ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**IMPLEMENTATION OF PROJECT MANAGEMENT PRINCIPLES,
TOOLS AND TECHNIQUES AT MINISTRY OF INFORMATION
COMUNICATION TECHNOLOGY**

BY

SOLOMON ASSEFA

JULY, 2017

ADDIS ABABA, ETHIOPIA

IMPLEMENTATION OF PROJECT MANAGEMENT PRINCIPLES, TOOLS AND TECHNIQUES AT MINISTRY OF INFORMATION COMMUNICATION TECHNOLOGY

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN PROJECT MANAGEMENT

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DECLARATION

I declare that the project entitled "Implementation of Project Management principles, tools and techniques at Ministry of Information and Communication Technology" is my original work and has not been presented for any degree in this university or any other university or colleges, as well as all sources of material, used for the project have been duly acknowledged.

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Endorsement

I confirm that this thesis entitled "Implementation of Project Management principles, tools and techniques at Ministry of Information and communication Technology" has been advised by me and submitted for examination.

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ABBREVIATIONS AND ACRONYMS

PMI: Project Management Institute

PMBOK: The Guide to the Project Management Body of Knowledge

ICT: Information Communication Technology ICT

GTP I: The first Growth and transformation plan

GTP II: The second Growth and Transformation Plan

MCIT: Ministry of communication and information Technology

SDLC: System Development Life Cycle

CFS: Critical Success Factors

2G: Second generation

4G: Fourth generation

BPO: Business Process Outsourcing

IDI: Information Technology Development Index

ITSG: IT Services Group

BPO: Business Process Outsourcing

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ABSTRACT

The purpose of this study is to assess the Implementation of Project Management Principles, Tools and Techniques in Ministry of Communication and Information Technology e-government projects. As it is seen in literature in developing countries ICT projects do not have a good record, Ethiopia as developing country shares same problems in the sector. A quantitative and qualitative mixed research approach was used to explore the practice in depth. Primary data was collected using questionnaire and Interview and document review was used for collecting secondary data from the literatures. The researcher developed a questionnaire based on the practice of five project management process groups. The survey questionnaire was administered to purposively selected respondents like Project Managers and ICT professionals that are working in the e government directorate of MCIT. The researcher also conducted an interview and review internal documents to triangulate and supplement the data obtained from the questionnaire. For the data presentation and analysis SPSS and Microsoft Excel were used because these tools have ability to compute and analyze statistical data. The findings revealed that Project management tools and techniques are mostly implemented in each phase of project implementation of MCIT in house projects and policies and procedures are in place and implemented accordingly but there are no standards, legal and regulatory framework for the ICT development.This report recommends that the proper implementation of project management principles and tools are required and standard in house Project management methodology has to be established for future projects. Finally the result would contribute to realizing improved performance of ICT implementation to the development of Ethiopia.

Key words: Project management, Project management maturity, project management Process Groups.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Project management, though a new field as compared to other related management science; is recognized as one of the fastest growing disciplines in today's industries. Project management can be defined as the achievement of project objectives through people and involving the organization, planning and control of resources assigned (Harrison and Lock, 2004).The PMBOK Guide definition of project management is "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the application and integration of the forty two logically grouped project management processes comprising in five Process Groups: initiating, planning, executing, monitoring and con-trolling, and closing" .Without effective project management, projects are often running into troubles and risking failures (Heagney, 2012). Lack of understanding of the basic concept behind managing any projects leads to missed deadlines, over budget, costly changes, frustrated project managers, team members and other stakeholders (Ibid).

Researchers continued to improve the practice of project management using several applicable methodologies on project management. In 1969, the Project Management Institute (PMI) was founded and set out to be an association where project management professionals worldwide could collaborate on best practices in project management. PMI developed "The Guide to the Project Management Body of Knowledge" now in its fourth edition, a leading guide of PMI standards for project managers worldwide (Stackpole, 2010).The PMBOK guide is not a methodology itself, but also promotes several key components that good methodologies must contain. The use of a specific methodology, or procedure, gives project managers a directive on undertaking their projects that can help achieve the goals they desire to ultimately accomplish.

In information communication technology (ICT) sector, Project Management has been found as one of the most important aspects of the entire development process of IT. The main purpose of project management is to ensure the projects finish on time, within budget limit, with in defined scope and desired quality for achieving other project objectives.

Information communications technology projects are usually thought as merely a set of activities requiring only hardware, networking systems, software and applications with the end goal of introducing technological changes. As a matter of fact, managing ICT projects are quite challenging which need proper project management practices until the

closure of the project (Schwable, 2014). Basically, such endeavor primarily is attempted by giving a due attention the strategically context; larger goals of the organization.

The majority of public sector ICT applications in least developed countries are either in partial or total failures (E-Development: From Excitement to Effectiveness, 2005). One of the reasons for failure, as mentioned by the World Bank, is a poor project design and management. The failure begins since inception of such projects. Another, recent study conducted by McKinsey & Company on 5,400 large scales IT projects found that, the problems with IT Project Management are proliferating as opposed to the dynamism of the field. Among the key findings quoted from the report:

1. 17 percent of large IT projects go so badly that they can threaten the very existence of the company
2. On average, large IT projects run forty five percent over budget and seven percent over time, while delivering fifty six percent less value than predicted (Delivering large-scale IT projects on time, on budget, and on value, 2012).

A study conducted by the Standish Group between 1994 to 2012 ICT projects both public and private sector showed alarmingly failed to be delivered and displayed as a result confirms that the performance achievement of ICT projects needs to be improved (Stoicaa and Brouse, 2013).

Based on the GTP II strategic document Ethiopia, as a developing country, gives much emphasis to the development of ICT which it is considered as one of the major enabler in every aspects of the development of the economy; "During the plan period, the major strategic directions were to enhance the information communication technology infrastructure and human development, utilize ICT in government administration, industry development and private sector development. ICT equipment producing industries have started to emerge in the economy, while a number of ICT service providing enterprises have already become operational in Adds Ababa ICT Park. In the coming few years, these emerging enterprises are expected to create wide ranges of job opportunities and enhance the export mix of the country" (Growth and Transformation Plan II, 2016).

As it is noted in the national IT policy setting standards and procedures for effective project management and accountability for national and sector specific programs and projects are given to MCIT to enhance the successful implementations of projects(The National Information and Communication Technology (ICT) Policy and Strategy, 2016). Therefore, as an IT and project management professional the researcher is interested to

assess the extent to which implementation of project management tools and techniques have created a positive impact at MCIT projects in Addis Ababa.

1.2. Statement of the problem

Project management is an application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing (PMI, 2013).

Public sector organizations are differentiated in comparison with their commercial counterparts in the private sector. Literally in public sector there is no profit maximizing focus, little potential for income generation and, broadly speaking, no bottom line against which performance can be measured (Boland and Fowler, 2000). The vast majority of public sector organizations still generate most of their income from the State (Ibid). Nevertheless, the capacity of the public sector is pivotal to the maturation of the economy (Mutajwaa and Rwelamila, 2007). Furthermore, the need for project management expertise in public sector organizations has become fundamental in order to deal with the enormous responsibility of managing a number of projects (Ibid). In developing countries the implementation of project management tools and techniques is still in its early phases of development (Ibid). It is a relatively modern practice that attempts to achieve planned objectives within specific time and cost limits, through optimum use of resources and using an integrated planning and control system (Abbasi and Al-Mharmah, 2000). According to Schlichter, (1999) as sited in Ali (2010) project management has led a number of organizations to be more effective and efficient in the delivery of their products and services, to have more accurate budgeting and scheduling and improved productivity. The growth and acceptance of project management are continuing to increase as resources become scarce in less developed countries.

Globally companies are increasingly implementing project management in organizational practices for delivery of expected results. The ongoing process for innovation and transformation are reactionary to unpredictable global economic and political situations in which businesses operate. It is pertinent to note that no business including public sector has immunity from the realities of stiff competition and urgency of updating business aspects for competitive edge. Project management works are more visible in companies having strong core competency as costs are cut, risks are mitigated, and success rate improves.

Aligning project management strategies with strategic objectives is a vital way to achieving competitive advantage. Projects are integral parts of organization undertaken for various business goals and its management offers numerous benefits including and not limited to; Efficiency in operations, Reduction in failure rate of projects, Business Expansion, Competitive Edge, Organizational Flexibility, Quality and Quantity Assurance, Communication Improvement ,and Resource Optimization (PMI, 2014).

There are many reasons (simple and complex) why projects fail. Goatham (2014) identified common sources of project failures as follows;

1. Inability of accessing and utilizing past failure experiences;

2. Market and strategy failures – This occurs if project outcome does not solve anticipated problem for which project was undertaken and usually this type of failure is too expensive;

3. Organizational and planning failures – This is attributed to lack of well-articulated organizing and planning;

4. Leadership and governance failures – This failure is associated with ineffective project leadership or ownership that compromise project governance and control;

5. Underestimation and analysis failures – Projects sometimes fail if commitment to schedule and project resources precedes appreciation of full complexities of project;

6. Quality failures – Projects fail if quality of project inputs is compromised at any point. This occurs if the projects supplies are not monitored to ensure that the definitive characteristics (quality and quantity) of such supplies are not reduced. It is pertinent to observe that project outcome is as good as the input under normal situations;

7. Risk failures – Projects fail or even a whole organization could be derailed if associated risks are not predicted accurately;

8. Skills, knowledge and competency failures – Lack of requisite expertise and project management experience increase the chances of project failures. Projects involve man, money, material, machine (often), and skills that must be properly blended by project lead for anticipated project outcomes. The higher the project skills, the less the possibility of mistakes, errors, and failures;

9. Communications failures – Projects fail if communication is ineffective. For a project to succeed, communication must be seamless between all project stakeholders. Communication inspires confidence, provides deeper insight through various perspectives, reduces stakeholders' conflicts and increases project success;

Carlos (2009) also outlined common reasons for project failures as follows:

1. Poorly defined project roles, responsibilities, objectives, and goals;

2. The application of project methodologies with a "one tool for all projects" disposition of some project managers;

3. Lack of end-user participation in the course of project implementation for acceptable criteria for project success definition;

4. Inadequate or vague project requirements;

5. Project team weaknesses and competing priorities;

6. Insufficient project resources (finance, personnel and material);

7. Ignoring early project warning signs by project stakeholders, especially the project manager;

8. Inadequate testing procedure and shifting project objectives.

The lists of reasons for project failures are as many as authors, perspectives, and categorizations to the matter under discussion. However, the enumerated reasons are common issues typical of a developing economy like Ethiopia.

