



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES**  
**SCHOOL OF INFORMATION SCIENCE**

**ASSESSING FACTORS AFFECTING THE SUCCESS OF  
ICT PROJECT IMPLEMENTATION IN PUBLIC  
SECTORS:  
THE CASE OF CITY GOVERNMENT OF ADDIS ABABA  
(CGAA)**

By  
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MARCH, 2018  
ADDIS ABABA, ETHIOPIA



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THE CASE OF CITY GOVERNMENT OF ADDIS ABABA (CGAA)**

A Thesis Submitted to School of Graduate Studies of Addis Ababa University in  
Partial Fulfillment of the Requirements for the Degree of  
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**Advisor: Temtim Assefa (PhD)**

**March, 2018**  
**Addis Ababa, Ethiopia**



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## **Declaration**

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

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

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Ermias Kebede

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

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Temtim Assefa (PhD)

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## **List of Acronyms**

APM	Association for Project Management
CGAA	City Government of Addis Ababa
CEO	Chief Executive Organization
CIAT	Capital Investment Appraisal Techniques
ICTD	Information and Communication Technology for Development
ITS	Information Technology System
LC	Letter of Credit
MCIT	Ministry of Communication and Information Technology
NPV	Net Present Value
PM	Project Manager
PMI	Project Management Institute
PMO	Project Management Office

## **Abstract**

Government organizations are increasingly becoming reliant on Information Communication Technology (ICT) as a tool to deliver service efficiently and effectively to their citizens. Accordingly, public organizations are investing on ICT to implement it successfully for service delivery.

ICT project implementation success is considered as good news within many organizations. Over the past decade organizations have begun to realise the increasing importance and potential of exploiting ICT to gain competitive advantage in their particular organization. Organizations have consequently pushed for the implementation of robust ICT solutions not only to facilitate crucial decision-making processes, and to improve overall organizational efficiency and effectiveness as well. These ICT solutions are deployed via implementing ICT projects. One of such organization that currently investing on ICT project implementation is City Government of Addis Ababa (CGAA) public sector organizations. The CGAA public organizations have implemented a lot of ICT projects. The aim of the research study was to assess ICT project implementation success factors and challenges for improvement of the ICT project implementation.

Qualitative research method was used in this research by using semi structured interviews, document reviews and participatory observation in the data analysis themes, categories and subcategories were identified. The result of the study was the identification of project success factors and challenges that contributes ICT project implementation success.

The study identified the success factors like top management support, proper planning, good project selection and justification, client/user involvements, project resource allocation, communication, vendor capacity and knowledge transfer as success factors. Challenges were government bureaucracies, organization related and human related problems were identified during study. The study developed a framework that guide successful implementation of ICT projects. This study proposed a framework to overcome the main issues related to ICT project implementation and challenges. In general, ICT project implementation in public sector organization tend to complete behind schedule, indicating shortfall in various project factors. This research will be beneficial to CGAA public sector organizations to increase their awareness and knowledge to implement successful ICT project and exploit benefit of ICT in service delivery.

**Keywords:** ICT project implementation, success factors, project success, challenges, public sector

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the study

Information and communication technology (ICT) offers major transformational opportunities by contributing to the improvement of productivity, competitiveness, growth, wealth creation, poverty reduction and spur of knowledge-based economy Nawei et al. (2012b). Implementation of ICT into organization becomes more prominent in developing countries, particularly in public sector organizations. The developments of ICT projects have increased in many organizations to ensure that overall needs of customers in business requirements are fulfilled. In line with nowadays, the government public organizations have taken a huge step in implementing ICT in public sector (Karunasena et al., 2011). This is parallel to adapt with the world-wide changes of information technology to promote more efficient and cost-effective and convenient government services, allow greater public access to information and make government more transparent and accountable to citizens. The benefits of ICT in government service cannot be disputed; there are several concerns about its success as well as the strategies to be adopted in implementation of systems in various countries.

ICT is now viewed as a catalyst of growth and transformation within public sector settings (Walsham, 1995 and Walsham et al., 2005). Governments are increasingly initiating innovative projects by leveraging the power of ICT (Madon & Sahy, 2004 and Ravishakar, 2013). ICT is transforming how businesses operate, how organizations are run and managed; the adoption of ICT has evolved in both private and public sector to become a key strategy in ensuring efficient running and management. As such there is a need for governments to successfully implement various important ICT projects which will help them facilitate their transformation in today's interconnected world.

ICT is transforming how businesses operate, how organizations are run and managed; the adoption of ICT has evolved from being a preoccupation of the private sector to becoming a key strategy in ensuring efficient running and management of public organizations and the government collectively (Mohamad, 2015). As such there is a need for governments to successfully implement

various ICT projects which will help them facilitate their transformation in today's interconnected world. The study will undertake an assessing of the implementation of ICT projects based on clients/users/project owners need and involvement from project inception all the way to its implementation and what causes such projects to success and challenges in their eventual implementation. The modernisation of public services on the basis of the capabilities offered by ICT has produced a new paradigm, that of electronic government. Among the technologies capable of realising the idea of modernising or reinventing public administration, the Internet clearly occupies a central role (Lenk and Traunmueller, 2000a). Both governments and private organizations are investing heavily and relying highly on ICT to improve productivity through streamlining of business process in order to enhance efficiency and effectiveness. Many researchers have evaluated benefits of investing in ICT Projects (Davenport et al.,2002; Ittner and Lacker, 2003, Yang and Seddon, 2004), and all agree that information systems are designed to help manage organizational resources in an integrated manner.

As Heeks (2002) stated that ICT project development is composed of ICT infrastructure, ICT hardware, software & information system, and people. These are cornerstones for the development of ICT in organizations. Organizations are using ICT as a tool to run businesses, to support work, and to serve customers, which must work within their strategies and master plans. Therefore, organizations should evaluate their ICT strategies and ICT master plans with respect to organizational plans. Working models must be adapted to harmonize with any necessary factors to achieve sustainable and sufficient development of ICT in organizations.

Generally, ICT and IS/IT development and adoption initiatives are implemented via projects (Cadle and Yeates, 2008); therefore, effective implementation of such projects play a vital role in today's organisations. Technology and software projects implementation require time, budget and human resource commitment for success. The completion of these projects successfully, in a timely manner, within a specified budget, and meeting the users' requirements is known to be challenging in most organizations.

The effective integration of ICT into the public-sector system is a complex, multifaceted process that involves not just technology-indeed, given enough initial capital, getting the technology is the easiest

part-but also service delivery, institutional readiness, and long-term financing, among others. Due to ICT's importance in the society and identifying the possible obstacles and enablers to integration of these ICT projects in public sectors would be an important step in improving the quality of service and management (Tezci, E. 2011a).

## **1.2. Statement of the Problem**

Governments around the world are allocating huge resources and devoting more effort to improve service delivery to their citizens (Gubbins, 2004). Organizations invest in ICT for a number of reasons. For example, Wang (1994) suggested gaining competitive advantage, strategic planning, goal alignment, management support and information architecture as the reasons for undertaking ICT projects. Moad (1994) suggested improving productivity, quality and competitiveness as the driving forces behind IT investments. Connors (1996) added that IT investments may be driven by the need to meet customer expectation, typically because other competitors have offered products, services or facilities which raise overall customers' level of expectations. In order to enable organizations to stay competitive, attention to the issues related to successful projects has been tracked by academics and practitioners.

The Ethiopian government has taken the ICT project implementation initiatives to use ICT effectively and efficiently in public sector organizations from 2003 (MCIT,2004). The former Capacity building ministry (2002) has taken the initiatives like SchoolNet, e-government, WoredaNet and other project for improving service delivery to citizens. However, ICT project are implemented in public sector and the success implementation is in problem. These ICT projects are implemented in public sectors for the purpose of enabling service delivery more effective and efficient. The problems related with ICT projects in public sectors are implementation process, challenges, sustainability. In general, there is no framework that shows how ICT projects are successfully implemented in public sector organizations (annual report,2016).

The service delivery environments these days are characterized by complexity, and acceleration of everything from communication to production methods. ICT has been one of the major drivers of this complexity and acceleration. However, research continually shows that government public sectors have difficulty in the implementation of ICT projects. For many years implementation of

projects has been a topic of debate. The issue of factors that influence implementation of ICT projects has become of great importance especially with the ever-growing concerns and demands from various players in the market.

In CGAA public sectors, from some previous studies and observation organization have difficulty in implementation of ICT projects. The difficulty like, there is no formal procedure during ICT project implementation. These previous studies were noted that factors such as top management support, project team skill and composition, project management, effective communication, business case, change management and programs and culture, business plan and vision, weak external consultancy, post implementation support, inappropriate skill, unclear goals and objectives, scope management during the project, unrealistic time or resource estimates, selecting and monitoring project all these influence the implementation of ICT projects (Cushing, 2002).

Most of the stakeholders, consultants and project managers have made up their own personal opinion and conclusion about the ultimate causes of failure of ICT Projects. However, success or failure of a project cannot be determined at one single point in time, but over the full-life of the solution delivered by the project. And also, ICT project success rates are still low in spite of the huge investments in ICT. Many ICT projects have been categorized as failures in developing countries, “Alongside the successes many IS in developing countries can be categorized as failing either totally or partially” (Heeks, 2002). According to Heeks (2002b) the low success rate in ICT projects is a result of not managing project and identifying the success factors during project implementation. This is true in our country specifically CGAA public sector organizations, ICT projects are started to implement but monitoring and evaluating does not have attention. There are a lot of ICT projects launched in CGAA of public sectors since 2010 (Addis Ababa public service ,2010). However, public sector annual report (2015) identified all ICT project were not successfully implemented in the public-sector organizations.

There are several literatures that examined ICT adoption and technological impact, challenges on government delivery services. However, the new improvements and utilization ICT to serve the citizens still becoming an interesting focus research. Nowadays governments at all levels are using computers, mobile and the internet to inform citizens and interact with others. Government are

using ICT to enable their employees to do their tasks as well as opening possibility from citizens to interact with government. Numerous studies have been done to examine e-Government adoption, implementation and their impacts (Brown, 2007; Moon & Norris, 2005; West, 2004). Since that time, e-Government has been attracting research interest, and is believed to become one of the most important IT implementation and organizational challenges in the next decades (Marche & McNiven, 2003).

However merely studying or researching on the strengths and weaknesses of ICT project implementation is not enough as there is need to look into further details of what has been focused in success implementation of ICT project. Liu (2010) has stated that ICT projects are unique, which are characterized by emergency, uniqueness, one shot, short term and uncertainty. To implement an IT project successfully, problems in the IT project implementation like factors and challenges must be found, analysed and solved and there must be successful project implementation and management as well it has been argued (Liu, 2010).

### **1.3. Research Questions:**

1. How ICT projects are implemented in CGAA public sector organizations?
2. What are the success factors that affects the success of ICT project implementation in public sector organizations of CGAA?
3. What are the challenges that hinder the success of ICT project implementation in public sector organizations of CGAA?

### **1.4. Objectives of the Study**

#### **General Objective**

The research study is aimed to assess the factors and challenges that affect the success of ICT projects implementation in public sectors.

