners on time, being too ambitious to see the outcome from the ITIL investment, rigid organizational structure, difficulty in deciding process priority, fear of ITIL, and inappropriate process management tools. This seemed that the study has confirmed many of the typical barriers in a number of researches. This in turn implied that ET's ITIL implementation process has been surrounded by a number of barriers in addition to those barriers mentioned as common.

Besides, complexity of integrating ITIL to the existing system, and composition of ITIL implementation project team members were barriers which were identified as endemic to this specific research. The complexity of integrating ITIL to the existing system is mainly determined by the existing organizational structure, the availability of appropriate process integration tools, and the capacity to integrate ITIL to the existing system. Hence it seemed that ET is lacking these determinant factors. Similarly, the team composition issue is likely associated either with the arbitrary assignment of team members or difficulty to get members from diverse fields of study at the outset.

Another observable pattern from Table 11 is that the last six barriers from the theoretical pattern are not confirmed by this empirical study. These barriers are: not creating work instructions, spending too much time on complicated process diagrams, anonymity of

process managers, not creating work instructions, unable to satisfy customers need in time, conducting the ITIL project in a business as usual approach. This might not be taken as a problem to the finding of this empirical study, because a single empirical study is not expected to confirm all barriers which were identified by many studies which were conducted under different contexts. Another possible justification for not confirming these barriers might be resulted from the fact that the interviewees didn't discuss about them.

5.1.3 Critical Success Factors to the Implementation of ITIL

The discussion in this section was based on the matching between the theoretical patterns and the observed patterns of CSFs to the implementation of ITIL.

Table 12: A Matrix that Matched the Theoretical and Observed CSFs

CSFs	Literature (Theoretical)	Empirical		
		PM	PO	POP
Top management support and commitment	[83],[22],[145],[10],[146],[15],[144]	√	√	√
Training and expertise of people involved in ITIL implementation	[83],[22],[11],[3],[146],[144],[147]	√	√	√
ITIL process implementation and applied technologies	[83], [22], [145],[146],[15],[148]	√	√	
Organizational change management	[83],[22],[145],[10],[3],[16]		√	√
Communication and cooperation	[83],[22],[3],[146],[15],[144]		√	√
Project management and governance	[83],[22],[145],[10],[3],[15],[146],[148]		√	√
Monitoring and evaluation	[83],[22]			√
ITIL aligned organizational structure	En	√		

Key: En- endemic to this study, √-confirmed , [10]- Cater-Steel and Tan (2005), [15]- Cater-Steel *et al.* (2009), [22]- Pollard and Cater-Steel (2009), [3]- Shang and Lin (2010), [11]-Addy

(2007), [14]-Lamrihini and Sebaaoui (2012), [16]-Winter (2012), [146]-Iden and Langeland (2010), [145]-Pederson *et al.* (2010), [144]- Cater-Steel (2006), [147]-Kabachinski (2010], [148]-Marquis (2006) , [83]- Mehravani and Hajiheydari (2011)

The matching between the theoretical and the observed CSFs shown on the above table revealed that the result of this study has provided empirical evidence to all CSFs in the theoretical pattern. Besides, in the observed CSFs there is one CSF that is unique to this study. This unique CSF is ITIL aligned organizational structure. The detailed discussion about each CSF is shown hereafter.

Top Management Support and Commitment

A closer look at Table 11, revealed that *"Top management support and commitment"* is among the widely addressed CSFs both in theoretical and observed patterns of CSFs. In addition to the justifications given by the interviewees about the importance of top management support to the successful implementation of ITIL, the criticality of top management support had been justified by different researchers mentioning some basic issues: guarantees funding needed for hardware, software, consultancy and training (Winter 2012), triggers communication between stakeholders (Lamrini and Sebaaoui 2012), and endorses policy and enforces compliance to following newly implemented standards and processes (Lamrini and Sebaaoui 2012). Lack of senior management support and engagement by the project team could create a "them and us" atmosphere in which resistance to new service processes built up (Mehravani and Hajiheydari 2011).

When we look into the ITIL implementation process of ET, barriers such as lack of resources (inadequate budget for training and purchase of process management tools),

arbitrary assignment of employees irrespective of their skills and competencies, and not assigning process owners on time were practically observed barriers. The researcher has a strong belief that the support and commitment of the top management is critical to solve these barriers and gear the implementation process to success.

Finally, from the pattern matching it is evident that the finding provides an empirical evidence to the argument of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Pederson *et al.* 2010, Cater-Steel and Tan 2005, Iden and Langeland 2010, Cater-Steel 2006, Kabachinski 2010) that "top management support and commitment" is critical or very decisive to the successful implementation of ITIL.

Training and Expertise of People Involved in ITIL Implementation

This study has revealed that *"Training and Expertise of People Involved in ITIL Implementation"* is from among the widely discussed CSFs to the implementation of ITIL in ET. The justifications of the interviewees for considering this factor critical or vital to the successful implementation of ITIL were presented in the previous chapter. Similarly, the observed pattern of CSFs presented in Table 4 revealed that this factor had been addressed and discussed in almost all of the reviewed literatures. To mention some, Nenickova (2011) stated that all employees which are involved in ITIL implementation require general training in core topics appropriate for personnel to be able to talk and work together with various ITIL processes. Similarly, Mehravani and Hajiheydari (2011) stated that training allows users to interact with ITIL, allows the sharing of common problems, increases communication & cooperation in ITIL, and help users understand

how using ITIL framework could impact their jobs and reduces employees resistance to change (Pollard and Cater-Steel 2009).

As discussed in the previous chapter, the result revealed that lack of ITIL knowledge and expertise has impeded core activities of the ITIL implementation process like process design, process integration and automation. This in turn resulted in process misalignment and fear of ITIL. As a result, to alleviate the above mentioned barriers, the researcher has a strong belief that there should be continuous capacity building training starting from short term to various levels of certifications to all people who are involved in the ITIL implementation process. This implies that training and expertise of people involved in ITIL implementation is decisive to the successful implementation of ITIL.

Thus, the finding of this study has confirmed the argument of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Addy 2007, Shang and Lin 2010, Iden and Langeland 2010, Cater-Steel 2006, Kabachinski 2010) that *"Training and Expertise of People Involved in ITIL Implementation"* is critical to the successful implementation of ITIL.

ITIL process Implementation and applied technology

The result of the study indicated the importance of ITIL process implementation and applied technology to the successful implementation of ITIL. With this respect, organizational readiness, scoping, governance, training, tools and resources were taken as the crux of the matter. When we come to theoretical literature, this factor was highly pronounced and discussed as CSF for the implementation of ITIL. For instance, Addy (2007) stated that ITIL process implementation and applied technologies is critical in that

it provides proper applications of implementation strategy, and Cater-Steel and Tan (2005) added that it ensures a step-by-step close eye analysis of the implementation process of ITIL and helps to determine process priority. Similarly, EMA (2006) indicated that this factor allows choosing appropriate tools for easier configuration, integration, and automation of processes. Besides, Lamrini and Sebaaoui (2012) emphasized the factor's use to increase perceived usefulness.

Practically, when we see the process of ITIL implementation in ET, the above mentioned barriers were manifested through the difficulties in deciding process priority, process governance and management, and implementing inappropriate process management tools. Regarding the problem of process priority decision, the observed problem in ET was associated with implementing change management and release & deployment management process. Similarly, before the restructuring of the Information System division of the company as per the ITIL service lifecycle modules, it was difficult to manage related processes which were dispersed in different departments. Thus, the researcher strongly argued that a careful consideration of ITIL process implementation and applied technologies is decisive to the successful implementation of ITIL.

Generally, the result of this study provided empirical evidence or confirmed the argument of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Pederson *et al.* 2010, Iden and Langeland 2010, Cater-Steel *et al.* 2009, Marquis 2006) that "ITIL process implementation and applied technologies" is critical to the successful implementation of ITIL.

Organizational Change Management

The result of the study indicated that resistance to change, difficulty to manage issues that arise from organizational change, and complexity of integrating ITIL to the existing system were some of the observed barriers to the implementation of ITIL in ET in relation to organizational change management. At the beginning of the ITIL implementation process, ET tried to integrate ITIL to the existing system and that created complexity. In the meantime, when it begun restructuring there was chaos in the Information System division in relation to human resource assignment. This in turn resulted in resistance to change. The resistance was manifested through not adhering to the ITIL processes and procedures, and aspiration of the previous system. Managing these issues was by itself a hurdle to the management. Here, it should be underscored that the implementation of proper organizational change management practice was a must to solve the above discussed problems, and gear the change towards success.