The Information Communication Technology (ICT) as a sector in Ethiopia is in its infant stage. Needless to mention, the sector requires experts in the field and its investment is expensive. ICT is partially new emerging technology its deployment and implementation is a risky task. It incorporates many elements, which need to be synchronized to ensure the project success. These are the human factor, material factor, change management factor, technology factor and so on. All these elements have to be managed and controlled to achieve the project objectives.

Project management is a powerful vehicle for successful implementation of projects, which contains various tools and techniques and procedures for planning, managing and controlling projects that may or may not entirely eliminate the challenges and problems. The practice of project management concepts, skills and knowledges could actually

enhance the accomplishment of the objectives and goals which results the success of the project.

The question remains if Ethiopian ICT contractors and consultants understand the importance of effective and timely application of project management concepts in the deployment and implementation of ICT Projects, to what extent that the contractors, consultants and other stakeholders apply it properly. Therefore, this research will explore the gap between the theory of ICT project management and its practice in MCIT.

1.3. Basic Research questions

The research aimed to answer the following questions:

1. To what extent the Project Management tools and techniques are put into practice in management of ICT projects in MCIT?
2. Are policy and producers of ICT project management are implemented in ICT projects of MCIT?

1.4. Objective of the Study

The main objective of this study was to assess the implementation of tools and techniques of Project management into practices of ICT projects and its impact on MCIT performances in Addis Ababa main office of MCIT of Ethiopia.

1.5. Specific objectives:

The research focued on three specific objectives

1. To assess the extent to which project management tools and techniques are implemented on the management of ICT projects of MCIT.
2. To assess the extent to which ICT policy and procedures are in place and implemented

1.6. Significance of Study

The discipline of project management is extremely versatile and can be adapted to any business or industry and its strength is grounded on collaborative efforts of teams of experts who can quickly adapt, organize and troubleshoot, to solve problems. Hence, this study will be significant to contributing for the development of ICT Project Management improved practices in Ethiopia, for future researches and body of knowledge. The result of the study will have an added value to Project owners, Project team members, Consultants and Contractors would accordingly engage themselves to proper project

management practices that have positive relationship with project success. This would contribute to realizing improved performance of ICT implementation in all sectors of development in Ethiopia.

1.7. Scope of Study

Although ICT is an emerging and a wide technology that facilitates scientific developments and scale up capacity; the study will only examine the application of project management tools and techniques and the positive impact created on ICT projects of MCIT.

1.8. Definition of Key terms

Information Communication Technology (ICT): is defined as an umbrella that consists of hardware, software, networks, and media for collection, storage, processing, transmission, and presentation of information (World Bank Group, 2003).

Project management: is an application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing (PMI, 2013).

1.9. Organization of the study

This thesis is divided into five chapters. Chapter one introduces the background of the study Including objectives, a statement of the problem, aim of the study, scope and limitations of the study. Chapter two contains the literature review. Chapter three present the methodology which include the research design, sampling technique, sample size and data collection instruments. Chapter four focuses on analysis and interpretations of data Finally, chapter five will provide summary of findings, conclusions of the study and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Historical Development of Project Management

In searching the history of project management questions like did the Great Wall of China, the pyramids, or rock hewn church of Lalibela has been built without project management? It is possible to suppose that the concept of project management has been about since the start of history. Although the exact period when it started to be used remains unknown, it is assumed that some aspect of project management probably made its first appearance in the works of ancient civilizations. Schwalbe in his book states that most scholars agree that the modern concept of project management began with the Manhattan Project, which the U.S. military project that aims to develop the atomic bomb in World War II. The Manhattan Project involved many people with different skills at several different locations and the Manhattan Project lasted about three years and cost almost $2 billion in 1946 (Schwalbe, 2011). Since 1950's, project management has become a well-established and recognized professional discipline, even though its actual start is remain obscure. However, (Kerzne, 2009) suggests that the history of project management can be divided into three periods:

2.1.1 Traditional Project Management - 1960 to 1985

During this period, Project management was mainly used by large construction and defense projects. Many large projects were completed behind schedule and were seriously over budget. Most projects in other industries were still handled on an informal basis whereby the authority of the project manager was minimized. Instead of appointing proper project managers to oversee the projects, functional managers were put in charge of managing projects. In the 1970 to early 1980s, formalized project management processes were being sought by many companies. The complexity and size of their project activities had grown to a point where it had become difficult to handle them without proper systemization. Management even came to realize that they could effectively run their organization's business on the basis of managing projects. Project management has since been growing rapidly, and has even been accepted by non-project driven sectors.

Project Management Institute (PMI) was founded in 1969 in the US. PMI produces standards for the practice of project management. Its standards document is recognized as a standard for managing projects worldwide. In the United Kingdom and Europe, the Association for Project Management (APM) and the International Project Management Association (IPMA) were established in 1972 and 1965 respectively to promote project management to their members and other business associates.

2.1.2 Renaissance of Project Management - 1985 to 1993

The organizations in other industries began to recognize the advantages project management could bring them. The use of project management techniques became a necessity and not a choice. Organizations were faced with strong competition and they realized that they had to compete on the basis of cost and quality. This strong driving force has encouraged the implementation of project management and project management began to be applied to all sizes of projects.

2.1.3 Modern Project Management – 1993 to Present

Most of the organizations developed some degree of competence in project management and wanted their employees to recognize the value of such improvements. In all industries, modern tools and techniques in support of projects have grown increasingly sophisticated. Project management is no longer confined to the project-driven industry, but virtually to all areas of business.

Project management has firmly been recognized as a profession, and a career path does exist for the professional project manager. The changing environment, along with changing technology, also allows for new ways of project management. One common example of a "new" ways would be the popularity of virtual project teams and virtual project management offices that rely heavily on trust, cooperation and effective communications.

2.2 Emergence of ICT Project management

The term project can be heard very often in the business community. Companies announce new projects almost every day. This is especially true of IT businesses; whenever they have an idea about a product, hardware or software, they turn it into a project. Hence, there must be certain attributes that characterize the undertaking of a project. The definition provided by the Project Management Institute "a project as a temporary activity under taken to create a unique product, service or result. Temporary meaning the project has a beginning and an end not necessarily meaning short in duration. PMBOK further goes on to clarify this definition with temporary not being related to the product generated from a project, but on the contrary, products of projects have a long lasting outcome (PMI, 2008). Even if the same project is repeated one more time, it will differ from its predecessor in one or more commercial, administrative or physical aspects (Lock, 2007 p.5).

ICT project management includes overseeing projects for software development, hardware installations, network upgrades, cloud computing and virtualization rollouts, business analytics and data management projects and implementing IT services. The aim

of implementing ICT project is not the technology itself, but achievement of certain business goals such as improved customer serviceor increased profitability (Dutta, Geiger and Lanvin, 2015). (Marchewka, 2015) conveys that IT project management employs project management principles and tools that should be part of a methodology, which consists of step-by-step activities, processes, tools, controls and deliverables defined for the entire project. Thus, IT projects failures are avoided.

As (Dutta, Geiger and Lanvin, 2015) indicates, IT project management as a discipline has become even more worrisome in today's business environment; constant IT changes are taking place; stakeholders and management have expectations that have to be met instantaneously; and ad- hoc temporary teams are created constantly to complete different projects.

The IT area is very wide, therefore different types of IT projects may be under taken with in it. (Cadle and Yeates, 2008) has grouped them into nine broad categories:

1. Software development
2. Package implementation
3. System enhancement
4. Consultancy and business analysis assignments
5. Systems migration
6. Infrastructure implementation
7. Outsourcing (and in-sourcing)
8. Disaster recovery
9. Smaller IS project

2.2.1 Characteristics of ICT projects

IT projects that range from small internal ventures to mega projects, they all share common characteristics:

- ✓ They are usually high-risk projects, often with the potential to bring either valuable benefitsor disaster to the project owner.
- ✓ When one of these projects fails, it can disrupt or even destroy the service provided to the project owner's customers.
- ✓ When one of these projects fails for a public sector owner the consequences will attract widespread adverse media attention and can even damage the ruling political party.

✓ The project owner has ultimate responsibility for managing the project and can be regarded as both owner and main contractor – in other words the core of the project is internal to the organization.

2.2.2 Project Management Methodologies for ICT Projects

PMI has developed *The Guide to the Project Management Body of Knowledge* (PMBOK), now in its fourth edition, a leading guide of PMI standards for project managers worldwide. The PMBOK guide is not a methodology itself, but promotes several key components that good methodologies must contain. The use of a specific methodology, or procedure, gives managers a directive on undertaking their projects that can help achieve the goals they desire to ultimately accomplish.

Information technology projects are different and therefore must have a unique set of project management tools and techniques to accomplish them. However, project management techniques and tools can apply to any project in any industry, regardless of whether it involves software, hardware, construction, engineering, or services. It is not the tools that are different, but rather the projects. What make IT projects different are their unique risks, the rapid development requirements to meet rush-to-market demands, the short life of technology, and multiple dependencies with other projects. The tools are the same, but they must be applied differently depending upon the project type and complexity. A review of the five major project management methodologies will be discussed as follows. These methodologies include: Agile, Prince2, Six Sigma, System Development Life Cycle (SDLC), and Waterfall.

2.2.2.1 Agile

The software industry faced significant challenges with the rise of computer processing and the Internet Age. Software developers were unable to create a sustainable software application product because of the number of glitches that a software application faced in different microcomputer environments or with upgrades to computer operating systems. This prompted several information technology engineers to come together at the turn of the twenty- first century to create the Agile Alliance (Mellor, 2005). In the Alliance's well-known *Agile Manifesto,* the proponents of a more lightweight method of software development share a project management methodology that has become recognized as an Agile Project Management.

Agile methodologies take an iterative approach to software development. Unlike a straightforward linear waterfall model, agile projects consist of a number of smaller cycles - sprints. Each one of them is a project in miniature: it has a backlog and consists

of design, implementation, testing and deployment stages within the pre-defined scope of work.

2.2.2.2 Prince2

The Prince2 project management methodology stands for Projects IN Controlled Environments (Skogmar, 2015) and was developed in 1989. It is the project management standard for the UK government's information technology projects, though it is now used extensively in both the public and private sectors. Prince2 is described as a structured project management approach and centers on eight characteristic techniques for the successful administration and control of a project (Ibid).

The PRINCE2 methodology is a tailored process approach to plan management. It offers a framework encompassing all facets of a task. PRINCE2 is a best-practice approach for the management of all types of projects. The PRINCE2 Methodology provides defined inputs and outputs for each process. This includes specific objectives or actives that are to be carried out. PRINCE2 has become progressively more popular and is now the recognized, established standard for project management in the UK and elsewhere.