#### **Specific Objectives**

- To assess how ICT projects are implemented in public sector organizations of CGAA
- To identify underlying factors for successful ICT projects in public sector organizations of CGAA

- To identify challenges in ICT project implementation in public sector organizations of CGAA
- To recommend a success conceptual framework for ICT project implementation

### **1.5. Significance of the Study**

Schwalbe (2007): said “Just as Information Technology Projects have poor track record of meeting projects goals, they also have poor record in meeting budget goals”. Considering the rate of deployment and expansion of ICT Projects in Ethiopia particularly in CGAA, it is critical to understand the dynamics of ICT Projects and guaranteeing a proper grasp of special features of ICT Projects is critical to the successful implementation of ICT Projects.

The results of the study will be important to the following potential users in the following ways; the top management of public sector organizations will find this study an invaluable source of information in understanding the importance of their role in decision making, resource allocation and motivation, and their associated impacts in relation to ICT projects implementation in their organizations. The ICT managers, project managers and all other stakeholders who may be interested in improving ICT project delivery in the public-sector organizations, and to understand the importance of a clear business case for a project, constitution of the right team and the of use of proper project management skills in managing a project. Both the Federal, State and local Government will benefit from the findings of this work since it will serve as a feedback on some of the reasons how their various projects are either successful or on the approach of failing or already failed. And also, scholars and researchers may use this study as a reference and guide for future related studies.

The research will also bring the insight about successful implementation of ICT projects, and the professionals to collaborate throughout the life cycle of any project. It will also be of interest to employers of ICT Professionals in the sense that additional emphasis will be placed on the non-technical capabilities of their ICT professionals. In other words, beyond an ICT expert building, designing and implementing an ICT Project, how holistically successful is the project? Finally, Project management professionals will also gain the need to see their profession from the broader

view of adapting their expertise to every field of endeavour since all projects are dynamically affected by varying factors depending on the type of projects.

Also, Top managements of CGAA bodies, public-sector organization experts and other Ministries ICT professionals and top managements will benefit as an eye opener to the need of incorporating the gaining of relevant knowledge in ICT Project management as criteria for implementing ICT projects in their respective bureaus.

### **1.6. Scope of the study**

This research study limited to CGAA public sector organizations and it is aimed to assess factors and challenges influencing the success of ICT project implementation. It covers ICT projects are being implemented and under progress in the selected public sectors organizations of CGAA. The study has taken in city government of Addis Ababa of public sector organizations in 2017.

### **1.7. Organization of the Study**

Chapter one of the study contains introduction, giving a background of the study while putting the topic of study in perspective. It gives the statement of the problem and the purpose of study. This chapter outlines the objectives, research questions, and significance of the study.

Chapter two gives scholars' work on ICT projects, Success factors for ICT projects and empirical review. It also outlines conceptual framework variables that shows ICT project implementation success.

Chapter three consists of research methodology which covered the research design, target population, sample design, data collection, validity of data collection instruments, data analysis techniques, and ethical considerations. Chapter four describes data presentation and analysis. Chapter five consists of discussion, findings, conclusion and recommendation. Finally, References and appendices are at the end of the paper.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1. Introduction**

This chapter assesses related literature on successful ICT project implementation in public sector organization in general, developing countries. The chapter identifies factors and shows how their presence or absence affects ICT Project implementation in government. The success factors of ICT project implementation and challenges are analysed and synthesized. Generally, this chapter will deal on understanding the theories and related literature that surrounds the research topic in order to create a better background for fulfilling the purpose of this research and achieving set research objectives. This exactly what will be undertaken in this chapter as it will present an overview of relevant theories that surround the research topic.

#### **2.2. Theory of ICT projects**

All projects initiated in an organization require to be managed. Various scholars have written much about managing projects throughout the project period from the initiation to actual rolling out in organisations to reduce chances of project failure. Some of the factors that lead to project failure are poor planning, poor budget implementation, support from top management, poor communication of project objectives, anytime you alter processes, systems, organization structures or job roles, you need a structured approach to manage both the 'technical' side and the 'people' side and lack of stakeholder support (Umulisa and Noor, 2017). Management of the technical side are normally solved through project management while most of the people side approach is through change management. The chapter begins with a review on the concept of IT based projects, and then a review on the challenges attributed or suspected to influence these projects.

There are a number of theories attempting to address technology, which tend to be associated with the disciplines of science and technology studies (STS) and communication studies. Most generally, the theories attempt to address the relationship between technology and society and prompt questions about agency, determinism/autonomy, and tele-economy (Joseph,2012). Additionally, one might distinguish between descriptive and critical theories. Descriptive theories attempt to address the definition and substance of technology, the ways it has emerged, changed and its relation to the human/social sphere. More substantively it addresses the extent of which technology is autonomous and how much force it has in determining human practice or social

structure. Critical theories of technology often take a descriptive theory as their basis and articulate concerns, examining what way the relationship can be changed. The authors mentioned in this article are those that have some concern with technology or media, though they often borrow from one another and of course build upon seminal theorists that preceded them.

ICT projects are no exception from this conclusion. ICT remains the lifeblood of forward-thinking organizations (Snyder, 2009). The application of ICT concepts has become a subject of fundamental importance to organizations and indeed a prerequisite for local and competitiveness. Boer (2000) wrote that Information Technology and the development of business computer systems, is relatively new, by which he says less than 50 years old.

### **2.2.1. Definition of ICT projects**

According to Mpofu (2010), a project is a temporary endeavour undertaken to create a unique product or service or result. Temporary means that every project has a definite beginning and a definite end. “Unique means that the product or service is different in some distinguishing way from all other products or services” (PMI, 2000, p.4). Every project therefore has a start and end time between which defined work is performed by an assigned project team towards achieving an overall objective or a specified goal, within a controlled budget. According to the Project Management Institute (2013), a project team may range from a single person through to human resources from cross-organizational boundaries. Projects are usually set up to achieve a goal which supports, fulfils and/or aligns with overall departmental, functional or organizational strategies and objectives. Thus, projects have distinctive characteristics from day-to-day operational activities; instead, projects are essentially reinforcements of operations and overall organization. Projects are primarily established to strengthen or improve business activities, strategies and goals, or to solve problems and issues encountered by the entity and/or its units. According to the PMI’s definition, “Project Management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. Project Management is accomplished through the use of the processes such as: initiating, planning, executing, controlling, and closing.” (PMI, 2000, p.6). A project can be defined as a temporary endeavour undertaken by people who work cooperatively together to create a unique product or service within an established period of time and within and

established budget to produce identifiable deliverables Boyce and Haddad (2001). Projects differ from project operations, because project operations are continuous and repeating while projects are temporary. Operations of projects deliver the same or almost the same results but in contrast, projects are unique. A project usually needs resources to deliver results. Project execution is based on a detailed plan, which also considers external factors and constraints. Planning, execution and controlling of projects is the primary field of project management. For major projects, it is necessary sometimes to set up a special temporary organization, consisting of a project team leader and one or more work teams (Flaman and Gallagher, 2001).

In general, ICT projects are a subset of the set of projects. An ICT projects can be defined in different ways. For instance, Leydesdorff and Wijsman (2007) defined an ICT project “is a project whose aim is to develop and/or introduce an ICT system”. This involves the specification, acquiring and internal and external construction or modification of the system. Generally, ICT interventions need to be sustained culturally, socially, technically as well as economically and financially (Tarwireyi, 2008).

Another definition by Heeks (2003) is an ICT/IT project can be defined as; a project that has a constrained timeframe, undertaken to enhance or support the technology and/or systems infrastructure and architecture of an organization, within a specified budget, carried out by a project team, with an ultimate goal of supporting and/or aligning with the organization objectives. ICT/IT projects may be established to support business strategy, to facilitate operational activities, to equip users and customers with technology facilities, and/or to empower the business and its processes.

These ICT projects are typically managed by either an existing operational ICT/IS/IT manager or a specialized ICT/IT project manager. Regardless of the specific arrangement, ICT/IT projects are usually managed and implemented by personnel who have knowledge of or experience in project management (Cadle and Yeats, 2008). The nature and complexity of ICT/IT projects can vary depending on their scale and complexity, as well as the internal and external non-project factors that are relevant at different points in time (McLeod & MacDonell, 2011). In cases an ever-

changing technology environment, ICT/IT managers often face the prospect of managing projects is challenging.

To conclude like any project, an ICT/IT project is a temporary endeavour (with a start date and an end date) to bring about a specific finalized goal. According Frank (2014) ICT projects could be Programming computer software, a mobile app, or video game, Designing hardware architecture for a computer platform, Network installation, Web development for an online shopping site, and Data security on a social network and integrated physical security like CCTV.

### **2.2.2. Characteristics of ICT projects**

The role of ICT/IT has changed largely during the life span of the concept. In the beginning, the role of IT was to support daily operations, due to the fast calculation capabilities of computers. ICT projects are common in most companies since ICT has become a part of the business and competencies in many companies. Because of the strategic consequences, the emphasis of ICT projects has shifted from the technical side more to the managerial side. The projects involve people within an organization and in many cases also outside the organization because many companies use external vendors in executing the most difficult technical parts in ICT projects. (Milis & Mercken 2002) IT has become a primary source for competitive advantage in many companies (Asllani & Ettkin 2007). According to Legris & Collerette (2006), organizations decide to invest to information technology, because they expect it will improve their performance in cost, productivity, or quality.

One definition of an IT or ICT project is finite pieces of work that implement information technologies, within cost and time constraints, and are directed at achieving a stated business benefit, are often negatively distinguished from other projects because of the changing nature of requirements and a host of other variables (Kendrick, 2009). Bennington and Baccarini (2004) defined an IT or ICT project as “a finite piece of work that implements information technologies within cost and time constraints and is directed at achieving a stated business benefit” (p. 20). So, based on this definition, one of ICT project characteristics is finite and time constraints and

changing in nature. These above different authors definition show that ICT projects have different characteristics.

The intent of ICT project is to improve organization business through increased technology adoption in both public and private sectors. An ICT project is primarily a business improvement project, requiring a statement of expected business benefits, clear analysis of business processes, input from stakeholders, and plan to manage the business change which includes training users and gaining their acceptance of the changes.

ICT is also no longer considered merely as a technical service but rather a critical resource that creates organizational value (Williams & Williams, 2007). However, the authors also state that in many cases the ICT related investments do not deliver the expected value or meet business objectives. This is a very important factor to be taken into account, since ICT projects in many cases have to compete for funding with other projects and therefore it is very important to run projects successfully to be able to justify future investments. ICT costs have become a significant portion of the expenditure for many companies and Government organizations.

ICT projects are supportive in nature, high risk and long lead times, large part of the costs and benefits are hidden, benefits are seen in other areas of the business and other longer period, more difficult to assess, high degree of importance on subjective features, often changing requirements, more iterative in nature, significant differences between user's/customer's needs and demands and management emphasis on allocation and use of resources.

### **2.3. ICT Project Implementation**

Basically, implementation is defined as the realisation of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, or policy. As Markus (2010) defined implementation is the process where development, installation and maintenance of ICT projects take place. This is the third phase after initiation where planning and execution occur with the benefit of information sharing and alleviating or eliminating silos in the project. The main issues are co-ordination, technology, user friendliness, availability, scalability, ownership and pricing of

services (Kwon and Zmud, 1987; Baum and Di Maio, 2000; Heeks, 2006; Sharif and Manian, 2010; Al-Rashid, 2012).