With regards to this Ahmad and Shamsudin (2013) stated that implementation of ITIL is not just about technology change, it is about the whole organizational change acceptance. Understanding the context of change would be instrumental in showing whole stakeholders how their interests are aligned with the interest of ITIL (Cater-Steel 2006). Specifically, change management is critical in situations with big bang (revolutionary) approaches (Shang and Lin 2010).

Overall, the result of this study confirmed the proposition of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Pederson *et al.* 2010, Cater-Steel and Tan 2005, Winter 2012) that "organizational change management" is critical to the successful implementation of ITIL.

Communication and Cooperation

The pattern matching revealed that communication and cooperation is one of the ITIL implementation CSFs both on the theoretical and observed patterns. The result of the study indicated that communication is a tool used to build awareness of the need for change and desire to participate and support the change, and help employees understand and internalize change. However, when we refer to the practical ITIL implementation of ET, the study revealed that lack of awareness and lack of commitment were observed barriers in relation to lack of communication and cooperation. To further elaborate the issue, these barriers were manifested through the existence of information gap, and irregularities in communication and cooperation. With regards to this, the communication and awareness creation of ET about ITIL was mainly limited to the section management level. However, the IT staff at the process operator level is still unfamiliar to ITIL issues. Thus, it is advisable to establish and implement a planned communication and cooperation practices and create awareness across the organization in order to have shared vision about the benefits of ITIL both to the company and the employees.

The theoretical literature also broadly discussed and revealed the importance of communication and cooperation to the successful implementation of ITIL. Accordingly, Iden and Langeland (2010) explicitly stated that organizational restructuring and development of new roles and processes in the organization, as ITIL implementation, must be accompanied by appropriate communication that provides justification for change, establishing a context and involving people. Mehravani and Hajiheydari (2011) complemented that an open and honest information policy communicated to the users can

satisfy their need for information and highly reduce the chance of ITIL implementation failure. Communication increases cooperation, communication as the main activity to realize ITIL adoption expectations and to decrease its implementation problems is considered by organizations.

Thus, the finding provides empirical evidence which supports the argument of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Shang and Lin 2010, Iden and Langeland 2010, Cater-Steel *et al.* 2009, Cater-Steel 2006) that communication and cooperation is vital or decisive for the successful implementation of ITIL.

Project Management and Governance

The pattern matching revealed that project management and governance is critical to the success of ITIL implementation in both the theoretical literature and the empirical study. When we refer to the theoretical literature, its significance was highly pronounced above all CFSs to the successful implementation of ITIL. It was also indicated that the application of project management framework for the implementation of ITIL resulted in a higher level of quality. With this respect Rice (2000-2008) stated that:

> *The ITIL framework, a lifecycle approach that addresses the way an IT organization operates, is first and foremost business driven and answers the question "Are we doing the right things?" While the project management framework addresses the implementation of projects, requiring that companies ask "Are we doing things the right way?"*

This implies that ITIL framework and project management framework support each other in a way that propels services and operations to a greater level of proficiency. Thus, project management and governance is crucial for successful ITIL implementation.

This finding provides empirical evidence which supports the argument of (Mehravani and Hajiheydari 2011, Pollard and Cater-Steel 2009, Pederson *et al.* 2010, Cater-Steel and Tan 2005, Shang and Lin 2010, Cater-Steel *et al.* 2009, Iden and Langeland 2010, Marquis 2006) that project management and governance is critical to the successful implementation of ITIL.

Monitoring and Evaluation

Monitoring and evaluation is the core aspect of continuous service improvement, which is one component of the ITIL framework. It is somehow important CSF to the implementation of ITIL. In both the literature and the empirical study the importance of this factor was not as such magnified. However, Addy (2007), and Lamrihini and Sebaaoui (2012) tried to show the importance of monitoring and evaluation in relation to feedback through recording and reporting. Thus, this result confirmed the argument of the authors that stated monitoring and evaluation is critical to the successful implementation of ITIL. However, this study revealed that because of the weakness in the practical application of monitoring and evaluation in ET ITIL implementation irregularity of activities and difficulty of maintaining momentum was prevalent.

ITIL aligned organizational structure

As can be seen on Table 12, this CSF is typical to this study and it was not identified as a CSF in the theoretical literature. However, in this study it was considered critical because if the organizational structure is highly complicated and steeply, it is difficult to

implement projects like ITIL. ITIL implementation needs strong and timely collaboration and cooperation of various individuals and functions across the organization. Thus, ITIL implementation will be highly impeded if the organizational structure is not ITIL aligned. In other words, it was unlikely to implement ITIL in the presence of departmental demarcations as it was at the beginning of the ITIL implementation. At the outset when the project was started, the organization of the IT division was not as per the requirement of ITIL framework. It was highly departmentalized and rigid. However, in the meantime the Information System division was reorganized to fit the ITIL service lifecycle modules which include service strategy, service design, service transition, service operation, and continual service improvement. As a result, executions of cross-functional processes were facilitated, and improved the provision of end-to-end services.

In general the finding of this study about CSFs revealed that all the CSFs in the theoretical pattern were supported or confirmed by this study. The CSFs which were supported by small number of studies were weakly addressed by interviewees in the empirical study. From these findings we can realize that almost all CSFs seemed to be similar irrespective of the context in which ITIL is implemented. This means CSFs are few and key areas of activity which are not affected by contextual factors. On the other hand, even the typical CSF of this study (ITIL aligned organizational structure) was most likely embodied in high level CSFs or it was less critical as it was indicated on the result of this study.

5.2 Conclusion

This study has focused on the exploration of influencing factors that act as barriers and CSFs to the implementation of ITIL in ET. As a result, a variety of barriers were identified. The barriers were classified as:

- Common to most ITIL implementation processes. These include lack of top management support and commitment, lack of resource, lack of ITIL knowledge and expertise, resistance to change, lack of communication and cooperation, difficulty in engaging the right people to the right position, unable to maintain momentum, and lack of appropriate measurement and evaluation mechanism to measure benefits of ITIL.

- Unique to a single case of ITIL implementation process from the reviewed literatures and confirmed by this empirical study. These include lack of commitment from those who involved in the implementation of ITIL, difficulty in process governance and management, process misalignment, weaknesses in organizational change management, time lag between investment on ITIL project and performance outcome, not assigning process owners on time, being too ambitious to see the outcome from the ITIL investment, rigid organizational structure, difficulty in deciding process priority, fear of ITIL, and inappropriate process management tools. This showed that ET's ITIL implementation process has been surrounded by a number of barriers in addition to those barriers mentioned as common.

- Barriers which are typical to this empirical study. These are complexity of integrating ITIL to the existing system, and composition of ITIL implementation project team members. This showed that ET is lacking ITIL aligned organizational structure, appropriate process integration tools, and people with the relevant skill and competencies.

- Barriers that were mentioned in the reviewed literatures but not confirmed by this study. This might be because a single empirical study is not expected to confirm all barriers which were identified by many studies which were conducted under different contexts. Another possible justification for not confirming these barriers might be resulted from the fact that the interviewees didn't discuss about them.

Generally, ET's ITIL implementation process has encountered with a catalogue of barriers which have negative influence to its successful implementation.

- The study also identified eight CSFs to the implementation of ITIL in ET. Of these, all CSFs except one are similar to the theoretically identified CSFs. These are top management support and commitment, training and expertise of people involved in ITIL implementation, ITIL process implementation and applied technologies, organizational change management, communication and cooperation, project management and governance, monitoring and evaluation, and ITIL aligned organizational structure. The last factor is typical to this study.

In general, all the CSFs in the theoretical pattern were supported or confirmed by this study. The CSFs which were supported by small number of studies were weakly addressed by interviewees in the empirical study. From the findings we can conclude that almost all CSFs seemed to be similar in the theoretical and observed patterns of CSFs irrespective of the context in which ITIL was implemented. This means CSFs are few and key areas of activity which are not seriously affected by contextual factors. On the other hand, even the typical CSF of this study (ITIL aligned organizational structure) was assumed to be embodied in other CSFs in the theoretical literature. It was also observed as less critical in the study because it was mentioned and discussed only by one of the interviewees.

A single case study methodology was applied to undertake this research. Data was collected through document analysis, interview and direct observation. Interviewees were selected based on three different categories: ITIL implementation project member, process owners, and process operators. One project manager, two process owners, and two process operators, for a total of five interviewees were selected.

The research revealed that ET is indeed facing barriers to its ITIL implementation efforts. It is believed that these barriers can be mitigated through a better performance in the identified CSF areas. In the context of this study, CSFs were understood as high level factors if they are well addressed, they have a potential to solve or minimize all the identified barriers. Besides, it is also believed that they have a capacity to create additional opportunities to success.