2.2.2.3 Systems Development Life Cycle (SDLC)

With the arrival of computer information systems, organizations discovered the need to manage the systems that created, stored, or utilized the information for their businesses. While information systems were in place before microcomputers, the vast amount of information that could be housed within databases and servers introduced a new frontier for project management professionals.

Systems Development Life Cycle, sometimes referred to as Software Development Life Cycle or SDLC, is the "process that is followed to define needs, design a solution and then build the solution" (Whitten and Bentley, 2007). Explains that while there is a slight difference in a systems development lifecycle and a software development lifecycle, both have borrowed concepts from each other and include the development of a structural framework of stages to improve an application or system and guide it through these stages to implementation in the field(ibid). The systems development life cycle has been reported to be one of the more prominent concepts that has come from the field of information systems because it has had a significant bearing on programs, study, and practice of information systems (Hedman and Lind, 2009). Most systems development life cycle follows five clear-cut phases: "planning and problem identification, analysis, design, realization, and use and maintenance" which is most often referred to as the Waterfall method (Ibid).

2.3 Trends of ICT project management in Ethiopia

2.3.1 Background of MCIT

The Ethiopian government established the Ministry of Communication and Information Technology (MCIT) in 2010 recognizing the critical role of information and communication technology (ICT) in the national development. It is envisioned to make every aspect of Ethiopian life is ICT assisted by developing, deploying information and Communication Technology that would improve the livelihood of every Ethiopian, and optimize its contribution to the development of the country.

The major responsibilities of the Ministry of Communication and Information Technology

are:

- Implement Communication and Information Technology policy by formulating short, medium and long-term Communication and Information programs,
- Monitor and evaluate implementation of Communication and Information Technology projects and programs,
- Develop frameworks for the development of Communication and Information Technology in sectors such as Agriculture, Industry and Commerce, Education, Health, etc.
- Formulate projects and programs to guide Communication and Information Technology development with focus on strengthening on-going initiatives in all the sectors aimed at improved service delivery and enhancing good governance.

MCIT is organized into five divisions that are E-Government Directorate, Standard and Regulatory Directorate, Capacity Building Directorate, ICT Private Sector Development Coordination Directorate and Telecommunication and Postal Development Coordination Office (The organizational structure is annexed)

The Project Management Office (PMO) is part of the E-Government Directorate of MCIT and supports the e-Government Strategy implementation through monitoring project delivery, controlling the relationships with vendors, managing the procurement process, ensuring compliance with policies and standards, auditing projects at hand over, knowledge management and sharing in areas related to project management. The PMO plays the following roles:

- Monitoring the implementation of the e-Government Program on the different aspects (technical, administrative and financial);
- Project Addition/Deletion Approval

Supporting with evaluating requests received from the different Ministries/Agencies for implementations, and Supporting project's execution tasks through the identification and allocation of required resources, Knowledge sharing of experiences gained through executing the different Program components and procurement and contracting process management.

The organization structure of the PMO was developed based on the above mandate, where the following key departments have the core teams tasked to deliver listed roles:

- Project Coordination
- Knowledge Management
- Appraisal
- ITSG (IT Services Group)
- Marketing & Awareness
- Monitoring & Evaluation

The PMO contains a pool of resources that can be assigned different tasks depending on workload, projects nature and projects level of maturity. Accordingly, one team member can play several roles that can be of monitoring, support, and knowledge or procurement nature.

2.3.2 Policy and Procedures of ICT project management in Ethiopia

The ICT sector in Ethiopia is led by strong involvement from the government side. The government has a strong commitment to address the infrastructure development and service expansion throughout the country. The national telecommunication services operator, Ethio Telecom provides fixed, mobile and Internet services ranging from 2G up to 4G. Ethiopia has also been working towards stimulating the demand for the underlying infrastructure by increasing access to the public sector network.

2.3.3 IT Policy

The Government of Ethiopia has made the development of Information and communications technology one of its strategic plan priorities. The endorsed and currently enforce ICT policy is a presentment of its dedication to the development of ICT both as an industry and as an enabler of all-rounded socioeconomic transformation. ICT in Ethiopia at present is in its early phase of growth. The major indicators pointing to the low degree of ICT Development area:

2.3.3.1   The absence of appropriate legal and regulatory frameworks.

2.3.3.2   Limitations in telecommunications infrastructure and low degree of internet services penetration.

2.3.3.3   Lack of organized information and data resources, and poor accessibility to those that exist.

2.3.3.4   Lack of skilled human resources coupled with low ICT literacy.

2.3.3.5   Underdeveloped private sector.

To address these constraints, the Government, recognizing the importance of Information and Communication Technology development has endorsed an ICT policy and strategy in 2009. The reach of ICT policy covers knowledge and information as a tool for development & ICT as a sector or industry. There is strong belief and commitment that apart from being as enabler of socioeconomic development, ICT also supports the country's on-going process of democratization and good governance.

According to the ICT policy document (MCIT , 2009) the primary objectives of the ICT policy are listed as follows:

- Build ICT Infrastructure throughout the country and make it approachable.
- Create the necessary skilled human resources required for the proper development and application of ICT and expand the society's basic knowledge and usage of it.
- Develop the necessary legal framework for the application of ICT and design and implement appropriate security systems for the prevention of unlawful practices.
- Promote the use of ICT for modernizing the civil and public services to enhance its efficiency and effectiveness in service delivery; so as to promote good governance and reduce wastage of resources.
- Expand and strengthen the role of the private sector to ensure the rapid development of ICT.

Ethiopia's ICT policy is one of the fundamental components of the country's socioeconomic development goals and objectives. Hence, then focuses on the policy are in the following areas which are considered strategic for the success of ICT growth.

- Planning, implementation and development of ICT infrastructure
- Human resource development and capacity building
- ICT's legal systems and protection
- ICT for governance /E-Government/; Especially:
  - ICT in the education sector

- ICT for improved health
- ICT for agricultural modernization
- ICT industry and private sector growth
- ICT for research and development

2.3.4 e-government Strategy of the government of Ethiopia

The e-**government** strategy that was approved in 2011 envisages the implementation of two hundred nineteen e-services comprising of seventy nine informational and one hundred forty transactional services over a five-year period. Implementation of e-services were proposed through 12 priority projects and service delivery was through four primary channels, namely Portals, Call Centers, Mobile devices and Community ICT centers (MCIT ,2011). The Strategy has been designed keeping the ten guiding principles of e-Government:

Precept 1: E-government is about government rather than "e"

Precept 2: E-government is citizen-centric and criteria-based

Precept 3: E-government prefers in-house expertise to out-of-house expertise

Precept 4: E-government is wary in introducing private sector practices

Precept 5: E-government prefers open source to proprietary software

Precept 6: E-government is networked government and not integrated government

Principle 7: E-government promotes the CIO concept in e-government

Precept 8: E-government is introduced through an organization-wide e-business program

Principle 9: E-government provides multi-channel delivery of public services

Principle 10: E-government promotes the causes of e-citizen and e-democracy (Misra, 2008)

As per the strategy, the e-government service delivery was to be facilitated and strengthened through six core projects, including:

- The National Payment Gateway,
- The Enterprise Architecture framework,
- The Public Key Infrastructure,
- The National Data Set,

- The National Enterprise Service Bus and

- The National Integrated Authentication Framework.

In summation to the above mentioned tasks, common applications that horizontally cut across all ministries has been projected to be implemented. These include initiatives like E-Procurement, Human resource Management System, E-Office, E-Mail and Integrated Financial Management Information System (IFMIS).

Established on the strategy, most of the objects have been attained in the first Growth and transformation plan (GTPI) period of the execution. Ethiopia's first information technology park which is called as "Ethio ICT Village" is also inaugurated and began operation recently. The park is based on a 200 hectare site.

The IT Park is being built with a perspective of building an Information Technology (IT) village based on the tight linkage between research, industry and business in IT and IT enabled services and is expected to draw foreign investors as good as local ones. The IT Park has various functional zones like business, assembly and warehouse, commercial, administrative and Knowledge Park. The main focal point of the park is to attract IT, manufacturing, development of the IT services industry and Business Process Outsourcing (BPO).

2.4   Current challenges and aspects of managing ICT Project management

2.4.1   Ethiopian ICT sector Performance on International ICT indices

The IDI is one of the indices that measures ICT readiness using three sub-indices (detailed below): infrastructure and access, use, and skills (ITU, 2016).

- The infrastructure and access sub-index captures ICT readiness and includes five indicators (fixed telephone, mobile telephone, international internet bandwidth, households with computers, and households with internet).

- The employment sub-index captures ICT intensity and includes three ICT indicators (internet users, fixed [wired] broadband, and mobile broadband).

- The skills sub-index captures ICT capability and includes three proxy indicators (adult literacy, gross secondary enrollment, and gross tertiary enrolment). This sub-indicator is given less weight than the other two sub-indices in the calculation of the IDI.

Ethiopia ranked very low, at 169th out of 175 countries, on the 2016 IDI. Ethiopia's standing was well below Mozambique, Tanzania, and Malawi, countries that also hit low in the IDI.