The organisation goals and objectives can be achieved by utilising ICT properly through the successful implementation of ICT projects. Successful project implementation should address several attributes which include, project integration, project scope management, project time management, project cost management, project quality management, project human resource management, project communications, project risk management, project procurement management, otherwise the chances of failure is high whenever anyone of those attributes are not addressed properly (Duncan, 1996). The commonly assumed models of ICTs and development make certain assumptions which are grounded in technology determinism. This often ignores complex political factors influencing poverty and inequality at all levels to be hidden or go unhidden. ICTs and development discourse have to be rethought and this is likely to change the way ICT projects are designed (Wilson, 2003).

According to Gichoya (2005), ICT project implementation is a complex endeavour; a lot of research is therefore needed to name challenges, good practice and solutions for successful implementation. In the development and implementation of ICT software system, there are generally accepted principles to achieve success in these projects (Middleton, 1997). To obtain a successful IT project (Buruncuk & Gülser, n.d.) says that the organizations or companies should establish requirements of the software for doing their business and select flexible packages for needed customization level.

ICT projects are contributing factor to socio-economic growth. Langmia (2005) shows how ICT has positively contributed to the economic development of South Africa. (Nawi et al., 2012) show how ICT acted as an enabler towards the growth of the economy of Malaysia through the Economic Transformation Programme, an initiative meant to increase Malaysia's income by 2020. (Kasigwa et al, 2006) discuss how ICTs have become deeply involved in the conception and practice of socioeconomic development of developing countries and recommend that viable models be developed and tested thereby ensure sustainability of ICT projects. However, challenges are still being experienced in terms of success and sustainability of ICT projects. It is possible to improve

efficiency and effectiveness of internal administration within governments through use of ICT (Gichoya, 2005).

#### **2.4. Project Implementation Process**

According to Jugdev and Muller (2005), the project implementation process is complex, usually requires extensive and collective attention to a broad aspect of human, budgetary and technical variables. In addition, projects often possess a specialized set of critical success factors in which if addressed and attention given will improve the likelihood of successful implementation. Business today is operating under high level of uncertainty, projects implementations are open to all sorts of external influence, unexpected events, ever-growing requirements, changing constraints and fluctuating resource flows. This clearly shows that if projects are undertaken and critical process steps not taken in order to manage them effectively and efficiently, the chances of failure are high. Ammeter and Dukerich (2002) observed that the process of project implementation, involving the successful development and introduction of projects in the organization, presents an ongoing challenge for managers.

Elaboration about association between project process life cycle and success factors is essential. so that it could be clearly understood. This is especially because different factors occur and affect the project at the different stage of the project process life cycle (PMI, 2000).

Authors (Field & Keller, 1998; Cooper et al. 2001; PMI 2004; Nicholas, 2004) refer to the sequence period throughout the project as project process life cycle. However, Wideman (2004) has a different view; his argument is that not all projects possess the feature of a cycle or repetition; thus, suggesting a more appropriate term, project life span. According to him Wideman (2007) many experts and academics have misuse the term life cycle but the problem is that once an idea gets entrenched, it is very difficult to correct it.

Marble (2003), quoting Swanson (1998), restricts implementation to the system life cycle stages between design and use. In this regard, Swanson defines implementation as “a decision-making activity that converts design into an operating reality so as to provide value to the client”. Implementation stage is where all the planned activities are put into action. Before the implementation stage of a project, the implementers, spearheaded by the project committee or

executive, should identify their strength and weaknesses, which are internal forces, as well as opportunities and threats, which are the external forces. The strength and opportunities are positive forces that should be exploited to implement a project efficiently. The weaknesses and threats are hindrances that can hamper project management and implementation. Monitoring is important at this stage to ensure that the project is implemented as per schedule. This continuous process should be put in place before project starts. As such, the monitoring activities should appear on the work plan and should involve all stakeholders. If activities are not going well, arrangements should be made to identify the problem so that they can be corrected.

Project implementation often constitutes the most important stage in project development. (Wayne and Wittig, 2002). Depending on how it is managed, the project thus contributes to the economic development. Project implementation is the principal means through which government and private sector meet in order to focus on developmental needs such as the provision of physical infrastructure and the supply of essential health facilities (Rege, 1999). Because the deployment of the project implementation system to pursue these developmental goals, it therefore entails governmental exercise of enormous discretion. Project implementation is often an extremely controversial subject matter. This is especially the case where “the ability to exercise decision in the award of government contracts has been a source of valued political patronage” and procurement has been “a means for the illicit transfer of funds from governmental responsibility to private hands”, (Rege, 1999). In general project implementation process stages are as follows:

#### **2.4.1. Project Initiation /Definition Stage**

This is the imaginative stage of the project where the decision-makers examine the needs, assess the resources, and establish the goals and objectives of the project (Wideman, 2002). Well management of the factors in this stage is essential in order to form a strong foundation for the overall project success (Webster, 1999).

During project initiation or definition different parties must participate in the project. There are several arguments why the selection of an ICT project tends to be so difficult. First of all, the traditional CIAT techniques are not or hardly applicable for ICT projects and there is no new

generally accepted technique for the assessment of ICT projects (Milis & Mercken 2002). Second, the fact that the performance of an investment is very much dependent on the way it is implemented renders the evaluation procedure even more difficult (Apostolopoulos & Pramataris, 1997). Third, unlike most other type of projects, the goals of an ICT project tend to shift as the development progresses.

The importance of project definition cannot be neglected. The definition phase must be done with care and it should be used to ensure the alignment with the business and the ICT. As a part of the definition, the scope of the project must be drawn clear to set the boundaries of what to do and what not. To be able to do this, a project manager must have knowledge on user requirements and knowledge from the ICT experts, a realistic view on the possibilities and maybe even more importantly the limitations of ICT, and sufficient experience to make realistic estimates of the resources required. (Milis & Mercken 2002).

#### **2.4.2. Planning Stage**

This is the stage where the detailed of how the project is going to be implement is planned, which includes step-by-step process; it is helpful to get the input from relevant stakeholder or outsourced experts (Fanelli 2005). The ideal project completed on time and within the approved budget to meet a pre-defined quality. To achieve that target, the project needs proper planning based on available resources.

All the arguments for planning in the reviewed literature show that ICT project implementation is a complex exercise requiring careful planning. This implies that more research is needed to identify challenges, good practice and solutions for successful implementation. Project planning is also taken as a success factor and it is discussed in section 2.6.2.

#### **2.4.3. Execution/Implementation Stage**

This is the stage where the deliverables, in the form of physical product or service, is carried out by the contractor based on decisions made in the earlier stages. Usually, this is the longest

stage in the project life span and it typically consumes the most project resources (Kerzner, 2006). In the project cycle, project implementation is the most critical phase as it is determined by realities and contingencies. Much of the literature has focused on the implementation stage of project management, especially in the success/failure paradigm, with the project champion seen as playing an important role in project success (Cooke-Davies, 2002 and Davis, 2014).

#### **2.4.4. Monitoring and controlling Stage**

Monitoring is important at this stage to ensure that the project is implemented as per schedule. Monitoring is undertaken on a continuous base to act as an internal driver of efficiency within the organization's project implementation processes and its main agenda is to develop a control mechanism for projects (Crawford and Bryce, 2003). This continuous process should be put in place before project starts. As such, the monitoring activities should appear on the work plan and should involve all stakeholders. If activities are not going well, arrangements should be made to identify the problem so that they can be corrected.

No matter how well a project is managed, how clear the brief was or simple the project, there's always the possibility of change. The project manager's role is, at the beginning of the project, to anticipate any problems or potential areas for change and create plans to deal with them. During the project, their role is to use the skills and techniques mentioned in the previous four points to manage the change effectively.

The implementation of a project requires very alert attention and simultaneous observation and monitoring by the project manager to ensure the smoothness of the project progress. Since a project is conducted in a dynamic environment, Project manager must have potential information, experience and skill to overcome any unpredictable outcomes which are unfavourable (Pinto and Slevin, 1983). KACC (2008) guidelines have identified a number of loopholes experienced in ICT projects. The loopholes are as a result of poor monitoring of implementation of ICT projects and lack of proper analysis of the feasibility of projects before they can be undertaken. The guidelines have provided recommendation to enhance integrity in the management of ICT in the public sector.

#### **2.4.5. Termination or close Stage**

Once the project has been completed, the project team is often disbanded and personnel are reassigned to other duties, resources that were secured for the project are now released back to the parent organization, and the project is transferred to its intended users (Adams & Barndt and King & Cleland, 1983).

Upon project completion, it's important for the project manager to review performance against the initial aims of the project. What went well? What were the problem areas of the project? Was the project delivered on time and in budget? If not, what were the sticking points? Through this analyse important insights can be gained into how the process can be improved for the next project.

Project documentation could be any information available in written form that is required or support to perform a project (Stoehr, 2002). This is one of the important factor that contribute to the project success, as those documentation provide not only a record of decisions but also tasks required at a particular stage in a project and should not be viewed as superfluous to the project (Government of Tasmania 2005). Besides time consuming in producing a proper document, the challenge is to ensure that they are treated accordingly in a proper way by all parties who involve in the project. According to Stoehr (2002) there are two categories of project documents, i.e. technical document and legal document. Based on this classification, contract document is the most important document to the project, as it is both legal and technical documents. Thus, to prepare it properly so that the terms are fair to all parties involved in the project, and to complete on time is crucial.

#### **2.5. ICT Project Success**

The discipline of project management has evolved over the past few decades through the introduction and probability of multitude of standards, best practices and research articles and through considerable development within its community of professionals' practitioners (Smith, 2003; Cleland & Ireland,2007; Crawford & Pollack,2007; Leybourne,2007; Perrin, 2008; Ika,2009; Dinsmore et al., 2010 and Association for project management (APM), 2012, PMI, 2013). It is however, important to note that the above publications deal predominantly within

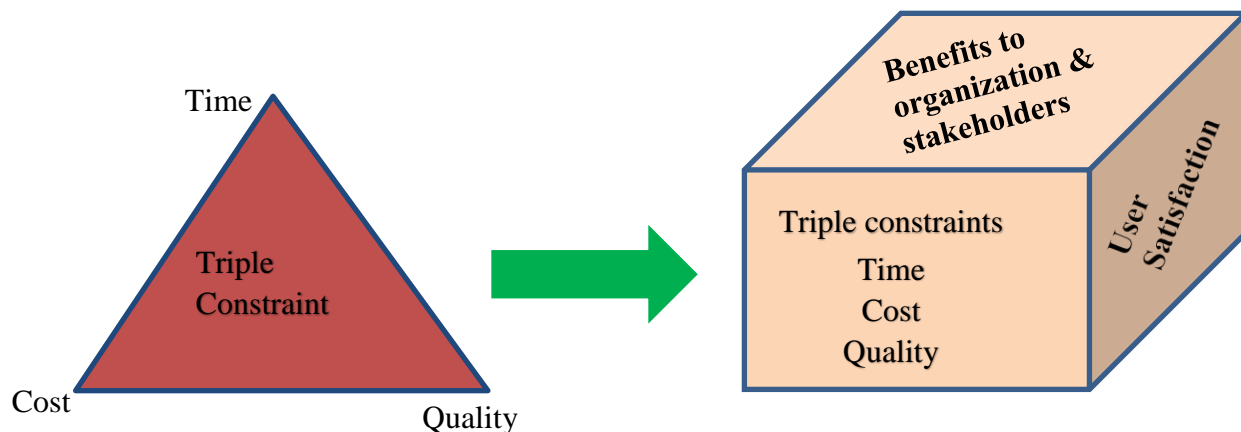
project management in general and not ICT projects specifically. Nevertheless, based on this information, it could safely be presumed that the majority of the projects, including ICT projects, should be completed successfully. However, an extensive literature review indicates that this is not the case specially in the ICT environment (Hyvär,2000b; Pellegrinolli et al, 2007 and Eveleen & Verhoet, 2010).