5.2.1 Research Contribution

The result of this study offers several benefits for both practitioners and academics. First, it gives insights as to which influences are acting as barriers, and which influences are acting as critical success factors. This will allow ET to focus its efforts towards those actions that can help overcome barriers and perform better on achieving critical success factors. On the other hand, the theoretical contribution of this research is that it filled a part of the gap available in knowledge limitations of Ethiopian literature. Thus, this research can serve as a springboard for future researches on related topics.

5.2.2 Limitations of the Study

This research had several limitations that must be noted. First, because this was a single case study, the generalizability of the result is only for the case company. Second, as this study is the first qualitative study conducted by the researcher, the amount of data collected and depth of analysis was potentially limited by the experience of the researcher. Third, though the top management is the sponsor of the ITIL implementation project the interview didn't include interviewee from the top management.

5.3 Recommendation

Based on the overall result, discussion and the basic questions of the study, the following recommendations were made both for practitioners and academic research.

5.3.1 Implications for Practitioners

Practitioners in ET should work on the enhancement and better performance of the identified CSFs to mitigate all the identified barriers as well as to create additional

success opportunities to successful ITIL implementation. To this end, the top management need to be supportive and committed to the ITIL implementation success, the company needs to focus on wide-spread awareness creation and education efforts at all the implementation levels, and training opportunities must exist according to the requirement of the ITIL framework. Second, ET need to have ITIL champion, someone who can promote ITIL, to create awareness and better understanding of ITIL and gain support from all ITIL implementation stakeholders. There should be monitoring and evaluation at all stages of the ITIL implementation process.

Generally, ET needs to focus its efforts and resources on factors considered as CSFs and perform better in those areas to increase its chance of implementing ITIL successfully.

5.3.2 Recommendations for Future Research

The study has not been entirely conclusive and has led to many questions related to ITSM practices of Ethiopian organizations. Further studies are therefore required to both extend this research and help improve the ITSM practices in Ethiopia. Therefore, in conclusion to this study some future work recommendations are presented below:

1. Case study on ITIL implementation influencing factors in ET by involving interviewees from the top management too.
2. Research on ITIL implementation influencing factors in Telecom companies using quantitative method, using models proposed in this study.

References

Addy, R. (2007). Effective IT Service Management To ITIL and Beyond!. New York: Springer Berlin Heidelberg.

Ahmad, N. and Shamsudin, Z. M. (2013). Systemic Approach to Successful Implementation of ITIL. Journal of Prodia Computer Science. V. 17, Pp. 237-277.

Ahmad, N., Hilali, A. A., Qutaifan, F., and Amer, N., T. (2012). ITIL ADOPTION MODEL BASED ON UTAUT. Paper presented at European, Mediterranean & Middle Eastern Conference on Information Systems 2012 ,June 7-8, Munich, Germany.

Alaskari, O., Ahmad M.M, N. Dhafr, Pinedo-Cuenca, R. (2012). Critical Success Factors (CSFs) for Successful Implementation of Lean Tools and ERP Systems. Proceedings of the World Congress on Engineering 2012 Vol III WCE 2012, July 4 - 6, 2012, London, U.K.

AlShamy, M., M., Elfakharany, E., and ElAziem, M., A. (2012). Information Technology Service Management (ITSM) Implementation Methodology Based on Information Technology Infrastructure Library Ver.3 (ITIL V3). International Journal of Business Research and Management (IJBRM), V. 3, Issue 3.

Bruner, J. (1973) *Going Beyond the Information Given*, New York: Norton.

Cartlidge, A., Hanna, A., Rudd, C., Macfarlane, I. , Windebank, J. and Rance, S. (2007). An Introductory Overview of ITIL® V3. United Kngdom: The UK Chapter of the itSMF

Cater-steel, A. (2006). Transforming IT service management-the ITIL Impact, Service Management 2006.

Cater-Steel, A. (2009). IT service departments struggle to adopt a service-oriented philosophy. International Journal of Information Systems in the service sector, Vol. 1, No.2, pp. 69-77.

Cater-Steel, A. and Tan, W. G. (2005). Implementation of Information Technology Infrastructure Library (ITIL) in Australia: Progress and Success Factors. Proceedings of the IT Governance International Conference, Auckland, NZ.

Cater-Steel, A., Tan, W. G. and Toleman, M. (2006). Challenges of Adopting Multiple Process Improvement Frameworks. Paper presented at the European Conference on Information Systems, Goteborg, Sweden.

Cater-Steel, A., Toleman, M. and Tan, W. G. (2009). Implementing IT Service Management : A Case Study Focusing on Critical Success Factors. Journal of Computer Information Systems.

Chen, A. H. C. and Chou, S. K. (2010). Issues in Implementing Information Technology Service Management. Service Science, Vol. 1, No. 2.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches.* Thousand Oaks, CA: Sage.

Diirr, T. and Santos, G. (2014). Improvement of IT service processes: a study of critical success factors. Journal of Software Engineering Research and Development, V. 2, No. 4

Enterprise Management Associates (2006). Mapping ITIL To The Real World. A White Paper Prepared for Mercury InteractiveJuly 2006.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M. and Wallace, F. (2005). Implementation research: A Synthesis of the Literature. Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network (FMHI Publication #231).

Fujitsu. (2007). IT Service Value There is no Silver Bullet. A Report by Fujitsu Australia and New Zealand.

Ghayekhloo, S., Sedighi, M., Nassiri, R., Latif, S. G. and Tirkolaei, H. K. (2009) Pathology of organizations currently implementing ITIL in developing countries. In: Proceedings of the 2nd International Conference on Computer and Electrical Engineering. ICCEE, Dubai, pp 28–30. Dec 2009.

Himi, A., Bashani, S. and Semma, A. (2011). The IT service Management according to the ITIL framework applied to the enterprise value chain. International Journal of Computer Science Issues, Vol. 8, Issue 3, No. 2.

ICASA (2012) COBIT 5 – Control Objectives Management Guidelines Maturity Models: A Business framework for the Governance and Management of Enterprise IT. Information Systems Audit and Control. Association, USA .

Iden, J. and Eikebrokk, T.R. (2013). Implementing IT Service Management: A systematic literature review. International Journal of Information Management, V. 33, No. 3, pp. 512– 523.

Iden, J. and Langeland, L. (2010), Setting the stage for successful ITIL adoption: A Delphi study IT experts in the Norwegian armed forces, Information Systems Management 27,103-112.

ISG Information Services Group (2009). ITIL BENEFITS.

ISO/IEC (2009) ISO/IEC TR 20.000-3: Information Technology – Service Management – Part 3: Guidance on scope definition and applicability of ISO/IEC 20.000-1. International Standard organization/International Electro technical Commission, Switzerland.

itSMF (2006). Frameworks for IT Management. London: Van Haren Publishing, 2006.

Jantti, M. (2012). Examining Challenges in IT Service Desk System and Processes: A Case Study. The Seventh International Conference on Systems, University of Eastern Finland, Kuopio, Finland.

Kabachinski, J. (2010). Have you heard of ITIL? It's Time you did, Boimedical Instrumentation & Technology, 45(1): 59-62.

Kush, P. (2013). Difficulties in Implementing Effective Problem Management. International Journal of Scientific & Engineering Research, V. 4, Issue 8.

Lamrini, M. and Sebaaoui, S. (2012). Implementation of ITIL in Moroccan Campany: the Case of incident management process. International Journal of Computer Science Issues, Vol. 9, Issue 4, No. 3.

Lapão, L. V. (2011). Organizational Challenges and Barriers to Implementing IT Governance in a Hospital. Electronic Journal of Information Systems Evaluation, V.14, No. 1, pp. 37-45.

Lyra, M., R. and Dugue, C. G. (2012). The Contribution of the Information Architecture for the Definition of the IT Service Strategy. ARPN Journal of Systems and Software, V-2, No-2.

Magalhães, I. L. and Pinheiro, W. B. (2007) IT service management in practice: an approach based on ITIL. Novatec, São Paulo (in portuguese).

Marquis, H. (2006). What it is and what it isn't. Business Communication Review, V. 36, No. 12, pp. 49-52.

Marrone, M. and Kolbe, L. (2010a). ITIL and the Creation of Benefits: An Empirical Study on Benefit, Challenges and Processes. Paper presented at Eighteenth European Conference on Information Systems, Goettingen, Germany.

Marrone, M. and Kolbe, L.(2010b). Providing More than Just Operational Benefits: An Empirical Research, Journal of Information Systems and E-Business Management, V.9, No.3, pp. 363-380.

Mehravani, S. and Hajiheydari, N. (2011). ITIL Adoption Model based on TAM. Paper presented at 2011 International Conference on Social Science and Humanity IPEDR vol.5.

Miles, M. and Huberman, A. M. (994). Qualitative Data Analysis. Thousand Oaks, CA: Sage Publications.