ICT Development Index (IDI)
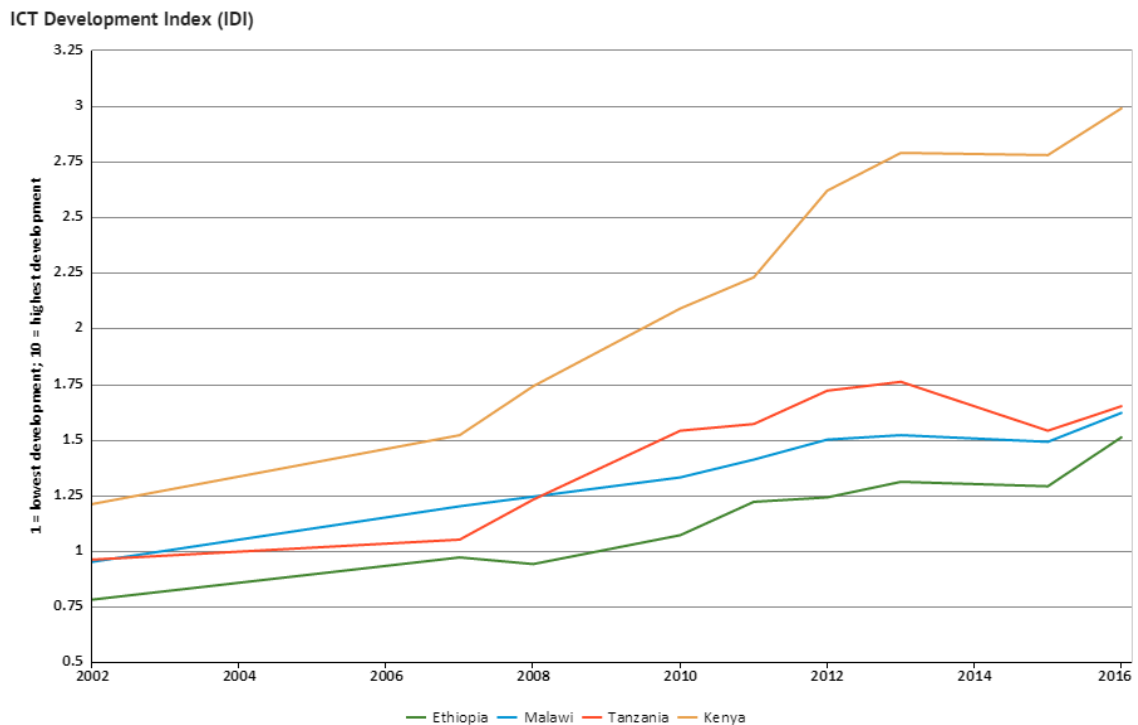
Last updated:Sunday, 07 May 2017   Author: Solomon Hailemariam

Figure 2.1: *Ethiopian ICT development status compared to Kenya, Malawi and Tanzania*

2.4.2   ICT Project management experience in Developed countries

2.4.2.1   Case of Denmark

Denmark is a highly developed ICT nation with a rank of 3 IDI 2016 Value 8.74 (ICT development index, 2016). The country has a strong foundation that can address the existing challenges like Health and well-being, Secure, clean and efficient energy, Green transport, Safe food and sustainable agriculture, Efficient use of resources and Inclusive and safe societies. ICT development is central for all these challenges and ICT thus is a key technology in pursuing growth through research and innovation (Agency for Digitisation, 2016).

The Danish digital ecosystem, as shown in the figure below, has a strong technological foundation for system development integrating hardware and software and embedded systems. It also comprises one of the most competitive and advanced telecommunications infrastructure and mobile markets. This will be central for the development of new smart products for applications in health, energy, environment and the future internet. Moreover, the ICT industry is strong, particularly when it comes to developing solutions for tomorrow's applications across industries and in private-public cooperation.
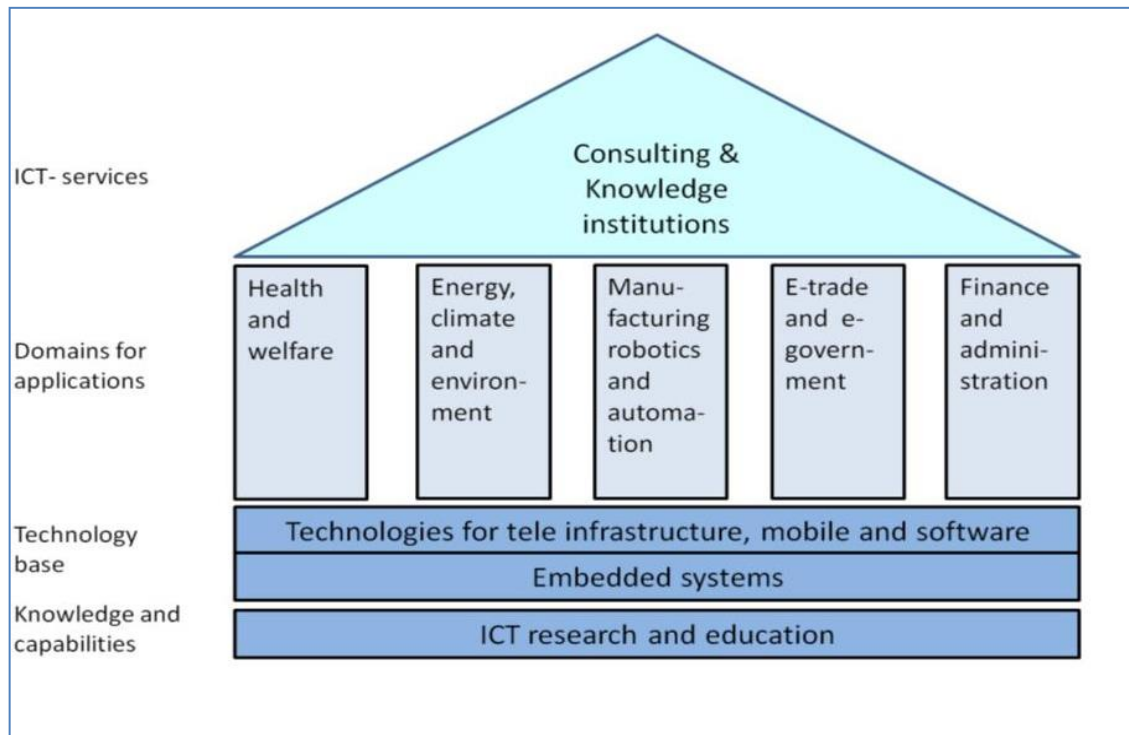
Figure 2.2: Denmark's digital ecosystem Denmark's digital ecosystem

ICT Project management practice in Denmark

The Danish government has put five strategic principles that are considered as guidance for the way that ICT projects are managed and implemented in governmental organizations.It aims to minimize the risk profile of ICT projects.

The five principles are:

1. Government agencies shall pursue ambitious solutions in relation to digitization but is obliged not to be 'first mover' in the usage of immature technologies unless there are special perspectives in doing so.

2. Already purchased or developed solutions must be reused wherever possible.

3. Only projects with clearly specified cost, benefits, and effects should be implemented.

4. Projects should be delineated by minimizing the scope and complexity with a clear focus on the business objectives.

5. Projects shall be managed based on shared methods and through the usage of only qualified resources, in order to ensure a sufficient level of maturity in every project

Cross-governmental IT project model

As per the Digital strategy 2016-2020 of the government of Denmark has introduced a cross-governmental IT project model which contributes to better, more uniform planning, management and implementation of governmental IT projects. The model is included in the Ministry of Finance budget guidelines and must be applied to all IT projects in the government sector. The model is generic and must be adjusted to the size and context of the individual project so as to meet the specific management needs of the individual project.

The cross-governmental IT project model includes four elements.

1. **Division into phases**

   The five main phases of the model serve their individual purposes and are clearly divided up, which makes it easy to distinguish when a phase begins and when it ends. Each main phase may be divided up into sub phases, if it proves expedient for the management of the project.

1. **Principles for phase transitions**

   The transition from one phase to the next signifies a change in the state of the project. The cross-governmental IT project model sets clear demands for what is to be documented at phase transitions and who has the responsibility for approving the transition.

2. **Products**

   The products of the model are the documents that are necessary for the project manager during the day-to-day management of the project. The products are also used as the basis for decision-making by the steering committee.

3. **Distribution of roles and responsibility**

   The responsibility for leadership and management of the five phases is placed in various places in the organization. The model includes a guide on which roles are to be manned when in the course of the project, and what the roles are responsible for.

2.4.2.2 Case of Norway

Norway performs relatively well on international benchmarks. It is a highly developed ICT nation with a rank of 9 IDI 2016 Value 8.42 (ICT development index, 2016).. ln Norway, legal means have recently been used as a key instrument to promote digitization of public services, and there is political support for and commitment to the

modernization of government services through digitization. Through the introduction of "Digital by default" as a principle for providing services, government agencies can, to a greater degree, focus their activities on providing fully-fledged digital solutions.

2.4.2.2.1 National policies and strategy

There are two overlapping national strategy and policy documents concerning the digitalization of society: (DAN, 2012) and the e Government strategy (MGARCA, 2012). Digital Agenda Norway has its primary focus on civil society, business and policy support measures, and also presents a synopsis of the e Government program.. The e Government program presents priorities, goals and strategies concerning user services, effective and efficient public services and coordination.

The eGovernment program outlines several strategic goals, with most revolving around digital communication becoming the general rule for contact with the public sector. Other goals include:

- ✓ The public sector is to provide unified and user-friendly digital services
- ✓ Login to public web services is to be simple and secure
- ✓ All citizens and businesses will receive mail from the public sector in a secure digital mailbox
- ✓ Development of ICT solutions is to be viewed in the context of the public sector's work processes and organization
- ✓ Protection of privacy and information security are to be safeguarded
- ✓ Digitization measures of relevance for several services are to be coordinated

To achieve this goal, the program presents future priorities and actions:

- ✓ A common solution for electronic IDs is a precondition for easy-to-use and secure digital services
- ✓ Portal is the common technical platform for digital services
- ✓ All citizens and businesses will be issued with a secure digital mailbox
- ✓ Common public registers are to support the digital public sector
- ✓ Common components are to safeguard the overall needs of the public sector
- ✓ The government's ICT infrastructure and systems shall be robust and highly secure
- ✓ Legislation is to facilitate digital communication by default
- ✓ Legislation is to be adapted to a digital public sector
- ✓ Digital reuse of registered information by other public agencies is to be facilitated

In Norway, ICT projects are centralized and procedures for evaluation of projects are thoroughly implemented ((van der Veen, 2015). These evaluations are used to create continuous improvement by learning from previous projects.

2.4.3 E-government Initiative Projects of MCIT

ICT Initiatives are primarily focused on e-Government and Public Key Infrastructure (PKI), e-Infrastructure including EthERNet , Entrepreneurship and education.

Over the past few years, there have been a number of national initiatives focused on provoking the use of ICT including: the National Data Set; National Enterprise Service Bus (NESB); Public Key Infrastructure (PKI); EthioICT-Village; WoredaNet; Integrated Financial Management Information System; ICT Business Incubation Centre; EthERNet (Ethiopian Education and Research Network) and SchoolNet (ITS Africa, 2014).

➢ **National Data Set**

This project aims to provide a national level data set of commonly used data elements across Ministries, which can be used by all inter-ministerial applications as well as channels of delivery (national portal, mobile portal, CSC, NCC etc.) for delivering services.

The National Open data set Master Plan is in progress.

Coverage: All Ministries and Agencies of Ethiopia

➢ **National Enterprise Service Bus (NESB)**

The objective of this project is to be provisioned a platform for seamless integration of Ministry / agency applications and database at the back end; integrating all front-end channels to deliver services. The National Enterprise Service Bus Master Plan preparation is in progress.

Coverage: All Ministry and agency application identified in the government strategy

➢ **Public Key Infrastructure (PKI)**

The objective of this project is to provide PKI based identification, integrity and non-repudiation of online transactions related to the government projects in Ethiopia

Coverage: Nationwide initiative for, issuance and use of PKI for all electronic transactions for government and private

➢ **Open Data Implementation**

The project aims to implement open data at national level.