It is therefore imperative that the perception of the project success be clearly defined generally and explicitly for organizations in particular ICT industry (Erasmus & Marnewick,2012). However, project success unfortunately remains ambiguous in the current literature (Marnewick & Labuschagne,2012). This ambiguity is a major area of concerns form a scientific stand point and has consequently triggered much debate regarding this particular topic (Cooke-Davis and Ika, 2009). Due to the potential problems and ambiguities, the definition of a successful ICT project, and thus the selection of appropriate success factors, is in itself potentially problematic. For instance, Mills (2002) explained in his literature reviews ambiguity comes from for instance, ambiguity due to (a) differences between parties like management, users, project team/project manager, supporters and stakeholders (Munns & Bjeirmi, 1996; Turner, 1993; Wateridge, 1996). (b) differences among people (Fowler & Walsh, 1999). (c) the stages at which the evaluation takes place (Wateridge, 1998). (d) influence of trends and fashion projects (Porter and Earl,1986) and (e) ICT project characteristics (Himton & Kaye, 1996; Clemonts & Weber, 1990; Wilcocks 1996, Turner, 1993; Wateridge. 1996).

After reviewing the works of Baker et al. (2012) concluded that project success is a matter of perception and a project will most likely be perceived to be an overall success if; the project meets the technical performance specifications and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people on the project team and key users or clientele of the project effort. There is also a general agreement that although schedule and budget performance alone are considered inadequate as measures of project success, they are still important components of the overall construct. Quality is more often than not intertwined with issues of technical performance, specifications, and achievement of functional objectives and it is achievement against these criteria that will be most subject to variation in perception by multiple project stakeholders says his publication.

Various project owners/users/stakeholders define and interpret the term “Success” differently, making it possible to believe that all stakeholders/ project owners, in any given projects have the same perception of success or failure (Belassi & Tukel, 1996; Lim & Mohammed, 1999, Erasmus & Marnewick,2012). Baker et al. (2008) conclude that there are possibly no much such things as “absolute success” in project management, only the perceived success of a project.

Moreover, they believed that the manner in which the various stakeholders/project owners gauge success possibly success probably changes throughout a project’s life cycle. Fincham (2002) asserts that project success and failure are neither automatically contradictory nor paradoxical; it is the same “black and white” issues. A single definition for the project success therefore cannot be simply created, as this would negate the fundamental variations which exists across the range of project types (Camiller,2011). As project management evolved from 1960s to 1980s it become apparent that costs needed to be managed on time, within a budget and at the expected level of quality (Ika,2009; Erasmus & Marnewick ,2012). However, as depicted in figure 2.1 below, researchers and practitioners realized over time that triple constraint did not include the measurement of project stakeholders/owners’ expectations and satisfaction (WateridgBaccarini,1999; Ika,2009; Meredith & Mantel 2011; Schwalbe,2011).



*Figure 2.1 Evolution of project success (adapted from Wateridge, 1998; Baccarini, 1999; Ika, 2009; Schwalbe and Meredith, 2011).*

The advent of the various project management standards and methodologies brought more about formal definition of project success. The PMI (2013) defines project success as the quality of the

project and product, timeliness, budget conformity and the level of customer satisfaction and expectation. Project management stipulates that “a project is successfully completed when it delivers novelty, differentiation and innovations on product, either in physical and service form” (Ohara, 2005). Project success is defined similarly by the AMP body of knowledge, that it is the needs of the project stakeholders /owners which must be satisfied and the success criteria as defined and agreed upon at project initiation are used to measure the overall level of satisfaction (APA, 2012).

A number of researchers reiterate project success consists of two distinct components: project management success and project product/service success (Young & Jordan,2008; Ika,2009; Crowley,2010; Camilleri,2011, Jugdev et al.,2013). These two components can be distinguished as follows (Van der Westhuizen & Fitzgerald,2005; Erasmus & Marnewick,2012):

- Project management success focuses primarily on the processes applied to the project. This includes the success achievement in terms of time, cost and quality objectives. It is also imperative to consider the manner in which the management process was conducted, as time, cost and quality pertain to the efficiency of the project execution/implementation (Pinkerton,2003)
- Project product (services in case of ICT environment) success focuses on the overall effect of the project’s final product or output or service. While project management success distinguishable from product success, the successful outcomes of both are inseparably linked. “if the venture is not success, neither of the project” (Pinkerton,2003).

The following simplistic equation could arguably be formulated for project success (Van der Westhuizen & Fitzgerald,2005; Erasmus & Marnewick,2012):

**Project success= project management success+ project product success (1)**

### **Project Management Success**

Project management success consists of three fundamental components (Baccarin,1999; Cooke-Davis,2002, Bannerman,2008 & camilleri,2011):

- Meeting time, cost and quality objectives (project inputs and outputs);
- Quality of the project management process (planning, controlling and risk management);
- Satisfying project owners/stakeholders/users’ requirement and expectation where they pertain to the project management process.

## **Project Product success**

Project product success consists of three fundamental components (Baccarini,1999; Cooke-Davis,2002, Bannerman,2008 & camilleri,2011):

- Project goal: meeting the project owner’s strategic organizational objectives;
- Project purpose ensuring the satisfaction of users’ requirements and expectation;
- Project product ensuring the satisfaction of project stakeholders/owners’ requirements and expectation where they pertain to the project product or services (final output).

It is mandatory to examine the success rate of especially ICT projects for purposes of ensuring realization of the objectives to all stakeholders who include financiers, beneficiaries, ICT experts, developmental experts, among others. Some studies have shown that on average the success of ICT developmental projects is currently standing at about 33% (Rubeistein & CHAOS Report, 2007). Others put the success rate of ICT projects (e.g. in South Africa a developing country with high penetration ICT indicators in Africa) at an average of 43% (Sonnekus and Labuschagne, 2004).

### **2.5.1. Time**

Time in an ICT project is of great significant. From different literatures time is expressed as time is used to compare how long an event or a project lasts and to tell when an event occurs. Over time, most of the ICT projects lack time management (the act of planning, controlling and finally executing specific activities, especially to increase efficiency or productivity). The key recommendation is that project timescales should be short, which means that larger systems should be split into separate projects. More than half of the references (Nguyen et al., 2004; Cleland & Gareis, 2006; and Shenhar et al. ,2006) demonstrated "Time" or "Schedule" as one of the most important project success criteria for any project. Time has been addressed as a criterion by which to evaluate a project's degree of success. It has also been mentioned as a factor, which can help the other factors/criteria be met. It is found in this study that the definition of “Time” is of great importance. "Time" as the date when a project is most likely to end can be a criterion, but "Time" as a manageable component might be considered as a factor.

### **2.5.2. Cost**

Without a doubt, every project is dependent on its cost or budget. Cost has been addressed by many researchers (Ahadzie et al., 2007) as a very important success criterion, where as having an intellectual budget plan and proper cost estimation have been mentioned as prominent success

factors in some studies. However, Procaccino et al. (2005) stated that a software project does not necessarily have to be within budget. Therefore, IT projects might be exceptions in this case.

### **2.5.3. Quality**

Quality, whether it concerns the product or process, has been considered as both a project success criterion and factor by a variety of researchers. Some researchers Hughes et al. (2004) named it quality performance and considered it as a major project success criterion. In addition, some other researchers Paulk et al. (1994) addressed quality as a criterion under the name of product's quality. On the other hand, some researchers such as Collins & Baccarini (2004) considered quality management process as a project success factor, which facilitates the success of other criteria and factors.

### **2.5.4. Users Satisfaction and Expectation**

Undoubtedly, stakeholders, whether they are directly or indirectly involved in projects and have different views about success, play crucial roles in every project. Stakeholders' satisfaction can be, both internally and externally (including clients, customers, contractors, managers, etc.), with the final product as a project success criterion is given special importance by almost all researchers (Belout. & Gauvreau, 2004 and Westerveld, 2003). It is worthwhile to note that stakeholders' satisfaction is sometimes paraphrased as satisfying stakeholders' needs or meeting stakeholders' expectations. According to researchers Procaccino & Verner (2006) stakeholder satisfaction is the most important success criterion in IT projects. There is a controversy over the measurability of stakeholders' satisfaction. Nevertheless, most of the researchers Collins & Baccarini (2004) consider this term as a measurable project success criterion.

## **2.6. Success factors of ICT Project Implementation**

In this section, several possible success factors for the implementation of ICT projects were derived from various types of literature. The aim of this section is to combine the information of the previous sections into a structured summary, which will be used to construct the qualitative research.

The success of an implemented solution can only be determined by its users, once the system has been taken into use and by ensuring that there is also enough support after the launch, there are better chances for success.

Success factor is a multi-dimensional concept, whereby certain factors may have different impacts on different projects (Shenhar et al., 2002). Furthermore, different people assess the project success in different ways and the assessment of the success may be made at different times (Shenhar et al., 2002) resulting in a more complicated situation. Here below lists of general success factors in ICT projects are explained. These success factors are the basic preconditions that make it possible to run an ICT project successfully. According to different authors like Boddy & Macbeth (2000), Milis (2002), Abdulaziz et al. (2013), Frank (2014), Wekessa (2016) different success factors that contribute the success of ICT projects were identified. These success factors are discussed:

#### **2.6.1. Good project selection and justification**

The appropriate solution has to be selected in function of a given opportunity or problem (Strassman, 2007). In the past, projects often failed because computers were used to solve the wrong problem (Earl, 2000). In pharmaceutical terms, one could say that it is the combination of a good diagnosis with the use of the right drugs that cure the patient. Using drugs without a proper diagnosis is potentially lethal.

Consequently, the selection and justification of an ICT project needs to be done with care. Selecting a mediocre or bad project or ill-justifying a project are serious handicaps. It might affect the profitability and thus the sponsor's happiness, the happiness of the users or of the project team and the actual implementation time and cost.

The results of the field study seem to indicate that alignment with the business strategy is far more important than alignment with the ICT strategy. The project where standard packages were introduced for the first time was not harmed by the fact that this was against the ICT policy (self-development). On the contrary, the participants were highly motivated since they could gain knowledge that was new to the company (skill transfer). These skills could be of use in the future.