Mohamed, B., Al Murad and Johari, R. (2014). Resolution of Challenges that are Facing Organizations before ITIL Future Computer Communication, V. 3, No. 2.

Mohammed, T. (2008, December 14-17). The Art of Existence and the Regimes of IS-enabled Customer Service Rationalization: A Study of IT Service Management in the UK Higher Education. Paper presented at the International Conference on Information Systems, Paris, France.

Nenickova, H. (2011). Critical Success Factors for ITIL Best Practice Usage, Economics and Management, V.16, pp. 839-844.

OGC. (2004). IT Infrastructure Library - planning to implement service management. London: TSO.

OGC. (2007). The Official Introduction to the ITIL Service Lifecycle. London: TSO..

OGCa. (2007). ITIL V3-Service Strategy. London: TSO.

OGCb. (2007). ITIL V3 – Service Design. London: TSO.

OGCc. (2007). ITIL V3 – Service Transition. London: TSO.

OGCd. (2007). ITIL V3 – Service Operation. London: TSO.

OGCe. (2007). Continual Service Improvement. London: TSO.

Oxford University (2001). Oxford Learners Dictionary. (10th Revised edn). London: University press.

Patton, M. Q. (2002). Qualitative Research and Evaluation Methods. Thousand Oaks, CA: Sage Publications.

Pederson, K., Krammergaard, P., Lynge, B. and Dably Schou, C. (2010). ITIL implementation: Critical Success Factors a comparative case study using the BPC framework, Journal of Information Technology Case and Application Research, V. 12, No. 2.

PEPPARD, J. (2003). Managing IT as a Portfolio of Services. European Management Journal, Vol. 21, No. 4, pp. 467–483.

Pereira, R. (2010). A Maturity Model for Implementing ITIL, MEIC Alameda, Instituto Superior Tecnico, Libboa, Portugal.

Pollard, C. and Cater-Steel, A. (2009). Justifications, Strategies, and Critical Success Factors in Successful ITIL Implementations in U.S. and Australian Companies: An Exploratory Study. Information Systems Management, V. 26, No.2, pp. 164-175.

Probst, J. and Case, G. (2013). Integrating Six Sigma and ITIL for Continual Service Improvement. The Stationery Office and Pink Elephant.

QAI Global Services . http://www.qaiglobalservices.com/CMMI-Six-Sigma-Consulting--Telecom-Sector.html. (accessed 21 April, 2014).

Rice, P. (2000-2008). PMP and ITIL: Framework methodologies with valuable synergy. Project Smart.

Rockart, J. F. (1979). Chief executives define their own data needs. Harvard Business Review. 57, 81-93.

Rudd, C. (2004). An Introductory Overview of ITIL. United Kingdom: itSMF Ltd.

Saunders, M., Lewis, P. and Thornhill, A. (2009). Research Methods for Business Students. 5th edition, Pearson Education Limited, UK.

SEI (2010). CMMI for Services - CMMI-SVC. Software Engineering Institute, Pittsburgh Roots.

Shang, S. S. C., Lin, S. F. (2010). Barriers to Implementing ITIL- AMulti-Case Study on the Service-based Industry. Contemporary Management Research, V. 6, No. 1, pp. 53-70.

Sharifi, M., Ayat, M., Rahman, A.A, and Shabudin, S. (2008). Lessons Learned in ITIL Implementation Failure. Information Technology, 2008, ITSim 2008, pp. 1-4. IEEE.

Shekipour, R. and Modiri, N. (2012). An Approach to Map COBIT Processes to ISO/IEC 27000 Information Security Management Controls. International Journal of Security and its Applications, V. 6, No. 2 .

Soomro, T. R. and Hesson, M. (2012). Supporting Best Practices and Standards for Information Technology Infrastructure Library. Journal of Computer Science V.8, No. 2: 2, pp. 72-276.

Stake , R. (1995). The Art of Case Study Research. Thousand Oaks, CA: Sage

Steinberg, R. A. (2008). Implementing ITIL: Adopting your IT organization to the coming Revolution in ITSM. Trafford Publishing.

Sultana, N. (2013). A Case Study on Implementing ITIL in Business Organization-Considering Business Benefits With ROI. International Journal of Engineering Sciences & Research Technology, V. 2, No. 4, pp. 918-924.

Talla, M. and Valverde, R. (2013). An Implementation of ITIL Guidelines for IT Support Processes in a Service Organization, International Journal of Information and Electronic Engineering V.3, No.3.

Tech, R.(2005). The Adoption of ITIL in Large Enterprises. TechRepublic, Inc.

Techtarget (2010).Top ITIL Tools, Techniques and Implementation Errors.

Tellis, W. (1997). Introduction to Case Study Research. The Qualitative Report, V. 3, No. 2.

Thomas, D. R. (2003). A General Inductive Approach for Analyzing Qualitative Evaluative Data.

Trochim, W. M. K. (1989). Outcome Pattern Matching and Program Theory. Evaluation and Program Planning, Vol. 12, p. 355-366

Von Bon, J. (2011) ITIL - A Pocket Guide - 2011 Edition. Netherlands :Van Haren Publishing.

Wan, J., Zhu, S. and Wang, Y. (2008) Empirical analysis on risk factors of IT service management project implementation. Paper presented at the 4th International Conference on Wireless Communications, Networking and Mobile Computing – WiCOM, Dalian, pp 12–14. Oct 2008.

Weill, P. (2005). IT Governance, "How Top Performers Manage IT Decision Rights for Superior Results," in Beijing, The Commercial Press, 2005.9.

Winter, K. (2012). ITIL Adoption –the Challenges. APMG International. White paper.

Yin, R. (1994). Case Study Research: Design and Methods, 2nd Edition, Sage Publications, London, UK.

Yin, R. (2003). Case Study Research: Design and Methods, 3rd. Edition, Sage Publications, London, UK.

Yin, R. (2009). Case Study Research: Design and Methods, 4th . Edition, Sage Publications, London, UK.

Zhu L., Song M. and Song J. (2009). ITIL-based IT Service Management Applied in Telecom Business Operation and Maintenance System. Proceedings of the Second Symposium International Computer Science and Computational Technology (ISCSCT '09). Huangshan, P. R. China, 26-28,Dec., pp. 243-246.339

List of Appendices

Appendix A: Ethio Telecom Establishment Council of Ministers Regulation

ፌዴራል ነጋሪት ጋዜጣ

FEDERAL NEGARIT GAZETA

OF THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

17th Year No. 11
ADDIS ABABA 28th January 2011

CONTENTS

Regulation No. 197/2010

Ethio-Telecom Establishment Council of Ministers Regulation .... Page 5693

COUNCIL OF MINISTERS REGULATION No. 197/2010

COUNCIL OF MINISTERS REGULATION TO PROVIDE FOR THE ESTABLISHMENT OF THE ETHIO-TELECOM

This Regulation is issued by the Council of Ministers pursuant to Article 5 of the Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 691/2010 and Article 47(1)(a) of the Public Enterprises Proclamation No. 25/1992.

1. Short Title

This Regulation may be cited as the "Ethio-Telecom Establishment Council of Ministers Regulation No. 197/2010".

2. Establishment

1/ The Ethio-Telecom (hereinafter the "Telecom") is hereby established as a public enterprise.