➢ **EthioICT-Village**

MCIT is in the process of setting up the EthioICT-Village in an area of 200 hectares in Addis Ababa, which aims to establish Ethiopia as the premier IT Hub of Africa. It aims to provide a world-class business environment along with a conductive policy and regulatory framework, state-of-the-art infrastructure and value proposition. It incorporates an ICT Business zone, an Assembly and Warehouse zone and a Knowledge Park zone.

➢ **WoredaNET**

WoredaNET is a government network connecting more than 800 local, regional and federal government offices across the country. It is a terrestrial and satellite based network designed with the primary objective to provide ICT services such as video conferencing, directory, messaging and Voice Over IP, and Internet connectivity to the federal, regional and "woreda" level government entities. The WoredaNet implementation project was part of the broader government Strategy.

The goal of WoredaNet is to establish a multi-service IP-based service by the use of Terrestrial Broadband and VSAT infrastructure for the delivery of services to government and the citizens. The initiative is aimed towards the improvisation of Federal and Regional Government administrative efficiency, effectiveness and productivity, as well as, information provision and service delivery to the public at large.

The main objectives of the project include:

- To bridge the digital divide between urban and rural communities;
- To provide knowledge and information to citizens;
- To build organizational capacity at all levels of government;

- To provide the lowest level of government with accurate and timely information.

The second phase has commenced.

Geographic scope and frame: All the participating ministries, agencies, regional and local government offices to be covered in the Woreda-net. 216 electronic services are going to be delivered.

> **Integrated Financial Management Information System (IFMIS)**

IFMIS enables public institutions to use a single system with extensive facilities from one physical source. This enables the Ministry of Finance and Economic Development (MoFED) to improve the quality of financial decision-making by generating timely financial information. IFMIS is implemented in government offices.

Geographic scope and frame: Regional and Federal Offices

> **ICT Business Incubation Centre (MICT-BIC)**

MICT-BIC was initiated in 2008 under the Information and Communication Technology Assisted Development (ICTAD) Project of EICTDA in cooperation with the World Bank and the German Development Service. The project aims to provide solutions to difficulties that graduates of higher education institutions in Tigray Region, Amhara Region, Oromiya Region and South Nations and Nationalities Region are facing such as finding employment in governmental and private organizations. The main objective of MICT-BIC is to serve as a vehicle for development of a competitive ICT based MSEs and foster technology innovation in the above mentioned regions.

The Incubation Program is targeted at graduates with ICT related business ideas and young companies that are interested in incubation services. MICT-BIC is offering individual advisory and support to develop a comprehensive business plan. In addition, the incubation center provides a standardized training program on entrepreneurship, business plan development and incubation services. Currently there are two Incubation centers in Jigjiga and Diredawa, which are commencing activities.

Geographic scope: Tigray Region, SNNP Region, Amhara Region, Diredawa and Somali

Financing sources: Government of Ethiopia, World Bank, German Development Service

> ➤ **EthERNEt - Ethiopian Educational and Research Network**

EthERNet was initiated in 2001 as part of a national capacity building program among other projects that aim to provide connectivity and specialized applications for schools and local governments. The project was launched to build and deliver highly interconnected and high performance networks for Universities and other Educational and Research Institutions in Ethiopia. More specifically EthERNet was aimed to build and deliver high performance networking that connected these institutions in the world, and by doing this to enable them to share educational resources and collaborate both within Ethiopia and globally.

Currently EthERNet has a network with 20Mbit/Sec or better bandwidth that ties many of the established universities in Ethiopia. In addition, plans have been made to build the next generation network that would provide 10Gbit/Sec to each of the public universities and also interconnect them. A driver in this fresh-high-performance/bandwidth network is EthERNet's vision to offer a highly interconnected and advanced network of Ethiopian Research and Education institutions that enables institutions to actively and effectively participate in the national, regional and global research and teaching communities. The Ministry of Education is currently forming with the ICT Centre of Excellence (Ethiopia) to construct a solid organizational framework for EthERNet that will enable it to engage with a wide scope of stakeholders such as Universities, and involve them in helping define the direction and services that EthERNet develops and pitches.

Geographic Scope and frame: 22 Ethiopian public universities are linked

Funding source: Government of Ethiopia

> ➤ **SchoolNet**

SchoolNet is a satellite-based network that supplies Internet connectivity as well as TV-broadcast educational content to secondary schools across Ethiopia. SchoolNet aims to provide students in rural schools with access to equal learning opportunities to those in urban schools.

The Ministry of Education in Ethiopia launched the SchoolNet Project in 2003 with support from UNDP. About 756 schools were connected through this task. The second phase of SchoolNet project is ongoing to connect more schools and to provide internet access.

Geographic scope and frame: high schools, and preparatory Schools, total of 756+

2.4.4 Current challenges

The Challenges so far as presented by Dr. Debretsion Minister of MCIT in his presentation at Addis Ababa ITU Regional workshop on the topic "ICT initiatives in Ethiopia " are:

- Lack of qualified human resource in the sector
  - Limited qualified professionals to install, commission, administer and maintain the infrastructure and managing Projects
  - Limited ICT skills in the Public Sector
  - Lack of hybrid human capacities: technological, commercial and management etc. Which is a mandatory requirement to be successful in ICT projects
  - Inadequate HR training centers and institutions
  - The brain-drain of the qualified professionals, abroad or even from public to private, affects ICT implementations
  - Stakeholder awareness to make ICT initiatives a success
- Infracture
  - Connectivity, bandwidth, computer penetration, computer literacy etc. are linked to infrastructure
  - High cost of development and limited financial resources
  - Having another priority than ICT like poverty reduction, food security, internal conflicts etc.
  - Underutilization of infrastructure because of skill, commitment and the like problems
- Low level of working culture
- Lack of experience in change management
- Weak private sector
- Low level collaboration/partnership between private and public sector (Debretsion, 2012).

2.4.5 Implications of using PM principles, tools and techniques on MCIT

The implications of using project management principles, tools and techniques in ICT Projects is the most important step towards project management maturity which has a positive impact to throw success. Skilled project managers and direct efforts are applied via a set of project management practices. In the ICT sector, some elements and practices include work scope, time, resources, monetary values, quality, communication, risk, and

change management. If these project management exercises are well done, there is a very high poss**i**bility of sustaining a viable project that will assure a sound Project successful.

2.4.6 The Conceptual framework of the study

A conceptual model shows the associations and inter relations that have been found in the research material, it shows structure and coherence to the research by simplifying the research task (Fisher, 2007), and the table 2.1 shows the conceptual framework of the study. For this chapter, the authors would like to defining the concepts and creating a conceptual framework which means of simplifying the research task.

Table 2.1: The conceptual framework

Unit of Analysis	Assessment Factors	Research	Contribution
MCIT e- service and application development team	Project Management Process Groups: • Initiation, • Planning, • Execution, • Monitoring and Control • Clothing Process	• Structured questionnaire • Interview • Document Review • Descriptive statistics • Qualitative data analysis	• To assess the extent to which project management tools and techniques are implemented and its impact on the management of ICT projects of MCIT. • To make sure ICT policy and procedures are in place and implemented • To recommend possible solution to stakeholders attention to ICT projects of MCIT.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

This chapter includes the research methodology of the study, sources and methods of data collection, the selection of the sample, the research process, validity and Reliability, the type of data analysis, and the ethical considerations.

3.1 *Research Design*

A research design is simply the framework or plan for a study that is used as a guide in collecting and analyzing the data as well it is a blueprint that is followed in completing a study. So this research uses descriptive research design and mixed research approach.

3.1.1 The research methodology

The mixed research approach is selected for this study as this method is found suitable in order to see, identify, and evaluate the current status of Project Management practice on ICT projects in MCIT in Addis Ababa. It is designed to obtain views of senior officials of MCIT, Project managers and experts that are directly or indirectly involved in projects directed by e-government Directorate of MCIT.

Bajpai defines a research methodology as "a systematic and scientific procedure of data collection, compilation, analysis, interpretation, and implication pertaining to any business problem" (Bajpai, 2011). (Kothari, 1985) refers research methodology as a strategy, overall approach or technique to answering research questions. The types of research methods can be classified into several categories according to the nature and purpose of the study and other attributes. According to (Creswell, 2009) there are three key research Methodological approaches to research a quantitative, a qualitative and a mixed method. The following part gives a brief explanation of each of these three approaches

Quantitative research "describes inferiors, and resolve problems using numbers. Emphasis is placed on the collection of numerical data, the summary of these data and the drawing of inferences from the data" (Herbst, and Coldwell, 2004).

Qualitative research, on the other hand, is based on words, feelings, emotions, sounds and other non-numerical and quantifiable elements. It has been noted that "information is considered qualitative in nature, if it cannot be analyzed by means of mathematical techniques. This characteristic may also mean that an incident does not take place often enough to allow reliable data to be collected" (Herbst, and Coldwell, 2004).

The mixed methods research approach means adopting a research strategy employing more than one type of research method .The methods may be a mix of qualitative and quantitative methods; inquiry on the assumption that collecting diverse types of data which can provide an understanding of a research problem (Creswell, 2014). Croswell further noted that in this approach the study will begin with a survey in order to generalize results to a population and then it focuses in a second phase, on detailed qualitative, open-ended interviews to collect detailed views from participants (Ibid).

3.2 Population and Sampling Techniques

The population of this research ICT professionals that are directly and indirectly involved in different project management activities of MCIT projects

3.2.1 Sampling Techniques

For this research purposive sampling is used to pick the sample from Project managers, consultants and ICT experts who are involved directly and indirectly in MCIT projects.

Purposive sampling is a widely used sampling method which allows a researcher to get information from a sample of the population that one thinks knows most about the subject matter. In this type of sampling, the choice of the sample items depends exclusively on the judgement of the investigator. Purposive sampling techniques include hand picking of the subject cases that the researcher thinks that possesses rich information to accomplish the researchers' objective.

A Sample is a small group element drawn from the population under study representing the same variables. In other terms a sample is a subset of individuals (i.e., Actual observations) drawn from a population you collect data from. We make inferences about a population based on a sample since we usually cannot sample the entire population. In other words, we infer something about the characteristics of the population of the sample. On the other hand Sampling is the process of selecting a sample from a population (Kothari 2004).

In reality there is simply not enough Time, Energy, Money, manpower, Equipment and Access to suitable sites due to this fact, considering a sample is unquestionable hence to measure every single 'item' or site within the 'parent population' or whole 'sampling frame' becomes difficult. Therefore an appropriate sampling strategy should be adopted to obtain a representative, and statistically valid sample of the whole (Kothari, 2004).