Projects that violated the business strategy or the business organization encountered far more difficulties.

### **2.6.2. Proper planning**

Mubarak (2010) opines that planning is the process of choosing the one method and order of work to be adopted for a project from the various ways and sequences in which it could be done. Karzner (2013) states that planning can best be described as the function of selecting the enterprise objectives and establishing the policies, procedures and programs necessary for achieving the set objectives. Proper planning in a project environment may be described as established a predetermined course of action with a forecasted environment where the project's requirements set the major milestones.

The four basic reasons for planning in ICT projects are to eliminate or reduce uncertainty, improve efficiency of the operation, obtain a better understanding of the objectives and lastly to provide a basis for monitoring and controlling of the project's activities (Karzner, 2013). A project plan is fundamental to the success of any project. Karzner (2013) states that it is a formal, approved document that defines how a project is executed, monitored, controlled and closed. Cooke-Davis (2002) concluded that the main purpose of applying assumptions, decisions, facilitate communication among stakeholders and documents it (project plan) serves as a guideline for which performance can be measured by both the client and the project team. This implies that all stakeholders should be involved when planning the project and developing the project management plan (PMI, 2013). ICT project planning has to be systematic flexible to handle unique activities, disciplined through reviews and controls and capable of accepting multi-functional inputs. In this context, it is worth mentioning that the main reasons why ICT projects fail are behavioral rather than quantitative problems. This may be due to poor morale, poor human relations, poor labour productivity and lack of commitment by those involved in the project (PMI, 2013).

### **2.6.3. Top Management involvement & support**

According to Mahoney and Wixom (2008), among the factors found to be most critical to technology success is the support of the firm's top management, which includes the commitment of necessary resources and political support to the project. Top management support has been

examined in various studies as one of the critical success factors in project implementation. Tukul (1996) and Jordan (2008) have argued that top management support is the most critical success factor in projects. Various authors have agreed upon the necessity of top management support as an independent variable for ICT project implementation. Top managers in an organization play a crucial role in providing and creating the required conditions for the project to succeed (Staehr, 2010). Top management support has been widely identified and highly ranked as a critical success factor in most ICT projects. Generally, research findings in this area indicate that this level of support is critical for the planning, implementation and eventual success of ICT projects (Teo, 1997). It has become an important factor with the introduction of maturity models. These models analyse projects as an organizational effort, rather than a project manager's exercise. A basic assumption of these models is that an organisation has a direct effect on the manner in which project managers run their projects. One example of evidence to strengthen this assumption is that top management support highly influences the tools that the project managers use in delivering the project.

Mooney (2008) noted that among the factors found to be most critical to technology success is the support of the firm's top management, which includes the commitment of necessary resources and political support to the project. In other research findings, it was concluded that top management support is more important than any other critical success factors and showed that top management influences IT projects by managing soft issues such as passion, motivation, culture and beliefs (Jordan, 2008).

According to McComb (2008), the literature of project management has made a strong sense for realizing and recognizing the importance of top management support. Furthermore, Green (2005), after investigating the 213 R and D projects, concluded that the projects with top management support were less likely to be unsuccessful. In addition, Meredith (2010) did term the projects with management support as "sacred cows" which loosely translates to projects that seldom fail. While studying ICT projects, several researchers have reported various aspects of top management support. For example, Guimareas (1995) argued that top management interests, understanding and encouragements are crucial elements for successful implementation of ICT projects. Some the researchers have suggested that for successful implementation of ICT projects, top managers

should represent themselves as project champions (McComb, 2008). As highlighted by Kazanchi (2008) the importance of control and measurement activities in ICT projects by top managers. Effective top management support gives confidence to the project manager to steer the project to success by use of effective leadership skills (Morgan, 2012). Most of the studies in this area has treated ICT projects as a unit of analysis. Being an isolated phenomenon, separate from the rest of the organisation. This single perspective overlooks the organizational practice of running several projects at the same time; which has become the norm in most organizations. The PMI (2008) summarizes debate on top management support writing that “although we know that getting support from top management is important, there is little guidance about the factors that influence whether support is granted. Such guidance matters from both the perspective of the project team seeking such support and from the perspective of the top managers who want to provide support most effectively.

#### **2.6.4. Client/User Involvement**

In the ICT/IT/IS literature, the terms user involvement and user participation have frequently been used to mean the same thing. However, Barki (1994) in his works he clarified that the two concepts are different and that they need to be defined separately. They defined user involvement as a psychological state of the individual and also as the importance and personal relevance of a system to the user i.e. their attitude toward the development process and its end product. Client (User) participation on the other hand is defined as the observable behaviour of users in the ICT projects, development and implementation i.e. the set of operations and activities performed by users or their representatives during the ICT project and development process or activities of users during the system implementation. The two authors further define four dimensions of user participation; Responsibility, User ICT relationship, Hands-on Activity and Communication Activity. Other authors in the available literature have opted to use the term User Engagement in which they chose to include both user participation (the behaviour) and user involvement (the attitude) and thus according to them User Engagement is used to refer to the total set of user relationships towards ICT projects and their implementation (Wekesa, 2016). For purposes of clarity and to remove any ambiguities, this study shall take the term client/user Involvement to represent all the above three variations.

Various reasons have been given as to why users must be involved in ICT project implementation. User involvement is viewed as a tool that helps to increase user satisfaction and acceptance by: developing realistic expectations about system capabilities, providing an arena for bargaining and conflict resolution about design issues, leading to system ownership by users, decreasing user resistance to change and committing users to the system. By involving end-users in decisions relating to implementation, workers may become more invested in the success of the implementation and more satisfied with the system through the social-psychological mechanism of perceived control. However, characteristics such as user expertise, degree of organizational decentralization, project complexity and users' previous experience with ICT could determine the degree of their involvement.

In ICT projects, user participation is advocated for in order to discover users' needs and points of view, validate specifications and hence build better ICT for the organization. The role of user participation in an organizational activity can be viewed from the perspective of two different behavioral theories (Barki, 1994). These theories are "planned organizational change" and "participative decision-making". The implementation of a new ICT project often implies a planned change in the way an organizational unit pursues its strategic objectives whereas participative decision making emphasizes the role of individuals in working groups. The authors also outlined how user participation can improve system quality by providing a more and complete assessment of user information requirements, providing expertise about the organization the system is to support, avoiding development of unacceptable or unimportant features and improving user understanding of the system. Mooney (2008) subsequently showed that user participation has a positive relationship with user satisfaction. They also argued that four factors affect this relationship; task complexity, system complexity, user influence and user-developer communication. Based on a meta-analysis study, the authors concluded that the inclusion of users in definition and design stages is the best way to increase their perception of the value of the system and to motivate them in order to achieve project success. The Chaos report also clearly shows that projects that lack user involvement perform poorly (Standish Group International, 2010).

In addition to client/user involvement at an earlier stage in the project implementation process, it remains of ultimate importance to determine whether the clients for whom the project has been initiated will accept it. Client acceptance refers to the final stage in the implementation process, at which time the ultimate efficacy of the project is to be determined (Pinto et al., 2003). Too often project managers make the mistake of believing that if they handle the other stages of the implementation process well, the client (either internal or external to the organization) will accept the resulting project. In fact, as several writers have shown, client acceptance is a stage in project implementation that must be managed like any other. As an implementation strategy, Bhavesh (2006) discusses the importance of user participation in the early stages of system development as a way of improving the likelihood of later acceptance. Bean and Radnor (2002) examine the use of "intermediaries" to act as a liaison between the designer, or implementation team, and the project's potential users as a method to aid in client acceptance.

#### **2.6.5. Project technical Teams' Skills and Commitment**

According to PMBOK (2005) the project team includes the project manager and the group of individuals who act together in performing the work of the project to achieve its objectives. The project team includes the project manager, project management staff, and other technical team members who carry out the work but who are not necessarily involved with management of the project. This team is comprised of individuals from different groups with specific subject matter knowledge or with a specific skill set to carry out the work of the project. The structure and characteristics of a project team can vary widely, but one constant is the project manager's role as the leader of the team, regardless of what authority the project manager may have over its members.

Project Teamwork and composition is important too throughout the project life cycle. Skilled team members are extremely critical in the successful execution of ICT projects. Milis (2002) in his literature reviews explained that many factors related to the skills of the project manager and the members of the project team are crucial for the success of the project (Turner, 1993; Belassi & Tukel, 1996; Wateridge, 1997). Therefore, (wateridge, 1996 &1997) study the selection of a project manager and the staffing of the project team need to be done with care.

The project manager should be competent. Preferably, he or she has experience with similar projects. This enables the project manager to make realistic estimates, in order to make a proper planning and it helps him or her to identify potential risks and problems at an early stage. He or she has to have the ability to coordinate a large number of different tasks and delegate authority. He or she has to be able to make trade-offs, should be open for criticism and review and should possess enough social skills to master conflicts or, better, to avoid them (Belassi & Tukel, 1996; Tomer, 1993; Wateridge, 2000).

The composition of the team should be so that the team members have complementary skills. This broadens the competence of the team and helps to avoid conflicts (Belassi & Tukel, 1996; Wateridge, 2000). As ICT projects become more complex and have greater impact, the social element becomes more important (Ingram, 2000). Consequently, the composition of the team should be looked at from a social as well as a technical viewpoint (Turner, 1993). Team members should not be judged solely on their knowledge or technical merits, but on their social skills as well. A project manager should engage team players rather than individuals (Wateridge, 1996).

The project team needs to be cohesive and well-motivated. The team members should be committed to the project. Turnovers have to be kept low (Belassi & Tukel, 1996; Wateridge, 2000). Skill transfer, empowerment strategies and reward mechanisms can achieve this. The role of the team members should be defined, as well as their responsibilities and authority. An effective communication strategy should be in place and the project structure should be clear to them (agency theory). Furthermore, the management structure and the leadership style of the project manager are important in motivating the team (Earl, 2000)).

According to Prabhakar (2005), successful project implementation entails various stages arranging from brainstorming, project start, diagnosis, planning, formal start and implementation has been known as one of the requisites of a successful projects. He emphasized that in order to successfully conduct a project, the project team should be in total control of the implementation and the project itself must have implications to the client that are well comprehended.

### **2.6.6. Proper Resource Allocation**

According to Kagiri and Wainaina (2008), before actual implementation of the project starts, organizations should undertake detailed implementation planning covering aspects such as physical work, time plan, input resources, inter-linkages, organization and management systems, output generation, and cost planning. Kholi (2002) noted that adequate resource plan and its linkage with time plan are crucial as the implicit resource requirements (manpower, materials, money etc.) for each period may not meet the availability constraint and hence the time plan may not be implementable. All the major activities that may have impact on time and cost to the project should be conceived and sufficient time provided.

In order to manage a project successfully, sufficient resources should be until at the disposal of the project manager / team. Top management should engage itself in (re-)allocating these resources to the project. They have to ensure the availability of the resources needed (Belassi & Tukel, 1996; Wateridge, 1996).