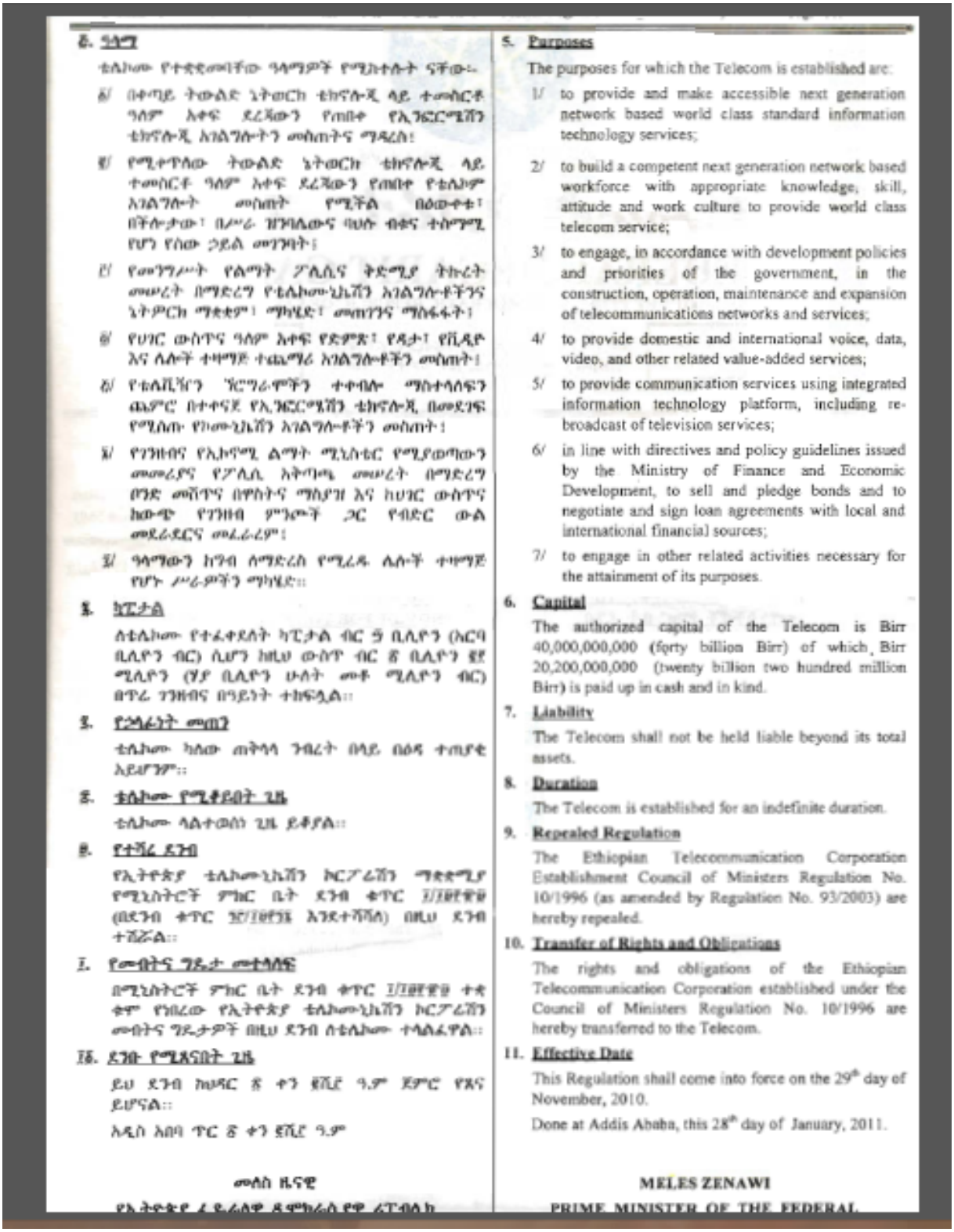
2/ The Telecom shall be governed by the Public Enterprises Proclamation No. 25/1992.

3. Supervising Authority

A body to be designated by the government shall be the supervising authority of the Telecom.

4. Head Office

The Telecom shall have its head office in Addis Ababa and may have branch offices elsewhere, as may be necessary.



፩. ዓላማ

ቴሌኮሙ የተቋቋመባቸው ዓላማዎች የሚከተሉት ናቸው፡-

፩/ በቀጣይ ትውልድ ኔትወርክ ቴክኖሎጂ ላይ ተመስርቶ ዓለም አቀፍ ደረጃውን የጠበቀ የኢንፎርሜሽን ቴክኖሎጂ አገልግሎትን መስጠትና ማዳረስ፤

፪/ የሚቀጥለው ትውልድ ኔትወርክ ቴክኖሎጂ ላይ ተመስርቶ ዓለም አቀፍ ደረጃውን የጠበቀ የቴሌኮም አገልግሎት መስጠት የሚችል በዕውቀቱ፣ በችሎታው፣ በሥራ ዝንባሌውና ባህሉ ብቁና ተወዳዳሪ የሆነ የሰው ኃይል መገንባት፤

፫/ የመንግሥት የልማት ፖሊሲና ቅድሚያ ትኩረት መሠረት በማድረግ የቴሌኮሙኒኬሽን አገልግሎቶችንና ኔትዎርክ ማቋቋም፣ ማከናወን፣ መጠገንና ማስፋፋት፤

፬/ የሀገር ውስጥና ዓለም አቀፍ የድምጽ፣ የዳታ፣ የቪዲዮ እና ሌሎች ተዛማጅ ተጨማሪ አገልግሎቶችን መስጠት፤

፭/ የቴሌቪዥን ኦሮግራሞችን ተቀብሎ ማስተላለፍን ጨምሮ በተቀናጀ የኢንፎርሜሽን ቴክኖሎጂ በመደገፍ የሚሰጡ የኮሙኒኬሽን አገልግሎቶችን መስጠት፤

፮/ የገንዘብና የኢኮኖሚ ልማት ሚኒስቴር የሚያወጣውን መመሪያና የፖሊሲ አቅጣጫ መሠረት በማድረግ ቦንድ መሸጥና በዋስትና ማስያዝ እና ከሀገር ውስጥና ከውጭ የገንዘብ ምንጮች ጋር የብድር ውል መደራደርና መፈራረም፤

፯/ ዓላማውን ከግብ ለማድረስ የሚረዱ ሌሎች ተዛማጅ የሆኑ ሥራዎችን ማከናወን።

፮. ካፒታል

ለቴሌኮሙ የተፈቀደለት ካፒታል ብር ፵ ቢሊዮን (አርባ ቢሊዮን ብር) ሲሆን ከዚህ ውስጥ ብር ፳ ቢሊዮን ፪፻ ሚሊዮን (ሃያ ቢሊዮን ሁለት መቶ ሚሊዮን ብር) በጥሬ ገንዘብና በኅይነት ተከፍሏል።

፯. የኃላፊነት መጠን

ቴሌኮሙ ካለው ጠቅላላ ንብረት በላይ በዕዳ ተጠያቂ አይሆንም።

፰. ቴሌኮሙ የሚቆይበት ጊዜ

ቴሌኮሙ ላልተወሰነ ጊዜ ይቆያል።

፱. የተሻረ ደንብ

የኢትዮጵያ ቴሌኮሙኒኬሽን ኮርፖሬሽን ማቋቋሚያ የሚኒስትሮች ምክር ቤት ደንብ ቁጥር ፺/፲፱፻፺፱ (በደንብ ቁጥር ፺/፲፱፻፺፮ እንደተሻሻለ) በዚህ ደንብ ተሽሯል።

፲. የመብትና ግዴታ መተላለፍ

በሚኒስትሮች ምክር ቤት ደንብ ቁጥር ፺/፲፱፻፺፱ ተቋቁሞ የነበረው የኢትዮጵያ ቴሌኮሙኒኬሽን ኮርፖሬሽን መብትና ግዴታዎች በዚህ ደንብ ለቴሌኮሙ ተላልፈዋል።

፲፩. ደንቡ የሚጸናበት ጊዜ

ይህ ደንብ ከህዳር ፳ ቀን ፪ሺ፫ ዓ.ም ጀምሮ የጸና ይሆናል።

አዲስ አበባ ጥር ፳ ቀን ፪ሺ፫ ዓ.ም

መለስ ዜናዊ

የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ

5. Purposes

The purposes for which the Telecom is established are:

1/ to provide and make accessible next generation network based world class standard information technology services;

2/ to build a competent next generation network based workforce with appropriate knowledge, skill, attitude and work culture to provide world class telecom service;

3/ to engage, in accordance with development policies and priorities of the government, in the construction, operation, maintenance and expansion of telecommunications networks and services;

4/ to provide domestic and international voice, data, video, and other related value-added services;

5/ to provide communication services using integrated information technology platform, including re-broadcast of television services;

6/ in line with directives and policy guidelines issued by the Ministry of Finance and Economic Development, to sell and pledge bonds and to negotiate and sign loan agreements with local and international financial sources;

7/ to engage in other related activities necessary for the attainment of its purposes.

6. Capital

The authorized capital of the Telecom is Birr 40,000,000,000 (forty billion Birr) of which Birr 20,200,000,000 (twenty billion two hundred million Birr) is paid up in cash and in kind.

7. Liability

The Telecom shall not be held liable beyond its total assets.

8. Duration

The Telecom is established for an indefinite duration.

9. Repealed Regulation

The Ethiopian Telecommunication Corporation Establishment Council of Ministers Regulation No. 10/1996 (as amended by Regulation No. 93/2003) are hereby repealed.

10. Transfer of Rights and Obligations

The rights and obligations of the Ethiopian Telecommunication Corporation established under the Council of Ministers Regulation No. 10/1996 are hereby transferred to the Telecom.

11. Effective Date

This Regulation shall come into force on the 29th day of November, 2010.