Types of Sampling Techniques:

Sampling techniques are basically of two types' non-probability sampling and probability sampling (Kothari, 2004).

Probability Sampling: Probability sampling provides a scientific technique of drawing samples from the population, according to some laws, of chance in which each unit has some definite pre-assigned probability of being chosen in the sample.

Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling, Multi-Stage Sampling and Area Sampling are considered under this category.

Non-Probability Sampling: It is purely based on personal judgment. Under this method a desired number of sample units are selected deliberately or purposely depending upon the object of the inquiry so that only the important items representing the true characteristics of the population are included.

Purpose Sampling, Quota Sampling and convenience sampling are considered as non-probability sampling.

Sample size:

Sample size means the number sampling units selected from the population for investigation. The size of sample directly related to standard of accuracy, time, cost and administration of investigation. The larger the size, items will represent universe more, but bring difficulty in managing the operation. Smaller in size will not represent the universe and accuracy in the result will be lowered. So, it should not be too large or too small, depending upon the study it should be optimized in size.

According to Weisbery an optimum sample survey is one which fulfills the requirements of efficiency, representation, reliability and flexibility (Weisberg, 2005).

The size depends on several factors for required inference of the study. Some of them are listed as follows:

1. Homogeneity and Heterogeneity of the population: In homogeneous unit a small sample is suitable while in heterogeneous a larger size is required.
2. Number of classes proposed: If it is necessary to classify data in a large number of classes, a large-sized sample should be taken to facilitate analysis of the data.
3. The nature of the Study: For intensive and continuous study small sample will be suitable and for the survey should be larger in size.

4. Practical consideration: The availability of finance, time and trained personnel are another consideration.

5. Standard of accuracy: For greater accuracy sample should select under the supervision of some experts and researchers.

6. Type of Sampling: In random, larger are suitable and in stratified, even small carefully drawn can give accuracy.

7. Nature of units: If it is expected that a large number of units will not respond, then a larger sample should be taken.

3.3 Sources and tools of Data collection

3.3.1 Methods of data Collection

Various methods of collecting data are employed by social scientists. Here we will discuss the varied dimensions relevant to: data generation and attempt to arrive at an abstract typology involving stimuli, responses and setting for data collection. The task of data collection begins after a research problem has been defined and research design is developed.

Types of data sources

- Primary data: Are those which are collected a fresh and for the first time and thus happen to be original in character.
- Secondary data: Are those which have been collected by someone else earlier and which have already been passed through the statistical process.

3.3.2 Questionnaire survey

Structured questionnaires prepared as the appropriate method for gathering primary data from a number of respondents within a limited timeframe. This method will be used to gather both qualitative and quantitative information from Project managers and experts that are directly or indirectly involved in projects directed by E-government Directorate of MCIT.

Project Management Institute (PMI) standard practice is taken as a reference for comparison.. This could also be the limitation of the research as PMI model is mainly developed from North American research and experience. The PMBOK guide 5th Ed, which is the most widely accepted project management standards, groups the project

management processes into five PM process groups & ten PM Knowledge Areas (PMI, 2013).

A questionnaire is developed based on the PM processes defined in the PMBOK guide under different PM process groups and knowledge areas and it was adopted from previous research and tailored to organization under investigation (Unab and Kundi, 2014). By considering the nature of the organization under study Project Procurement Management knowledge area was not included in the questionnaire.

3.3.3 Interviews

The interview is a data collection technique in which participants provide information about their behavior, thoughts, or feelings in response to questions posed by an interviewer and it involves some form of interaction between the investigator and the respondent. It could be administered via telephone (Telephone interview) or Face to face depending upon the convenience of the respondent and the investigator (Crano and Brewer, 2002). Interviews can be conducted face-to-face or by telephone. They can range from in-depth, semi-structured to unstructured depending on the information being sought (Ibid). A semi-structured interview questions are developed and will be administered to collect data from higher officials of MCIT.

3.3.4 Document Review

This is the method of collecting secondary data; it has advantages because the researcher is able to collect as much data as possible without limitation. The major sources of secondary data in this study included published books, journals, Papers and articles. Internet was another source where varieties of current materials were obtained which explains a lot about Project management in building construction sector.

This stage covered key definitions and concepts relevant to the study and related areas. The key areas covered include; ICT Project management, Project Management Methodologies for ICT Projects, ICT Project management practice in developed countries ,IT Policy, E-government Strategy , State of Ethiopian ICT sector performance on International ICT indices and E-government initiative projects

In collecting secondary data; there is less limitation and more access as the researcher is working for government institution and have a work relationship with MCIT enables to collect as much data as possible without limitation. The major sources of secondary data in this study included published books, journals, papers and articles. Internet was another

source where varieties of current materials were obtained which explains a lot about Project management.

3.4 Validity and Reliability

The validity of the research was taken into consideration, as close-ended questionnaires and semi structured interviews were developed and checked by benchmarking the literature review in order to generate a valid and comparable response.

The Linkert scale questionnaire items were tested for reliability by taking four sample respondents using Cronbach-Alpha test, which scored in 0.84 for the data collected from 4 respondents on 27 variables. Cronbach's α value of more than0.9 is considered excellent and value more than 0.7 is generally considered acceptable for internal consistency of data therefore, the score supports the presence of good internal consistency among the items and promise the reliability and acceptability of the items for the study (George and Mallery, 2005)

3.5 Ethical Consideration

The goal of moral philosophy in research is to ensure that no one is harmed or suffers on the adverse consequences of the research activities (Crane, 2012). Thus, the ethical issues need to be studied in a scientific research were also weighed in this survey. The study results depend on the data supplied by the respondents and the qualitative data obtained from the consultation and that document the review process will be realistic and bias free. In addition, the researcher asked for the consent of the interviewees and pledged to maintain the confidentiality of the data collected to guide this work, as well, the researcher will be liable for any consequences to respondents due to their participation in this research.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATIONS

4.1   Analysis Discussion and Results

The collected data from the questionnaire respondents are used to assess the Project Management Practice of MCIT and was analyzed using SPSS 20 and Microsoft Excel. From the 4 point Likert Scale used in the questionnaire, Mean & Variance were calculated for each of the process group practice processes. The demographic responses were also analyzed using Ms Excel.

The questionnaire was divided into two sections. In the first section, it is concerned with general information of the respondent, such as educational level, age group, work experience and job title. The second section is concerned with the project management process group , project management body of knowledge areas and the level of impact that Project management practice towards the effectiveness of project implementations of MCIT.

The completed answers were collected personally. Twenty three questionnaires were sent, and a total of 19 were returned, resulting in a response rate of 82.6%. From the received questionnaires 16 could be used for analysis. The effective rate is considered tolerable and furthermore an interview was conducted. A sample of the Questionnaire and the semi structured interview questions are attached at Appendix 1 and 2 respectively.

4.1.1   Demographic Information of the Respondents

4.1.1.1   Professional Mix of the respondents

. Table 4.1: List of respondents in the survey based on their job title

Respondents job title	Number of Respondents	Percentage of respondents
Web Developers	5	31.25 %
Professional Developers	7	43.75 %
Team leader	1	6.25 %
Consultant	3	18.75 %
Total	16	10

From Table 4.1, the participants of this research are all professional staff members of MCIT e-service and application development team members; from the sixiteen respondents, 31.25% of them are web developers,43.75% of them are Professional Developers,18.75% and 6.25% team leader

4.1.1.2 Characteristics of Respondents

Table 4.2:– Age, Educational Status and Service Year

Attributes of respondents		No of respondents	Percentage of Participants
Level of Education	BSc	12	75 %
	MSC	4	25 %
	Other	-	-
	Total	16	100 %
Age group	Less than 25 years	-	-
	Between 25 to 35 years	13	81.25 %
	Between35 to 45 years	3	18.75 %
	More than 45 years	-	
	Total	16	100 %
Service year	Less than 5 years	-	-
	Between 5 to 10 years	11	68.75 %
	Between10 to 15 years	5	31.25 %
	More than 15 years	-	-
	Total	16	100 %

Referring Table 4.2, the level of education shows that 12 (75%) of the respondents are first degree holders, and the remaining4 (25%) hold a second degree in the field of Information Technology. The age group shows that between the age of 25 to 35 years 13 (81.25%) and 3 (18.75 %) of them are between the age of 35 to 45 years old. The overall work experience distribution showing that 11 (68.75 %) of them have 5-10 years of experience each, 5 (31.25 %) of the respondents have 10 - 15 years.

4.1.2   Project Management initiation Process Groups Practice

According to PMI, the process of initiating a project helps to set what to be accomplished. It is the process where the project is formally endorsed by the sponsor, initial scope defined, stakeholders identified. Furthermore the management chooses and authorizes a project manager at this process group and as a result Project charter and Stakeholder register are key deliverables.

Table 4.3:– percentage frequency distribution for Project initiation process group

No	Project initiation Process group		frequency	Percentage
1	Project Charters are developed	Never	-	-
		Sometimes	-	-
		Mostly	10	62.5%
		Always	6	37.5%
		Total	16	100%
2	Stakeholder Register & Stakeholder Management Strategy is prepared.	Never	5	31.25%
		Sometimes	5	31.25%
		Mostly	6	37.5%
		Always	-	-
		Total	16	100%

From Table 4.3 the survey result showed that 10 (62.5%) of the respondents witnessed that Project charter is mostly developed in the initiation process group and the remaining 6 (37.5%) agreed that the Project charter is developed always. 5 (31.25%) respondents said that the stakeholder register and Stakeholder management strategy is sometimes prepared and 5 (31.25%) of them confirms the stakeholder register and Stakeholder management strategy is never been prepared and the remaining 6(37.5%) concludes mostly.

According to MCIT e-service and application development team manager; the practice of project initiation process group usually focuses on the preparation and endorsement of project charter and the assignment of project managers and there is a limitation regarding

to the stakeholder register and Stakeholder management strategy preparation.

4.1.3   Project Management Planning Process Groups Practice

Planning processes group include developing and maintaining a feasible plan to ensure that the project addresses the organization's requirements and needs. Projects include several plans, such as the scope management plan, schedule management plan, risk management plan, cost management plan, Human resource management plan, communication plan and procurement management plan. These plans define each knowledge area as it relates to the project at that point in time (Schwalbe, 2012).