Allocating resources is mainly a prioritization problem (Willcocks, 1996). Scarce resources have to be withdrawn from normal business activity or from other projects before they can be allocated to the ICT project. Lack of interest and involvement from (top) management can quickly lead to other activities getting a higher priority (Fowler & Walsh, 1999) and thus more resources. The momentum suffers. Moreover, when support from the top management is made obvious, doubters and reluctant providers of resources will become less doubtful and less reluctant (Wright, 1997), which makes it easier for the project manager to rely on and make use of resources.

As the strategic importance of IT increases, the resource allocation decisions become riskier and more difficult (Clemons & Weber, 1990) and should thus be made at an appropriately high level.

There is a lack of willingness on the part of the top management to allocate sufficient resources to overcome internal problems associated with the introduction and management of ICT (Hochstrasser & Griffiths, 1991). Guidance change cannot be done without proper resources. The same applies to risk management and contingency planning. Not only does the making of a good contingency plan consume resources, but the management needs to be aware that the eventual

execution of a contingency plan requires resources as well. (Mostly, a lot of resources need to be made available quickly to execute “plan B” and this at the moment where the credibility of the (project) management might be in doubt due to the failure of “plan A”).

Furthermore, in organizations where the resource planning and is successful, there are periodic scheduled budgetary reviews of resources expended against plan. Hayfield (2006) emphasized that these reviews will allow the leadership team to determine if the right blend of staff is being used and account for any adjustments that need to be made within the planned budget before overruns occur.

### **2.6.7. Managing Relationships /Communication**

When an ICT project is started, a number of people are brought together to work on the project. These people form an entity, mostly referred to as the project team. This team has relationships with all the other parties involved. These parties may be groups of people who are directly affected by and/or have direct impact on the outcome of the project (users, management, etc) or groups that are only affected indirectly, usually with no immediate influence (sub-contractors, government, unions, etc). The formers are referred to as internal stakeholders, the latter as external stakeholders. Since the project team groups different people, the relationships between the participants of the team need to be managed as well as the relationships with the internal and external stakeholders.

In the early stage, various stakeholders need to express their needs in the project for the decision-maker to decide; good communication among them would result in win-win situation. On one hand, all stakeholders should clearly and reasonably express their requirement and avoiding any ambiguities (Phua, 2004). On the other hand, the decision-makers should be responsive to the needs of project stakeholders and consider it wisely (Pinto & Slevin, 1988 & 2001).

During project execution, communication is in the form of information, instruction, and feedback. At this stage, good communication among parties is very important to avoid, or at least to minimise, confrontation (Toor & Ogunlana, 2008). Clear direction is essential and the top management should be a good listener.

Communication also regards as an important tool in trouble-shooting and problem solving, provided that all parties are sincere and transparent (Clarke, 1999). Hiding the problem by contractors or project managers to maintain their reputation could make it worse (Long et al. ,2004 and Sambasivam & Soon, 2007). Sometimes, in this situation, diplomacy together with good judgement from those parties in power would be very helpful to avoid conflict.

Milis (2002) in his literature review stated that during project implementation, there are different parties who involved in project implementation. These are technical team members, internal and external stakeholders. According to Milis, the relationship and their communication between team members must strongly take place. Firstly, projects put extra demands on the personal qualities of the people involved. The team members are asked to put in an extra effort. Consequently, the people involved need to be coached. Good communication and conflict control should lead to expectations that are more realistic, better relationships and teamwork amongst the participators. Evaluation and reward mechanisms should be in place (Strassmann, 1997). The management has to set ambitious, but realistic goals. The team members should have clarity in what is expected from them as well as their position within the team member. They have to be aware of the full picture of the project. This helps to create commitment of the team members and it helps to motivate them.

Secondly, Effective communication is a vital component in the process of building and maintaining relationships, and it essential for maintaining the support and commitment of all stakeholders. Project success is linked to the strength of the relationships created by effective regular, planned and adhoc communication with all members of the projects stakeholders' community (Bourne & Walker,2005). Stakeholders whether are internal and external the relationship and communication between must be managed. Every party involved in the implementation of an ICT project, brings its own set of needs. This can lead to friction between the parties on behavioural or organizational issues, which, in turn, could cause implementation failure (Fowler & Walsh, 1999).

A process of continuous and dynamic evaluation and debate between informed stakeholders provides the best chance for information system optimization (Remeny & Sherwood-Smith, 1998). It can reduce friction and help to align the different viewpoints of the parties involved.

Furthermore, intensive communication can improve the knowledge of management on IT-issues and the knowledge of IT-people on the specific management issues as the development and the implementation progresses.

### **2.6.8. Stakeholder Involvement**

Stakeholder Involvement or Engagement has been defined as the process by which an organization involves people who may be affected by the decisions it makes or can influence the implementation of its decisions (Snyder, 2009). They may support or oppose the decisions, be influential in the organization or within the community in which it operates, holds relevant official positions or be affected in the long term. Stakeholder is everybody who is involved in the project or whose work or interest might be affected by Project.

In order to succeed ICT project and be sustainable over time, executives must keep the interests of customers, suppliers, employees, communities and shareholders aligned and going in the same direction. Innovation to keep these interests aligned is more important than the easy strategy of trading off the interests of stakeholders against each other. Hence, by managing for stakeholders, top management executives will also create as much value as possible for shareholders and other public sectors.

According to Gatt (2010) Stakeholders may have varied level of interest, involvement, and influence on the project. It is extremely important to identify all the stakeholders and manage them as Stakeholders can have negative and positive influence on the project. Gatt points out that the stakeholders can include Customer, End Users or Clients, Sponsor, Program manager, Portfolio Manager, PMO, Project manager, Project Team, Functional Managers, Operation Managers, Sellers, Vendors, Legal department, Service providers service providers like telecom, Electric power and others. However, Keon (2002) identified stakeholders as people or groups whose lives or environment are affected by the project or indirectly affected, but who receive no direct benefit, nor have direct influence on it. People working in another department or competitors or service providers. This study considers this stakeholder for the research study.

Thompson (2012) observed that stakeholder management is critical to the success of every project in every organization I have ever worked with. “By engaging the right people in the right

way in your project, you can make a big difference to its success... and to your career." As you become more successful in your career, the actions you take and the projects you run will affect more and more people. The more people you affect, the more likely it is that your actions will supporters of your work or they could block it. Stakeholder management is an important discipline that successful people use to win support from others. It helps them to ensure that their projects implementation succeed where others fail.

There are also success factors that contribute ICT project implementation success such as knowledge transfer or training project implementation, vendor capacity and selecting appropriate vendors.

### **Success Factors Identified in Literature**

The following success factors are some of the factors that contribute the success of ICT project implementation

<b>Success Factors</b>	<b>Definition</b>	<b>Literature</b>
Top Management Support and Commitment	Top management is responsible for setting the goals, vision, process change, organizational structures, and formulating the new policies and strategies necessary to put ICT project initiative in place.	(Fortune and White, 2006; Shanks et al., 2000; Young and Jordan, 2008; Al-Mudimigh et al., 2011; Dezdar and Ainin, 2012)
Client or user involvement	Client involvement must involve in project implementation for requirement defining, accepting and testing	(Mooney, 2008; Standish Group International, 2010; Hsu, Lin, Zheng and Hung, 2012; Petter, 2008; Subramanyam et al., 2010)
Proper Planning	Proper planning is necessary to develop reasonable project estimates, enhance the management of customer and stakeholder expectations, mitigate project risks, establish and standardize a scope management process to develop concise project scope statements and handle issues consistently.	(Gunasekaran and Garets, 2003; Hong, 2009; Al-Turki, 2011)

<b>Success Factors</b>	<b>Definition</b>	<b>Literature</b>
Project Team Competency or skill and commitment	Competent, well experienced and skilled technical team with different composition members are required for successful project implementation.	(Shanks et al., 2000; Alghathbar, 2008; Dezdar and Ainin, 2012)
Communication Management	Communication is one key element which has to be applied effectively throughout a project's life cycle from the beginning till the end	(Rosario, 2000; Al-Mashari and Al-Mudimigh, 2003; Dezdar and Ainin, 2012; Nah et al., 2007)
Training and Education (Knowledge Transfer)	Knowledge transfer during implementation for technical and training after implementation for users is vital for both success and sustainability of projects	(Finney and Corbett, 2007; Kumar et al., 2002; Robey et al., 2002; Mandal and Gunasekaran, 2003; Aladwani, 2001)
Stakeholders Management	stakeholder management is critical to the success of every project in every organization by engaging the right people in the right way in the project.	(Crawford, 2005; Morris et al., 2006; Bourne and Walker, 2008; PMI, 2004; Abouzahra, 2011)
Good Selection and Justification	The appropriate solution has to be selected in function of a given opportunity or problem and a feasible project must be justified and selected according the business logic. The selection should be aligned with strategy and organization business plan	(Koen Milis,2002;)
Project resource	sufficient resources project should be at the disposal of the project manager / technical team	(Koen Milis,2002 and Nawei et al, 2010)

<b>Success Factors</b>	<b>Definition</b>	<b>Literature</b>
Change Management	managing the process of implementing major changes in IT, business processes, organizational structures, and job assignments to reduce the risks and costs of change, and to optimize its benefits.	Antti Pasanen (2009)

*Table 2.1: Success Factors Identified in Literature (Source: literature reviews)*

## **2.7. Challenges of ICT Project Implementations**

The inability to realize the main factors contributing to project success/failures embedded in public sector organizations has resulted in some numerous projects experiencing implementation challenges and eventually failing (Mokgoabone, 2004; Tabane, 2011; Ontebetse, 2013).

Extensive studies have been carried out to ascertain the challenges that flaunt the implementation of ICT projects in developing countries (Achampong, 2012; Mutula, 2008; Nkohkwo and Islam, 2013). There are different challenges that hinder the ICT project implementation. Because, implementation of ICT projects, however like any other project that may be introduced in an organisation can be successful if well managed or can fail to materialise at any stage of a project.

Different literature reviews discuss about challenges of ICT project implementation in public sector organization. For instance Nkohkwo and Sirajul (2013) identify challenges of e-government projects are Top management support, leadership, deficiency and implementation guidelines, recruitment of ICT personnel, change management, human capital development, lifelong learning, organizational motivation, information management, internal efficiency, non- contextualization of e-government practices, partnership between private and public sector, ability and commitment, disintegrated projects, e-government vision, evaluation framework, transparency, citizen inclusion. This is not different from ICT project implementation.

In the case of the public sector, the successful exploitation of technology requires the presence of a wide range of skills and organizational practices. Dunleavy et al. (2006) highlight four main challenges which might hinder the efficiency impact of ICT in the public sector. First, due to their sheer or absolute size and complexity combined with exposure to political pressure, public administrations/sectors generally they are called organizational inflexibility. This consists in a

greater resistance to absorb labour saving technology and in a generalized tendency of public institutions to overcome barriers to the introduction of ICT by means of large scale investment programs rather than piecemeal, cumulative changes (the "big-bang cycle" approach). Second, growing pressures on governments to increase their market orientation as to achieve greater cost-efficiency, have induced public sectors in many countries to outsource a large fraction of ICT activities or projects. This has determined an additional layer of technical inflexibility to the already rigid organisational features we have just recalled. Third, while the development of digital network services and defence related technologies allowed the public sector to attract large numbers of highly skilled ICT specialists, private firms and ICT system companies have thereafter gradually overtaken governments in terms of ICT and digital technology innovation. This has significantly reduced the attractiveness of public sector for qualified workers and caused an endemic lack of skilled ICT specialists, further increasing the costs of adapting new systems to the specific characteristics of public organisations. Fourth, the shortage of in-house specialized ICT and the increasing outsourcing trends mentioned above are often coupled with a lack of competition in the ICT supply for public organisations. This is likely to generate distortions in the quality or quantity of ICT supplied to the government hence reducing the effectiveness of ICT within the public sector.