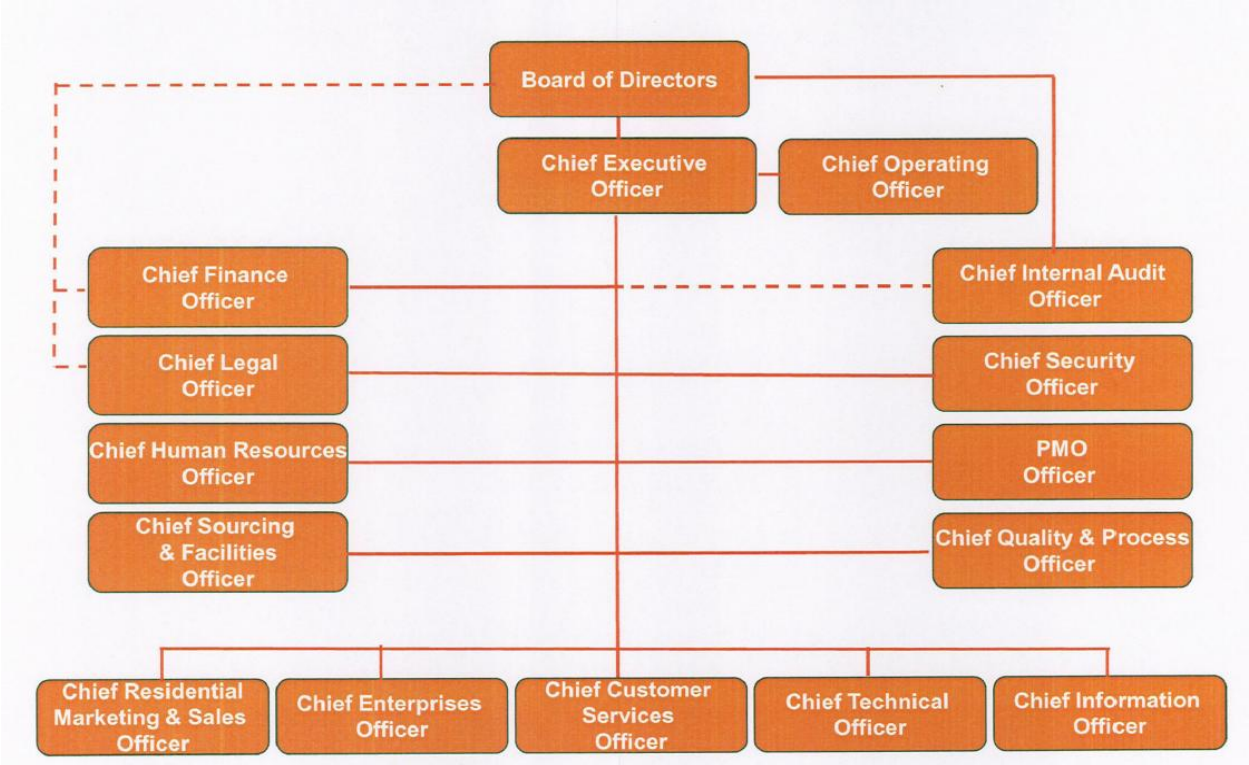
Done at Addis Ababa, this 28th day of January, 2011.

MELES ZENAWI

PRIME MINISTER OF THE FEDERAL

Source: Negarit Gazeta, 17th Year, No. 11, Addis Ababa, 28th January, 2011.

Appendix B: Organizational Structure of Ethio Telecom



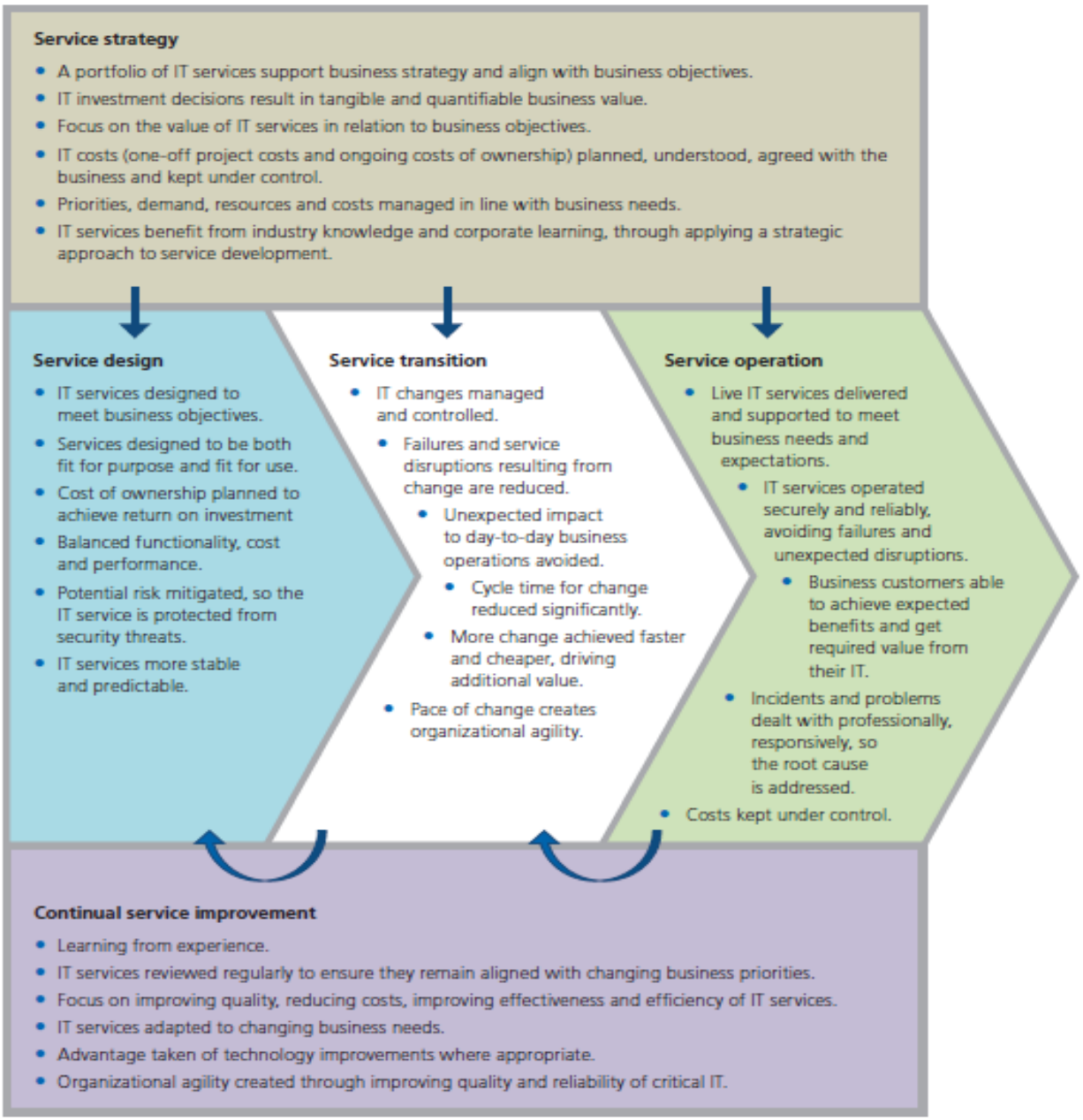
Source:- http://intranet.ethiotelecom.et/sites

Appendix C: List of Ethio Telecom ITIL Service Processes and process owners

Process owner	Process Name
Process owner A	Business Relationship Management, Demand Management, Service Portfolio Management, Strategy for IT Services
Process owner B	Availability Management, Capacity Management, Supplier Management , IT Service Continuity Management
Process owner C	Access Management, Event Management, Incident Management, Problem Management, Request Fulfillment
Process owner D	Release and Deployment Management, Service Validation and Testing, Transition Planning and Support
Process owner E	Change Management, Continual Service Improvement
Process owner F	Service Catalogue Management
Process owner G	Information Security Management
Process owner H	Service Asset and Configuration management
Process owner I	Knowledge Management
Process owner J	Financial Management for IT Services

Source: http://intranet.ethiotelecom.et/sites

Appendix D: The integration of ITIL modules



(Source: Cartlidge *et al.* 2007)

Appendix D: Ethio Telecom Press Conference on Service Quality

http://www.ethiopianreporter.com/index.php/interview/item/5086-‹‹ትልቁ-የኢትዮ-ቴሌኮም-ፈተና-የአገልግሎት-ጥራት-ችግር-ነው››(21/02/2014)

መነሻ ገጽ - ቆይታ - ‹‹ትልቁ የኢትዮ ቴሌኮም ፈተና የአገልግሎት ጥራት ችግር ነው››

16 EBRUARY 2014

‹ትልቁ የኢትዮ ቴሌኮም ፈተና የአገልግሎት ጥራት ችግር ነው››

አቶ አብዱራሂም አህመድ፣ የኢትዮ ቴሌኮም ኮርፖሬት ኮሙዩኒኬሽን ሥራ አስኪያጅ

ኢትዮ ቴሌኮም ከፍተኛ የአገልግሎት ጥራት ችግር ውስጥ እንደሚገኝ አምኗል፡፡ በመላው አገሪቱና በአዲስ አበባ ለሚታየው የኔትወርክ ችግርና የጥራት ዝቅጠት ምክንያት የሚደረጉት ሁለት ዓበይት ክስተቶች መሆናቸውን የገለጹት፣