Table 4.4:– percentage frequency distribution for Project planning process group

No	Project Planning Process group		frequency	Percentage
1	Project Management Plans are prepared	Never	0	-
		Sometimes	0	-
		Mostly	0	-
		Always	16	100%
		Total	16	100%
2	Project schedule, Schedule Base lines & Schedule data is generated.	Never	0	-
		Sometimes	0	-
		Mostly	0	-
		Always	16	100%
		Total	16	100%
3	Cost Estimates, Cost Performance Baseline and Project Funding requirements are generated.	Never	0	-
		Sometimes	0	-
		Mostly	11	68.75%
		Always	5	31.25%

No	Project Planning Process group		frequency	Percentage
		Total	16	100%
4	Quality requirements and Standards are identified and compliance strategies are documented.	Never	0	-
		Sometimes	0	-
		Mostly	8	50%
		Always	8	50%
		Total	16	100%
5	Quality Management Plan, Quality Matrices, Quality Checklists and Process Improvement Plans are Prepared.	Never	0	-
		Sometimes	0	-
		Mostly	13	81.25%
		Always	3	18.75%
		Total	16	100%
6	Human Resource Plan are developed	Never	0	-
		Sometimes	0	-
		Mostly	4	25%
		Always	12	75%
		Total	16	100%
7	Communications Management Plans are developed.	Never	0	-
		Sometimes	0	-
		Mostly	12	75%
		Always	4	25%
		Total	16	100%

No	Project Planning Process group		frequency	Percentage
8	Risk Management strategy is defined, risks are identified, qualitative & quantitative risk analysis is performed and actions to enhance opportunities and reduce threats are developed.	Never	0	-
		Sometimes	3	18.75%
		Mostly	7	43.75%
		Always	6	37.5%
		Total	16	100%
9	Risk Management Plans, Risk Register & Risk related contract decisions are prepared.	Never	0	-
		Sometimes	3	18.75%
		Mostly	10	62.5%
		Always	3	18.75%
		Total	16	100%

The data from Table 4.4 is the result obtained from the survey of the practice of planning process group 16 (100%) of the participants confirms that MCIT always produce Project Management Plans, Project schedule, Schedule Base lines & Schedule data.

11(68.75 %) of the respondents said MCIT always generates Cost Estimates, Cost Performance Baseline and Project Funding requirements whereas the remaining 5(31.25%) said mostly. 8 (50%) of the respondents said quality requirements and Standards are identified and compliance strategies are documented most of the time whereas the remaining said always. 13 (81.25 %) of the respondents said MCIT mostly prepares quality Management Plan, Quality Matrices, Quality Checklists and Process Improvement Plans whereas the remaining 3(18.75%) said always.12(75 %) of the respondents said MCIT always prepares project human resource plan, whereas the remaining4(25%) said mostly. 12(75 %) of the respondents said MCIT mostly developed Communications Management Plans and the remaining 4 (25%) said always.

7(43.75%) of the respondents said Risk Management strategy is defined, risks are identified, qualitative & quantitative risk analysis is performed and actions to enhance opportunities and reduce threats are mostly developed but the remaining 6(37.5%)

always and 3 (18.75) sometimes.10(62.5%) of the participant confirms that Risk Management Plans, Risk Register & Risk related contract decisions are mostly prepared whereas 3(18.75 %) said always and 3(18.75%) sometimes.

This result go in line with the terms of the interviewee that the project planning process group practices are carried out in detail as per the standard by using planning and scheduling tools even though appropriate techniques are used there are some limitations in quality management ,communication management and risk management planning. According to the department manager MCIT gives continuous capacity building activities to enhance the performance of project team members.

4.1.4   Project Execution Process Group Practice

According to Schwalbe Project Execution Process group include coordinating people and other resources to carry out the various plans and create the products, services, or results of the project or phase (Schwalbe, 2012).

Table 4.5:– percentage frequency distribution for Project Execution process group

No	Project Execution Process group		frequency	Percentage
1	Work is performed as defined in the Project management plan to achieve project objectives	Never	0	-
		Sometimes	0	-
		Mostly	11	68.75%
		Always	5	31.25 %
		Total	16	100%
2	Quality requirements and quality control measurements are audited	Never	0	-
		Sometimes	4	25%
		Mostly	12	75%
		Always	0	-
		Total	16	100%
3	Project Teams are acquired	Never	0	-

No	Project Execution Process group		frequency	Percentage
	and developed to enhance their competencies, interactions and team environment	Sometimes	0	-
		Mostly	13	81.25%
		Always	3	18.75
		Total	16	100%
4	Team member's performance is tracked, feedback is provided, issues are resolved and changes are managed to optimize team performance.	Never	0	-
		Sometimes	0	-
		Mostly	11	68.75
		Always	5	31.25%
		Total	16	100%
5	Project relevant information is made available to Stakeholders as planned.	Never	0	-
		Sometimes	0	-
		Mostly	10	62.5%
		Always	6	37.5%
		Total	16	100%
6	Stakeholders are communicated and worked with to meet and address their needs & issues.	Never	0	-
		Sometimes	0	-
		Mostly	14	87.5%
		Always	2	12.5 %
		Total	16	100%

By referring the result obtained from the survey of the Project Execution Process group Practice as seen in Table 4.6 11 (68.75%) of the participants confirms that MCIT mostly Work is performed as defined in the Project management plan to achieve project

objectives while 5 (31.5%) confirms it is performed always. 12 (75 %) of the respondents said Quality requirements and quality control measurements are audited whereas the remaining 4 (25%) said it is audited sometimes. 13 (81.25 %) of respondents said Project Teams are acquired and developed to enhance their competencies, interactions and team environment in most cases while the remaining 3 (18.75 %) always. 11(68.75 %) of the respondents agreed that team member's performance is tracked, feedback is provided, issues are resolved and changes are managed to optimize team performance whereas the remaining 5 (31.25 %) said always. 10 (62.5 %)of respondents Project relevant information is mostly made available to Stakeholders as planned whereas 37.5% always and Finally 14 (87.5%) of the participants said Stake holders are communicated and worked with to meet and address their needs & issues while 2 (12.5%) said always.

As per the words of the department manager the execution process group is the one that the project plans are actually implemented so the practice in MCIT is:

- In recruiting project team members the technical capacity, the ability of working with others, Project experience are taken into account.
- Team members are equipped with the necessary documents of the project like Conditions of Satisfaction; Project Overview Statement; Requirements Breakdown Structure and Work Breakdown Structure.
- Project operating rules are usually in place

4.1.5   Project Monitoring & Control Process Group Practice

Monitoring and controlling processes group include all the activities that are regularly measuring and monitoring progress to ensure that the project is going as per the plan to meet the project objectives. The project manager and staff monitor and measure progress against the plans and take corrective action when necessary (Schwalbe, 2012).

Table 4.6:– percentage frequency distribution for Project Execution process group

No	Project Monitoring & Control Process group		frequency	Percentage
1	Progress is tracked, reviewed and regulated.	Never	0	-
		Sometimes	0	-

No	Project Monitoring & Control Process group		frequency	Percentage
		Mostly	8	50%
		Always	8	50%
		Total	16	100%
2	Change Requests are reviewed, approved and managed.	Never	0	-
		Sometimes	0	-
		Mostly	14	87.5%
		Always	2	12.5%
		Total	16	100%
3	Completed project deliverables acceptance is formalized.	Never	0	-
		Sometimes	0	-
		Mostly	9	
		Always	7	
		Total	16	100%
4	Project Scope is monitored/ updated and changes to scope baselines are managed.	Never	0	-
		Sometimes	0	-
		Mostly	5	31.25%
		Always	11	68.75 %
		Total	16	100%
5	Project Progress is monitored/ updated and changes to schedule baselines are managed.	Never	0	-
		Sometimes	0	-
		Mostly	11	68.75%

No	Project Monitoring & Control Process group		frequency	Percentage
		Always	5	31.25
		Total	16	100%
6	Project budget is monitored/ updated and changes to cost baselines are managed.	Never	0	-
		Sometimes	8	50 %
		Mostly	8	50 %
		Always	0	-
		Total	16	100%
7	Quality activities are monitored and results are recorded to assess performance and to recommend necessary changes.	Never	0	-
		Sometimes	0	-
		Mostly	11	68.75%
		Always	5	31.25
		Total	16	100%
8	Performance Information like status reports, progress measurements and forecasts are collected and distributed.	Never	0	-
		Sometimes	0	-
		Mostly	8	50%
		Always	8	50%
		Total	16	100%
9	Risk response plans are implemented, identified risks are tracked, residual risks are monitored, new risks are identified and risk process	Never	0	-
		Sometimes	0	-
		Mostly	13	81.25
		Always	3	18.75

No	Project Monitoring & Control Process group		frequency	Percentage
	effectiveness is evaluated.	Total	16	100%

As per the data described in table 4.6 the survey result shows that 8 (50%) of the respondents said project progress is always tracked, reviewed and regulated while the remaining 8 (50%) said mostly. 14 (87.5 %) of the participants agreed that Change Requests are mostly reviewed, approved and managed whereas the remaining 2(12.5%) said always. 9 (56.25%) of the respondent confirms that Completed project deliverables acceptance is mostly formalized while the remaining 7 (43.75%) said always. 11 (68.75%) of the respondents infer Project Scope is always monitored/updated and changes to scope baselines are managed whereas 5 (31.25%) said mostly. 8 (50%) of the participants Project budget always monitored/ updated and changes to cost baselines are managed while the remaining 8 (50 %) said mostly. 11 (68.75%) of respondents infers quality activities are mostly monitored and results are recorded to assess performance and to recommend necessary changes whereas 31.25% said always. 8 (50%) of the respondents conclude that Performance Information like status reports, progress measurements and forecasts are always collected and distributed while the remaining 8 (50 %) infers mostly. 13 (81.25%) of the respondents agreed that Risk response plans are mostly implemented, identified risks are tracked, residual risks are monitored, new risks are identified and risk process effectiveness is evaluated but the remaining 3 (18.75%) of the respondents said always .

Regarding the Project Monitoring & Control Process Group Practice the department manager confirmed the result obtained from the questionnaire survey. He noted that progress reporting in every milestone is mandatory like status report and exception report (whenever there is a deviation from the plan) and project status meetings are conducted regularly.

4.1.6   Project Closing Process Group Practice

Project closing process group includes various activities in relation to formally closing the project. The processes consist of formalizing acceptance of the project or project phase and ending it efficiently. In doing so the project manager is expected to formally close the project by archiving records, holding a lessons learned session, making final payments, closing contracts and celebrating and releasing the team.

Table 4.7:– percentage frequency distribution for Project Execution process group

No	Project Closing Process group		frequency	Percentage
1	Activities across all management process groups are finalized to formally complete the project or phase.	Never	0	-
		Sometimes	0	-
		Mostly	8	50%
		Always	8	50%
		Total	16	100%

As per table 4.8 8 (50 %) of the respondents infer that the activities across all management process groups are finalized to formally complete the project or phase is implemented mostly while the other 8(50%) concluded as always.