Information and Communication Technology for Development (ICTD) have faced a high failure rate, partly due to poor management and poor project design (Rubeistein and CHAOS Report, 2007). Additionally, a well-defined and well balanced (interplay) among the key elements of a successful ICTD project are people, process and technology (Macapagal and APCICT, 2010). At the world level, failure of ICT projects has been linked to; lack of clarity about roles, responsibilities and requirements, lack of definitions and managing project requirement and failure to communicate these from project sponsors, poor design and implementation among others (Ritter, 2007).

ICT projects may be viewed as socio-technical systems in which there are complex interconnected factors (social, human, technological) that interact within the system environments, but all of which synergistically underpin the project success (Ugwu & Kumaraswamy, 2007). In the context

of developing countries, many projects launched have not led to any significant improvement in the delivery of government services (Benjamin, 2001; Heeks,2002 & Kanungo, 2003).

ICT projects are largely about change. The projects bring change in business, operations, policies and processes of the organization. This often causes change resistance among the people affected by the project within the organization. The mere implementation of a new system is also not enough, since every change in processes or operations require retraining of the employees. The existence of an external vendor also adds extra challenges to the project management. In fact, it may be among the largest concerns of a project manager, or at least the co-operation takes a large portion of the project manager's time. Generally, Challenges that hinders successful implementation of ICT project in public sector can be the following:

### **2.7.1. Government Bureaucracy**

The factors for failure are those occurrences that constraint proper/smooth implementation of ICT projects in government. These can either be barriers or inhibitors as described by (Khaled, 2003; Gakunu, 2004; Aineruhanga, 2004; Heeks, 2003a; Ndou, 2004; Bhatnagar, 2003). Challenges can be considered as those occurrences that hinder ICT implementation. Some of these challenges for failure are: Infrastructure or site readiness, finance, poor data systems and lack of compatibility, skilled personnel, Leadership styles, culture, and bureaucracy and Attitudes (Ouma,2012). Different authors identified as there are a lot of bureaucracies in government public sectors organizations like decision making, risk mitigation and finance purchase procedures.

There is an evidence that bureaucratic performance is important for development performance (Kaufmann et al. 2000). In project management, bureaucracy is essential in order to have the checks-and-balances to enable projects to run smoothly. However, an improper practice of bureaucracy can cause unnecessary delays, as mentioned by Long et al. (2004).

### **2.7.2. Organizational Structure Instability**

Lam (2005) explains various issues relating to the challenge Organizational challenge – such as lack of readiness, rapid pace of the reform, absence of a champion, management/technical skills

and change challenges. Implementation of IS/IT systems during organizational change are faced with some of the key high-level challenges (Weerakkody and Dhillon, 2008). These challenges are resistance from employees, legacy systems constraints, cultural and political constraints, lack of senior management commitment, negative employee attitude and resistance to change (Weerakkody and Currie, 2003). In an organizational that bureaucratic, functionally oriented and legacy system driven challenges will be more sever (Weerakkody et al., 2007). In fact, successful implementation of ICT project will be the result if better understand those key challenges in detail.

### **2.7.3. Human Related Challenges**

#### **2.7.3.1. Commitment**

Successful development of an information system is dependent upon commitment to the project (Newman and Sabherwal,1996). Commitment is a complex state involving the human psyche, external forces imposed upon the individual or organization, and the element of time that may or may not correspond to the timeline of the systems project. Commitment can be defined as the state of mind that holds people and organizations in a line of behavior (Staw, 1982). Commitment to a systems project involves “doing what is necessary throughout the stages of system development, installation and use to assure that the problem is understood and that the system development solves that problem” (Ginzberg, 1981). During project implementation, all project parties must be committed to make project implementation successful.

#### **2.7.3.2. Resistance and Attitude**

Resistance to change Burke et al. (2001) defines it as refusal to see benefits in a new system because of what individuals are used to (works for them). A case study by Gupta (2000) revealed that the main hurdle experienced by most firms is resistance to change. He further stated that resistant was due to employees’ reluctance to learning new techniques or the ICT department reluctant to change due to its attachment to the current systems.

Resisting change is the result of inadequate training among government employees that are not very well trained in using information technologies (Norris, 1999 and 2007). Employees or users who are beneficiary of a project specially regarding to implementation they resist to change from the old system. Several other papers confirm that user attitudes can cause resistance or acceptance

(for example, Angst and Agarwal, 2004; Donat et al., 2009; Alsajjan & Dennis, 2010 and Lee 2011). Resistance is not only arising from users, but also it is widely reflected from the top managements and technical team.

In general, a review of the literature shows that governments are moving towards an era of high investments in ICT in order to improve governance processes and delivery of public services. There is scant research in ICT projects which successfully implemented in public sector organizations in case of CGAA. In this paper, the researcher tried to address this gap by assessing the success factors and challenges of ICT project implementation. Having reviewed the relevant literature mostly from developing countries, it is possible to suggest factors that will affect successful implementation of ICT projects in government public sector organization. These would likely to be modified after the gathering of empirical data in CGAA public sector organization.

## **2.8. Research Gap**

There is a growing body of research on the successes and failures of information and communications technology (ICT) projects in the public sector. However, there are issues in the methods, practices, performance and success in managing ICT projects (Othman et al., 2009). Due to this reason, the study requires case study research to explore successful implementation of ICT project factors, challenges that explains local situations (Ipe, 2003; Bechina & Bommen, 2006). Therefore, this study is concerned ICT project implementation case study research for the case of CGAA public-sector organizations. The study explores the public-sector organization current ICT project processes and the factors that influences the success of ICT project implementation for a case of CGAA public sector organizations.

It is noted that most of these studies concentrated on time and cost overruns. However, as Horine (2005) argued, although there exists a shared core of principles lying at the heart of any project success, from an idealistic perspective, no two projects are completely identical and each has its own set of unique challenges.

There is a limitation on successful implementation of ICT projects in public sector organization in case of city government of Addis Ababa. In case of CGAA there are a lot of ICT projects are implemented and under development. All these projects are implemented in the same rhythm. In

public sector organizations completing ICT project behind the schedule is not considered as project failure or challenged. As many arguments for ICT planning prove, ICT project implementation is a complex exercise and more research is needed to identify success factors, challenges, good practice and solutions for successful implementation (Gichoya, 2005). So, the gap is assessing challenges and success factors that influence the successful implementation of ICT projects.

As discussed in the literature review, various factors responsible for successful project implementation included top management, client involvement, stakeholder participation, communications, good selection and justification, planning, technical team, knowledge transfer. The study aimed to assess these success factors and challenges together in order to produce successful project framework.

### **Summary**

The traditional approach of measuring project success using time, cost, and quality as simple criteria is inaccurate and inadequate. Projects need to be judged against a more complex set of criteria, recognizing that different stakeholders have different priorities. Normally, set of success factors that are judged using the same criteria are grouped under particular dimensions. Project may be affected by different factors at different time.

Based on its life span, project can be divided into two segments; project process or management and product. Evaluating project success should cover factors in both segments of the project. Evaluating factors during the project process would verify the project management success, while evaluating factors related to the project product would judge the product success. While it is possible to identify various factors and challenges that influence success, the key factors and challenges that contribute to the project success can vary between projects. Success of a particular project could be different from the others, depending on the different project characteristics that influence those success factors. While some project characteristics are under control, the others might be beyond the control of any members of the project team. Controlling project characteristics is important in determining the direction or anticipating the outcome of the project.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter discusses the methodology that was used to conduct the study, focusing on research design, study location, target population, sampling procedures and sample size, research instruments, interviews, pilot study, Ethical consideration, validity, data collection procedure and methods of data analysis.

Research methodology is the core of the research process to carry out the research (Yin, 2003). It is an overall roadmap of the research process. It includes the research standard, procedure, data collection instruments and data analysis methods. As a result, this step needs much attention on choosing the appropriate method which can provide the desired output. Exploratory research is normally an unstructured and in formal method of obtaining back ground information about a research problem (Burns & Bush 2003; Churchill 1999; Sekaran 2003). Specifically, an exploratory qualitative study was used in this research to clarify problems, test the conceptual model and verify the theoretical propositions generated from the literature.

#### **3.2. Research design**

A research design is the logic that links the research purpose and questions to the processes for empirical data collection, data analysis, in order to make conclusions drawn from the data (Bloomberg & Volpe, 2008; Rowley, 2002; Yin, 2009). It is also research design is the blue print or plans of procedure that cover the decision from a wide assumption to detailed methods of data collections (Creswell, 2009). Previous scholars used different types of research methodology depending on the kinds of the problem situations, the existing knowledge, and the resource availability. Accordingly, in this study the researcher used a qualitative research method. Qualitative research methodology was selected basically to gather all the relevant information. It produces holistic understandings of rich, contextual, and generally unstructured, non-numeric data (Mason, 2002) by engaging in conversations with the research participants in a natural setting (Creswell, 2009).

To conduct this research, the researcher used interview, participatory observation and document reviews were used to collect qualitative data from target population.

The researcher employed appropriate research design to organize data in order to address the methodological issues as identified in the research problem. Scholars have supported the use of research design, which is often viewed as a structured set of rational decision-making choices or guidelines for generating valid and reliable research results. It also ensures the acquisition of information through objective procedure relevant to the research problem. Thus, research design is concerned with setting up a study in a way that will produce specific answers to specific questions (Straub *et al*, 2001; Cavana *et al*, 2001; Hamed, 2009: Alhujran, 2009).

Whilst literature identifies a number of interpretations of research design, researcher has concentrated on Oppenheim's (1992) by describing it as a strategy (or basic plan) of the research, and the rationale that enables the feasibility and validity of drawing broad conclusions from it. Therefore, the current research problem identifies the implementation of ICT projects in public sectors, using case study research approach focusing on CGAA public sector organizations.

The research aim is to assess ICT project implementation in public sector organizations in Ethiopian the context specifically CGAA. This will be achieved through development of a conceptual framework that will guide the entire research process. The conceptual model is also expected to serve as frame of reference for academicians and researchers to implement ICT project in other organizations.

### **3.2.1. Research Strategy**

According to Vreede (1995), a research strategy is seen to concern the steps carried out to execute the inquiry into the phenomenon studied. It outlines the sequence of data acquisition and analysis. A research method or technique constitutes ways of collecting, analysing and representing data. Sometimes it is necessary to use several techniques in research. This is intended to provide a more complete picture of some phenomenon through exploiting the inherent strengths of each technique (Beynon-Davies 2002).

According to Yin (2003), the choice of a research strategy or inquiring system is based on the nature of the research problem, and on the status of theory development in the research field. Yin further argues that a strategy has peculiar advantages and disadvantages, depending on three conditions: (a) the type of research question(s), (b) the control an investigator has over actual behavioural events and (c) the focus on contemporary as opposed to historical phenomena.