በኢትዮ ቴሌኮም የኮርፖሬት ኮሙዩኒኬሽን ሥራ አስኪያጁ አቶ አብዱራሂም አህመድ ናቸው፡፡ የኢትዮ ቴሌኮምን የ2006 ዓ.ም. የስድስት ወራት አፈጻጸም በማስመልከት ባለፈው ሐሙስ እንዳስታወቁት፣ በሁሉም የቴሌኮም አገልግሎቶች 27.14 ሚሊዮን ተጠቃሚዎች ቁጥር ተመዝግቧል፡፡ የሞባይል ተጠቃሚዎች ቁጥር 26.16 ሚሊዮን ደርሷል፡፡ የኢንተርኔት ተጠቃሚው ሕዝብ ቁጥር 4.5 ሚሊዮን ሲሆን፣ የመደበኛ ስልክ ተጠቃሚ ብዛት ግን 748,552 ነው ተብሏል፡፡ በገቢ ደረጃም ሰባት ቢሊዮን ብር በስድስት ወራት ሲያስገባ ያልተጣራ ትርፉ ከአምስት ቢሊዮን ብር በላይ መሆኑን አስታውቀዋል፡፡ ከዚህ ባሻገር ኢትዮ ቴሌኮም ለሁለቱ የቻይና ኩባንያዎች ለዜድቲኢና ለሁዋዌ ኩባንያዎች የሰጠው የ1.6 ቢሊዮን ዶላር የማስፋፊያ ፕሮጀክት ሁለተኛው የስድስት ወራት ተግባሩ ሲሆን፣ በአዲስ አበባ የሚታየው የኔትወርክና የቴሌኮም አገልግሎት ጥራት ችግሮች በመጪዎቹ ስድስት ወራት ውስጥ እንደሚፈቱ እርግጠኛ ሆኖ ቢገልጽም፣ የፈረንሳዩ ኩባንያ የወጣ ሰሞን በልበ ሙሉነት የተገለጸውና በሁለትና ሦስት ወራት ይፈታል የተባለው ችግር ከዓመት በላይ ቆይቶም ብሶበታል፡፡ ጋዜጠኞችም ይህንን ችግር በማስመልከት ደጋግመው ጥያቄ አንስተዋል፡፡ ለዚህ የሚሰጡትን ምላሽ ጨምሮ በስድስት ወራትና በመጪዎቹ ሁለት ዓመታት ተስፋ የተደረገባቸውን ሥራዎች በማስመልከት ከጋዜጠኞች ጥያቄ ቀርበውላቸው አቶ አብዱራሂም የሰጧቸውን ምላሾች የተከታተለው ***ብርሃኑ ፈቃደ*** እንደሚከተለው አጠናቅሮታል፡፡

ጥያቄ፦ ለማስፋፊያው ፕሮጀክት ከሁለቱ የቻይና ኩባንያዎች ጋር ኮንትራት ከተፈረመ ሰድሰት ወራት ሊሆኑ ነው፡፡ የአዲስ አበባውን ሥራ ሁዋዌ ስለወሰደ ሥራውን መጀመሩ ታውቋል፡፡ በከፊል ግን ቦታ ተሰይቶ እንዳልተሰጣቸው ኩባንያዎቹ እየገለጹ ነው፡፡ የዕድገትና ትራንስፎርሜሽን ዕቅዱ ሊጠናቀቅ 18 ወራት ይቀሩታል፡፡ በቀሪዎቹ ሰድሰት ወራት ጊዜ ውስጥ ይኼ ሁሉ ሥራ ይጠናቀቃል?

አቶ አብዱራሂም፦ እኔ የምለው ያልቃል ነው፡፡ ማለቁን ከሚወስኑ ነገሮች አንዱ የተቀመጠለት መርሐ ግብር ነው፡፡ ሁዋዌ ያስቀመጠው መርሐ ግብር አለ፡፡ በዚህ መሠረት የት ላይ ነን ስንል በትክክል በተቀመጠው የጊዜ ሰሌዳ መሠረት እየሄደ ነው፡፡ ከዕድገትና ትራንስፎርሜሽን ዕቅዱ አኳያ በሁለት ዓመት ውስጥ እንደሚጠናቀቅ ነው፡፡ በሞባይል ላይ ያለውን አፈጻጸም ስንገመግመው አሁን ባለንበት ደረጃ ከ64 ከሙቶ በላይ ዕቅዱን ፈጽመናል፡፡ የኢንተርኔት አገልግሎቱን ብናይ ደግሞ ከተቀመጠለት በላይ ነው፡፡ በዕድገትና ትራንስፎርሜሽን ዕቅዱ የተቀመጠው 3.5 ሚሊዮን ማድረስ ነው፡፡ አሁን ያለነው ከአራት ሚሊዮን በላይ ነው፡፡ በመቶኛ ካየነው አፈጻጸሙ ከ111 በመቶ በላይ ነው፡፡ ያልቃል ወይ ካልን በትክክል ያልቃል፡፡ የአዲስ አበባን ከተቀመጠለት ጊዜ በፊት ለማጠናቀቅ እየተሠራ ነው፡፡ ከስድስት ወራት ባነሰ ጊዜ የኖኪያ አካባቢ ተብሎ የሚታወቀውን በቶሎ ጨርሶ ሥራ ለማስጀመር እየተሠራ ነው፡፡

Appendix E: Interview guide for interviewing ITIL Implementation Project Manager

Q1. How did you start to involve in ET's ITIL implementation process?

Q-1-1 At that time, have you ever heard of the ITIL framework, or attended training on ITIL?

Q-1-2 After assigned as a project manager what were your main responsibilities?

Q-1-3 what general knowledge and skill is required to properly play the role of a project manager?

Q2. How is Ethio Telecom going through the ITIL implementation process?

Q-2-1 How did ET start to implement ITIL?

Q-2-2 How do you explain the composition, ITIL knowledge and previous ITIL implementation experience of the ITIL implementation project team members?

Q-2-3 How was your ITIL process implementation approach?

Q-3 From your experience of ITIL implementation in ET, what are the barriers to successful implementation of ITIL?

a. What do you understand by barrier?

b. Why do you call them barriers?

c. How did they damage or hurt the ITIL implementation process or outcome?

d. Can you give me an instant of a barrier?

Q-4 What factors do you think are vital or decisive for the successful implementation of ITIL?

a. What do you understand by critical success factor?

b. Why do you call them critical success factor?

c. How did they influence the ITIL implementation process or outcome?

d. Can you give me an instant of critical success factor to the implementation of ITIL?

Appendix F: Interview Guide for interviewing Interviewees from Process owners

Q1. How did you start to involve in ET's ITIL implementation process?

Q-1-1 At that time, have you ever heard of the ITIL framework, or attended training on ITIL?

Q-1-2 After assigned as a process owner what were your main responsibilities?

Q-1-3 what general knowledge and skill are required to properly play the role of a process owner?

Q-2 From your experience of ITIL implementation in ET, what are the barriers to successful implementation of ITIL?

a. What do you understand by barrier?

b. Why do you call them barriers?

c. How did they damage or hurt the ITIL implementation process or outcome?

d. Can you give me an instant of a barrier?

Q-3 What factors do you think are vital or decisive for the successful implementation of ITIL?

a. What do you understand by critical success factor?

b. Why do you call them critical success factor?

c. How did they influence the ITIL implementation process or outcome?

d. Can you give me an instant of critical success factor to the implementation of ITIL?

Appendix G: Interview Guide for interviewing Interviewees from IT Staff

Q1. How did you start to involve in ET's ITIL implementation process?

Q-1-1 At that time, have you ever heard of the ITIL framework, or attended training on ITIL?

Q-1-2 After assigned to work with ITIL framework what were your main responsibilities?

Q-1-3 What general knowledge and skill are required to properly work with ITIL framework?

Q-2 From your experience of ITIL implementation in ET, what are the barriers to successful implementation of ITIL?

a. What do you understand by barrier?

b. Why do you call them barriers?

c. How did they damage or hurt the ITIL implementation process or outcome?

d. Can you give me an instant of a barrier?

Q-3 What factors do you think are vital or decisive for the successful implementation of ITIL?

a. What do you understand by critical success factor?

b. Why do you call them critical success factor?

c. How did they influence the ITIL implementation process or outcome?

d. Can you give me an instant of critical success factor to the implementation of ITIL?

Appendix I: Observed pattern for ITIL Implementation Barriers

Question: What are the barriers to the implementation of ITIL in ET?