During the interview the department manager go in line with the questionnaire survey result and confirms that activities across all management process groups are finalized to formally complete and close the project some of the activities include:

- Acceptance test procedure
- Complete project documentation
- Post implementation audit
- Document lesson learned

4.1.7 Impacts of Project Management tools and techniques on performance of MCIT Project activities at Addis Ababa main office

Table 4.8:- Percentage frequency distribution of the level of agreement on the impacts of Project Management tools and techniques on performance of MCIT Project activities

No			Frequency	Percentage
1	It helps to get a project done on time.	Strongly Disagree	0	-
		Disagree	2	12.5%

No			Frequency	Percentage
		Agree	7	43.75%
		Strongly Agree	7	43.75 %
		Total	16	100%
2	It helps to get a project completed within the allotted budget	Strongly Disagree	0	-
		Disagree	0	-
		Agree	8	50%
		Strongly Agree	8	50%
		Total	16	100%
3	It helps to deliver as per the prescribed quality	Strongly Disagree	0	-
		Disagree	0	-
		Agree	11	68.75%
		Strongly Agree	5	31.25%
		Total	16	100%
4	Increases efficiency in delivering projects	Strongly Disagree	0	-
		Disagree	0	-
		Agree	9	56.25 %
		Strongly Agree	7	43.75 %
		Total	16	100%

The data that is presented in the above table shows that 7 (43.75 %) of the respondents strongly agreed that the proper implementation of Project management tools and techniques results timely completion of projects of MCIT whereas 7 (43.75%) agree and the remaining 2 (12.5%) disagree.8 (50%) of the respondents strongly agreed that it has

a positive impact on completing the project within the budget whereas the remaining 8 (50%) agrees. 11 (68.75 %) of the respondents agreed that it has a positive impact on the quality of project deliverables whereas the remaining 5 (31.25%) strongly agrees. 9 (56.25 %) of the respondents agreed that it increases efficiency in delivering projects while the remaining 7 (43.75) strongly agrees.

From the interview the department manager said that MCIT strongly believes that projects has to be managed by applying appropriate project management methodology hence the impacts of the application of project management tools and techniques resulted good performance history of MCIT project.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The main objective of this study is to assess the implementation of tools and techniques of Project management into the practices of ICT projects and its impact on MCIT performances in Addis Ababa main office of MCIT of Ethiopia. Below is a summary of the major findings in line with the research questions.

Regarding the extent that Project Management tools and techniques are put into practice in the management of ICT projects in MCIT the study explores and found that, project management practices such as initiation; planning, execution, monitoring/control, and closing were adopted by MCIT in the implementation of their projects. Project management tools and techniques are mostly implemented in each phase but some limitations are identified.

- Stakeholders participation and involvement is limited no Stakeholder Register & Stakeholder Management Strategy was prepared at all
- Quality activities are monitored and the results are recorded to assess performance and to recommend necessary changes, but there is a gap in project quality management.
- no means to manage changes in budget changes to cost baselines.
- Acquisition & development of Project teams,
- Communication with Stakeholders to meet and address their needs and distribution of relevant information to stakeholders.

The availability and applicability of policy and producers of ICT project management and their implementation in ICT projects of MCIT main office in Addis Ababa is identified as follows:

- There is no standard methodology for the projects, but in most of its projects, it uses an agile project management methodology.
- E-government strategy and IT policy were approved and implemented.
- There are no standards, legal and regulatory framework for the ICT development.

5.2 *Conclusion*

The conclusion gives the summary of what has already been said in the major findings from the study questionnaires and the analysis by linking them to the objectives of the research study. According to the findings of the research the following conclusions are drawn.

> According to the world bank report the majority of public sector ICT applications in least developed countries is either in part or total failures (World Bank,2005). Application of Project management methods and principles has become mandatory. Hence Ethiopia as a developing country transforming from agricultural lead economy to industrialized economy identifies ICT as one of the drivers of change and development, institution like MCIT should understand the importance of effective and timely application of project management concepts in the deployment and implementation of ICT Projects therefore, this research has explored the gap between the theory of ICT project management and its practice in MCIT projects.

> As a result of the study project management process groups are mostly implemented, but some shortcomings were identified by respondents including stakeholders participation and involvement is limited ,no Stakeholder Register & Stakeholder Management Strategy was prepared at all, a gap in project quality management, no means to manage changes in budget changes to cost baselines, Acquisition & development of Project teams, Communication with Stakeholders to meet and address their needs and distribution of relevant information to stakeholders.

5.3 Limitation of the Study

Although, it was appropriate to assess the advantages and challenges of ICT Project performances in a wide coverage time and financial constraints are bottlenecks to the researcher. The respondents are limited to staff members of MCIT e service and application development team which can be considered as a major limitation and may affect the generalization.

5.4 *Recommendation*

The following recommendations are proposed as a result of this research. The recommendations are specific to MCIT projects and ICT stakeholders employing improved project management*:*

- Stakeholder involvement starting from project initiation to closure is a vital process in project management. Hence MCIT has to give proper attention on stakeholders to properly acquire knowledge and best practice of project tools and techniques.

- Standard project management methodology is required to enhance the performance of projects; It is therefore, MCIT need to develop custom made Project management Methodology.

- Enhancing the leadership capacity of project managers relevant to Project Integration Management, Project Scope Management, and Project Quality Management. And Project Communications Management.

- Change management and quality standard is also an area of improvement

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Dear Participant

This study is about "Assessment of Implementation of project management priniciples,tools and techniques and its impact on MCIT performance at Addis ababa main office: perspectives of customer and the management" as a requirement in the completion of a Masters degree in Project Management.

Enclosed please find attached survey questions to be filledout to the best of your knowledge and professional integrity.The information will be used for academic purpose Your volunteer participation is appreciated and the information you provided will have an added value for the research,this research, as well it will be kept confidential.

The questionnaire has been limited to just 31 questions and will take approximately 20 minutes of your valuable time. Returning the completed survey on time will again be appreciated.

Thank you

Solomon Assefa

Tel. 0911 413307

Appendix I

Survey question

SECTION ONE: Demographic Data.

> **Instruction :**Please respond to the following questions either by ticking the appropriate box or by writing your answer in the space provided.

1- **Your Education:**

☐   **BA** ☐   **Master** ☐   **Other** _____

2- **Job Title:** _____

3- **Experience Years of Experience in the field**

☐   **Under 5 years** ☐   **5-10 years** ☐   **11-15 years** ☐   **more than 15 years**

4- **Age:**

☐   **Under25 years** ☐   **25-35 years** ☐   **36-45 years** ☐   **more than 45 years**

SECTION TWO: Project Cycle Management

> **Please respond to the following questions either by Choose the correct answer**

NO	Project management PMBOK process group	Never	Sometimes	Mostly	Always
	A. Project Initiating Process Group				

NO	Project management PMBOK process group	Never	Sometimes	Mostly	Always
1.	Project Charters (a document that formally authorizes a project and describes initial requirements that satisfy stakeholder need & Expectations) are developed.				
2.	Stakeholder Register & Stakeholder Management Strategy is prepared.				
	B. Project Planning Process Group				
3.	Project Management Plans (which documents the actions to define, prepare, integrate, and coordinate all subsidiary plans) are prepared.				
4.	Project schedule, Schedule Base lines & Schedule data is generated.				
5.	Cost Estimates, Cost Performance Baseline and Project Funding requirements are generated.				
6.	Quality requirements and Standards are identified and compliance strategies are documented.				
7.	Quality Management Plan, Quality Matrices, Quality Checklists and Process Improvement Plans are Prepared.				
8.	Human Resource Plan are (which identifies & documents the project roles, responsibilities, required skills, reporting relationships and staff management plan) are developed				
9.	Communications Management Plans (which documents stakeholder information needs and defines communication approach) are developed.				
10	Risk Management strategy is defined, risks are identified, qualitative & quantitative risk analysis is performed and actions to enhance opportunities and reduce threats are developed.				
11	Risk Management Plans, Risk Register & Risk				

NO	Project management PMBOK process group	Never	Sometimes	Mostly	Always
	related contract decisions are prepared.				
C. Project Execution Process Group					
12	Work is performed as defined in the Project management plan to achieve project objectives				
13	Quality requirements and quality control measurements are audited				
14	Project Teams are acquired and developed to enhance their competencies, interactions and team environment				
15	Team member's performance is tracked, feedback is provided, issues are resolved and changes are managed to optimize team performance.				
16	Project relevant information is made available to Stakeholders as planned.				
17	Stake holders are communicated and worked with to meet and address their needs & issues.				
	D. Project Monitoring & Control Process				
18	Progress is tracked, reviewed and regulated.				
19	Change Requests are reviewed, approved and managed.				
20	Completed project deliverables acceptance is formalized.				
21	Project Scope is monitored/ updated and changes to scope baselines are managed.				
22	Project Progress is monitored/ updated and changes to schedule baselines are managed.				
23	Project budget is monitored/ updated and changes to cost baselines are managed.				

NO	Project management PMBOK process group	Never	Sometimes	Mostly	Always
24	Quality activities are monitored and results are recorded to assess performance and to recommend necessary changes.				
25	Performance Information like status reports, progress measurements and forecasts are collected and distributed.				
26	Risk response plans are implemented, identified risks are tracked, residual risks are monitored, new risks are identified and risk process effectiveness is evaluated.				
	E. Project Closing Process Group				
27	Activities across all management process groups are finalized to formally complete the project or phase.				

Impacts of Project Management tools and techniques on performance of MCIT Project activities	Level of Conformance			
	Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
28 It helps to get a project done on time.				
29 It helps to get a project completed within the allotted budget				
30 It helps to deliver as per the prescribed quality				
31 Increases efficiency in delivering projects				

APPENDIX II

SEMI STRUCTURED INTERVIEW QUESTION GUIDE

1. Would you please tell me about your organization?
    a. Staff Profile
    b. About Project organization
    c. Project team members
2. IS there a standard project management Methdology for MCIT projects?
3. Do you provide training on project management to your staff?
4. How do you rate the contribution of PM methdologies to the success of projects of MCIT?
5. How do you define the success rate of projects managed by MCIT?
    a. With respect to cost
    b. With respect to schedule
    c. With respect to quality
    d. Adherence to agreed initial scope
    e. Reliazation of expected project benfits
    f. Stakeholders adoption and satisfaction
6. What challenges do you face in managing Projects?
7. How do you assign project manager?