PM	PO	POP	DO	Observed barriers
shortage of budget to buy tools, and for training	Lack of process integration and automation tools	Lack of automating tools	Absence of process automating tools	Lack of resource
Lack of competent staff in ITIL. It has impeded core activities of the implementation process	To give ABC of ITIL and to guide and follow up the employees by itself is a headache.	We did not get adequate and relevant training before the commencement of ITIL implementation. This has affected our performance	Service desk staffs were observed challenged by alarm management system	Lack of ITIL knowledge and expertise
Difficulty to persuade employees on the advantages of ITIL implementation.	Traditional mindset of the IT staff. Interest of employees always to work in business as usual attitude.	There is no observable difference from formerly used packages and tools.	Some IT staff members used the previous reporting template instead of the template compatible with ITIL	Resistance to change
Information gap is the observable hurdle.	Lack of constant communication and cooperation.	Sometimes we were not even informed on what comes next.	The IT staff was not communicated about organizational restructuring before the restructuring as per ITIL lifecycle modules	Lack of communication and cooperation
Lack of continues follow up and support from the management side.	It is difficult to get adequate and required resources on time.	We are overburdened and, the number of employees assigned is limited.		Lack of top management support and commitment
The team composition heavily depends on IT background rather than diversified field of study.	It seems that some employees can perform better if they were assigned in other sections	Arbitrary assignment of process owners resulted in lack of know-how, problem of help and support across their section.		Difficulty in engaging the right people to the right positions

PM	PO	Staff	DO	Observed barriers
I am afraid; there is no equal awareness in the organization across the board.	Majority of the IT staff didn't understand what ITIL is and what its benefits are to employees and the company.	We do not understand the use of all these intricacies.		Lack of awareness
	The management, process owners, and the IT staff too didn't exert the necessary effort as was at the beginning.	Hustle and bustle of the activity at the outset fails to continue.		Unable to maintain momentum
All of us (the management, project team members, and process owners) didn't exert as much effort for the success of the ITIL implementation as expected from us. This means most of us were not dedicated	The top management was not committed to provide the necessary resources, and to spend part of its time for advertising ITIL to the whole company.			Lack of commitment from those who involved in the implementation of ITIL
Difficult to manage processes because they are not properly integrated and some of the related processes were not grouped under the same process owner. Under this condition process governance caused cost and time overhead	process management was not as simple because processes were not well integrated and automated			Difficulty in process governance and management

PM	PO	Staff	DO	Observed barriers
	Due to lack of expertise in integrating related processes, some processes are not aligned. This causes additional overhead of time and other resources.	Within the ITIL framework, processes have interaction among them. This means the output of one process becomes an input to other processes. However, there is a case where some variables were not similarly defined in the interacting processes, which could cause unwanted results. Example alarm severity definition on incident management and problem management.		Process misalignment
	There is no clear cut criteria to measure the financial benefits gained after the implementation of ITIL to convince the top management for additional support and resources			No appropriate measurement and evaluation mechanism to measure benefits of ITIL
	Lack of interest of newly assigned employees. The adverse effect of change on IT functions. Lack of communication.			Weaknesses in organizational change management

PM	PO	Staff	DO	Observed barriers
The delay of the project resulted in the delay in the expected performance outcome. Delay in the project is caused by many reasons, but the practically observed reasons include delay of suppliers, delay of consultants, problem in the capacity of employees to deliver their assignment on time, etc.				Time lag between investment on ITIL project and performance outcome
No process owner for some processes at the outset. This delays the design and implementation of the processes				Not assigning process owners on time
	The top management was eager to see outcome improvements on as many processes as possible, in as much short time as possible			Being to ambitious to see the outcome from the ITIL investment

PM	PO	Staff	DO	Observed barriers
	Up until the recent reorganization of the IT division as per the ITIL requirement (Service strategy, service design, service transition, service operation) there was problems in working with the ITIL framework because of the previous rigid organizational structure or departmental demarcation			Rigid organizational structure
	There was no clear justification on which process to implement first.			Difficulty in deciding process priority
	Complexity of Integrating ITIL to the existing system			Complexity of Integrating ITIL to the existing system
Composition of ITIL project team members				Composition of ITIL project team members
		IT staffs fear to use the ITIL framework because of lack of adequate knowledge of the framework		Fear of ITIL
		some of the process management tools are not fit purpose, they do not deliver the expected output		Inappropriate process management tools

Appendix J: Observed pattern for ITIL implementation critical success factors

What are the critical success factors to the implementation of ITIL in ET?			
	Data Source Categories		
CSFs	PM	PO	POP
Top management support and commitment	critical to: - the overall ITIL implementation - the approval of ITIL project -provision of human and other resources. -enforce rules and regulations. -Oversee the overall ITIL implementation.	The top management: -is the sponsor of the ITIL project by allocating all resources. -advocates ITIL and creates interest on others. -oversees the ITIL implementation project status.	The support of the top management is very important from end to end: -resource allocation. -enforcing compliance to working as per the defined procedures and processes. -enhancing the morale and commitment of others in the company.
Training and expertise of people involved in ITIL implementation	-crucial to the success of ITIL implementation. -to develop skill and competency of employees. -to enhance the efficiency and effectiveness of employees.	-it is an intervention to build skill and competency of employees. -ITL roles at every level require some degree of skill and competency in ITIL.	-ITL roles at every level require some degree of skill and competency in ITIL. -Although there is a good attitude on ITIL, it is difficult to implement ITIL without relevant skill and competency.
ITIL process implementation and applied technologies	-helps to group related processes under the same process owner. -helps to automate processes and thereby: ensure quality, decrease cost.	-critical for consideration of: organizational readiness, scoping, governance, training, tools ,and resources which are vital for ITIL implementation.	
Organizational change management		Helps to address changes related to: -organizational structure and organizational culture. -change is the soul of any business environment. It can cause up to 70% failure if not properly managed. -ensures successful implementation of ITIL.	Organizational change management is very important for the success of ITIL. Because: -ITIL is more of organizational change than technological. -managing this change, especially the people aspect is very crucial.

Critical Success Factor	PM	PO	POP
Communication and cooperation		Communication and cooperation is very important for ITIL success in that: -helps to build awareness about the need for ITIL. -help employees understand and internalize change. -helps to deliver the right message at the right time in the right channel from the right source. -helps to reduce project risks.	Communication and cooperation are very important for ITIL implementation success. Because: -the first thing that needs to be done in ITIL is creating awareness through communication. -then comes working cooperatively towards a common goal. -Helps all involved parties to work with maximum effort to realize the expected benefits of ITIL
Project management and governance		Project management and governance is decisive for successful implementation of ITIL. Because: -provides a decision making framework that is logical, robust and repeatable to govern the ITIL implementation project. -clearly outlines the relationships between all internal and external groups which are involved in the implementation of ITIL. -ensures appropriate review of issues encountered during the process.	-Following a solid project management and governance principles and best practices is crucial to successfully govern ITIL implementation project. -Combining ITIL implementation with operational activities most probably leads to failure of both.

Critical Success Factor	PM	PO	POP
Monitoring and evaluation			Monitoring and evaluation is vital for successful implementation of ITIL. Because: -ITIL implementation requires close follow up of middle and top level managements. -helps to get feedback on the overall ITIL implementation process. - It is the foundation for continual service improvement.
ITIL aligned organizational structure	ITIL aligned organizational structure is crucial for the success of ITIL implementation in that it: -avoids the negative impact of rigid organizational structure. -helps maintain strong and timely communication and cooperation easily.		

Key: PM-Project manager, PO-Process owner, POP-Process operator

Appendix K: A matrix that shows observed CSFs derived from observed barriers by inductive reasoning method

	Critical Success Factors							
	Top management support and commitment	Organizational Change Management	Communication and Cooperation	Training and competencies of involved people in ITIL project	ITIL process implementation and applied technology	ITIL aligned organizational structure	Monitoring and Evaluation	Project management and governance
Barriers	Lack of top management support	Resistance to change	Lack of awareness	Lack of ITIL knowledge and expertise	Difficulty in deciding process priority	Complexity of Integrating ITIL to the existing system	No appropriate measurement and evaluation mechanism to measure benefits of ITIL	Time lag between investment on ITIL project and performance outcome
	Lack of resource	Difficulty to manage issues which have resulted from organizational change	Lack of communication and cooperation	Fear of ITIL	Difficulty in process governance and management	Rigid organizational structure		
	Difficulty in engaging the right people to the right position	Complexity of Integrating ITIL to the existing system	Lack of commitment from those who involved	Process misalignment	Inappropriate process management tools			
	Not assigning process owners on time							
	Being to ambitious to see the outcome from the ITIL investment							