### **3.2.2. Case study method**

A case study can focus on describing process(es), individual or group behavior in its total setting, and/or the sequence of events in which the behavior occurs (Stake, 2005). Therefore, a case study approach allows us to obtain rich descriptions of the dynamics of success factors and challenges of ICT project implementation as well as the holistic view of the project implementation activities in order to get the completed results. The advantage of case study research over traditional quantitative methods is that it does not only verify relationship but also explains the underlying reasons for the observed relationships (Eisenhardt, 1989).

#### **3.2.2.1. Why Case Study?**

The research design is an exploratory case study design in which case studies are tailor-made for exploring new processes or behaviours or ones that are little understood (Hartley 1994). Case study is particularly useful for responding to how and why questions about a contemporary set of events (Leonard-Barton 1990). The contextual nature of the case study is illustrated in Yin's (1993:59) definition of a case study as an empirical inquiry that "investigates a contemporary phenomenon within its real-life context and addresses a situation in which the boundaries between phenomenon and context are not clearly evident."

The primary purpose of this case study is to investigate the implementation of ICT projects at public sectors in CGAA. An exploratory case study design is deemed the best design to fulfil the objectives of the study. A research design is the general plan of how one goes about answering the research question (Saunders, Lewis and Thornhill, 2000). An exploratory survey research design was used to obtain data.

### 3.3. Target Population, sample size and sampling procedures

#### 3.3.1. Target Population

The research study is undertaken in city government of Addis Ababa public sector bureaus. Public sector bureaus which have implemented ICT project for their service delivery were selected for the study. These ICT projects are at different stages; some of them are already implemented (they are using the ICT products), under development (implementing or deploying ICT project) and planned for the future (on the way to implement ICT project). In the public-sector ICT projects include Software, Network installation, Physical security or CCTV and Light Emitting Display (LED) integrated systems. So, based on this the researcher selected the public-sector organizations that have these ICT projects in their sector organizations. Table 3.1 shows that ICT projects in public-sector organizations.

This study covered CGAA public sectors where ICT projects were being implemented and now are implementing currently. From these target areas, the respondents are Bureau Chief Executive Organization (CEO), Chief Information Officer (CIO) or ICT department head, Project managers (PM) and users. CEO includes General and deputy heads, CIO includes ICT directorate, team leader and case team leaders, PM is a person who is responsible for project coordinating, monitoring and users are employees who are using ICT project products in the organization. The researcher used purposive method for interview which can be collected for CEO, CIO and PM. These organizations were selected to have a fair representation of all in selected organization. The reasons why these public-sector organizations were selected, these organizations have a well-organized IT department, they have been already implemented ICT projects in their organization.

S. No	PS Bureau Name	Types of ICT project		Status
1	AA Police Commission (AAPC)	software	Network infrastructure	Implemented
2	Addis Ababa Education Bureau (AAEB)	software	Network infrastructure	Implemented
3	AA Land Development and Management Bureau (AALDMB)	software	Network Installation	Implemented

S. No	PS Bureau Name	Types of ICT project		Status
4	AA Small and Medium Enterprise Bureau (AASMEB)	Software	Network Installation	Implemented
5	Addis Ababa Vital status & Documentation Registration Agency (AA VSDRA)	Software	Network Installation	Implemented
6	Addis Ababa Transport Bureau (AATB)	Software	Network Installation	Implemented

*Table 3.1 ICT projects Status in CGAA of public-sector organization*

*Note: ICT projects are not only the above listed, but also there are different ICT projects which are implemented in the CGAA public sector organizations. (Refer Appendix-II)*

S.No	Public Sector Organization Name	CEO	CIO	PM
1	AA Police Commission (AAPC)	1	1	1
2	Addis Ababa Education Bureau (AAEB)	1	1	1
3	AA Land Development and Management Bureau (AALDMB)	1	1	1
4	AA Small and Micro Enterprise Bureau (AASMEB)	1	1	1
5	Addis Ababa Vital status & Documentation Registration Agency (AA VSDRA)	1	1	1
6	Addis Ababa Transport Bureau (AATB)	1	1	1
<b>Total Sample Size</b>		<b>18</b>		

*Table 3.2 sample size of the participants*

### **3.4. Data sources and collection instruments**

#### **3.4.1. Data sources**

Data collection is a systematic approach to gathering information from a variety of sources to get a complete and accurate picture of the area of the researcher interest. There are two sources of data. Those are primary data source and secondary data sources. The data collected from primary source is very helpful for any research. Most researchers use both primary and secondary data sources. Kumar (1996) study identify that data collected from two or more sources will better than data collected from a single source to have good quality research result.

### **3.4.2. Qualitative Data**

The interview questions were designed to capture the views of those individuals according to the constructs identified which are important for the context of the study (Refer Annex-I). The interview questions were adapted from (Seyyedeh ,2010; Van Der Meer, 2014; Vuuren, 2011) in the context of Addis Ababa city administration. In addition, review of ICT project implementation and other related documents were also used to gather secondary qualitative data which are important for the research context.

The sample size was designed was eighteen participants for interview. But data were collected using semi-structured interview from fifteen respondents such as CEO head, Project manager, Team Leaders, CIO head, etc. However, Guest, Bunce, and Johnson (2006) propose that saturation often occurs around 12-15 participants in homogeneous groups. This is consistent with my own experience during a recent CEO study where saturation occurred around 11 participants (Latham, 2013). In addition to interview documents were reviewed and participatory observation were taken place. Participatory observation is a method in which the researcher actually participates in the events being studied and related activities (Yin, 2009). The researcher has made observation on how the ICT projects are being implemented in public sector organizations.

#### **3.4.2.1. Data Collection Instruments**

In this study, the researcher collected Primary data from the target audience and used semi structured interviews as an instrument. Adams and Schvaneveldt (1985) indicated that questionnaires and interviews are the most common methods of data collection in many of the branches of social and behavioral science. Both methods are highly flexible and adaptable to a variety of research designs, populations and purposes. According to Fontana & Frey (2000), the interview asks all respondents the same series of pre-established questions with a limited set of response categories. There is very little flexibility in the way questions are asked or answered in the structured interview setting. Instructions to interviewers often include some of the following guidelines: The main reason for adopting interviews as a means of data collection is the richness of information that can be derived and/or obtained. So, for this study interview is conducted

#### **3.4.2.1.1. Interviews**

An interview is more appropriate in obtaining more information needed. Rogers & Bouey (1996) conclude that the most utilized data collection method in qualitative research studies is the interview, while Gillham (2000) emphasises that interview provides some flexibility to cope with the unpredictable nature of subject being examined.

Researchers were used interview for case study research (Yin, 2003). Interviews can be conducted through face-to-face, telephone, Skype or any other latest technology application. Face-to-face interviews were selected for this research. It allows a great deal of interaction between the interviewer and the interviewees (Saunders et al., 2003). Methods of interviewing can be open ended and semi-structured questions as guides (Darke et al., 1998). The motivation for the open-ended interviews is two-fold. Firstly, the respondents and the interviewer interpretation of their response matched their intent with literature reviews.

Secondly, they tried to explain how ICT projects successfully implementation. The researcher took twelve interviews from six sectors bureaus, two agencies and one institute for the case study data collection. The interviewee respondents are those persons who know the organization in detail and represented by the organizational representative. The respondents were assumed to well know all the organizational functions as a whole. The respondent included in the interview includes; vice director, senior expertise, and senior consultancy as well as project managers related to technology. The purpose of interviewing is to allow entry into the other person's perspective. Qualitative interviewing begins with the assumption that the perspective of the other person is meaningful, knowable and able to be made explicit. The purpose of the interview is to find out what is in and on someone else's mind and to gather their stories (Patton, 2002). Hakim (1987) argued that the central issue in qualitative research is its concern with individuals' own accounts of their attitudes, motivations and behaviour, offering richly descriptive reports of individual perceptions, attitudes, beliefs, views and feelings.

#### **3.4.2.1.2. Document Review**

According to Hancock and Algozzine (2006), documents are used as important data source for the research as they contain readily available data. Organizations documents show historical records

and events which includes: magazines, training manuals, videos, photos, procedure, minutes, reports, organization policy, rule and regulations, press releases, internet, websites, and others documents which may not be properly recalled by interviewees (Yin, 2003). It is not easy to get these documents from the public-sector bureaus. Some sector bureaus don't have document management system and very difficult to access the document for Addis Ababa government offices. Review of the existing company documents also forms an important part of the techniques to gather data for comparison (Patton, 2002). Documents are contract documents, technical documents, custom clearance, and Bank Letter of Credit (LC) and others of public sector organizations.

Besides the above documents, the researcher took notes and asked the interviewee for information not clear in the document during interview. These help the researcher for further understanding ICT project implementation success factors and challenges.

#### **3.4.2.1.3. Observation**

Ethnography (Participatory observation) is used to gather additional data which cannot be expressed verbally in an interview discussion. The aim of this participatory observation is to understand the situation from the inside and outside organizations. It can also help to verify respondent's bias, values and objective information (Hancock & Algozzine, 2006). In observation, the observer does not interfere with respondents. Observation is performed through natural settings by asking questions or introducing new provocations. The observer can witness connections, correlations and causes of the complex phenomena of social reality (Johnson, 2007).

To collect observation data, we developed an observation checklist. The check list was designed to capture data on interactions among employees in the office, document organization, office layout, usage of ICT, and the general work environment of the office. In this research, we observed by participatory group meeting, social interaction in their natural environment, work flow participation and cross organization project. Finally, observation allows us to develop a connection with the members of the group, build familiarity, and trust that aided in carrying out the interviews.

### **3.4.3. Data Collection Procedures**

The choice of data collection procedures should be guided by the research question and the choice of design. The case study approach typically combines data collection methods such as archives, interviews, questionnaires, and observations (Yin, 1989). This triangulated methodology provides stronger substantiation of constructs and hypotheses. However, the choice of data collection methods and also constructing hypothesis are also subject to constraints in time, financial resources, and access. Even though as (Yin, 1989) discussed in his research paper the case study approaches combine many data collection methods, but the researcher used semi structured interviews, observation and document review.

The researcher chose a combination of interviews, observation and document review with main emphasis on the research questions. The reason for limited observation, on the other hand, was due to problems in obtaining access early in the study and time and resource constraints. In addition to choosing among several different data collection methods, there are a number of choices to be made for each individual method.

The respondents had more than five years' experience of ICT management and project implementation were chosen, and the reason for that was to consult people with significant levels of practical experience. The respondents are CIO head, CEO head, project manager and Team Leaders. The researchers conducted interviews during June to July 2017. Each interviewee was briefed on the information concerning the aims of the study and the purpose of the interviews. The duration of each interview was 1 hour to 1 hour and 30 minutes with the consent of each participant, and each interview was conducted on a one-to-one basis. Participating CEO and CIOs were assured of their anonymity before the beginning of each interview

#### **3.4.3.1. Interview Procedures**

After the interview process with the CIOs and Project manager had finished, the researchers started to analyse the interviewees' answers. The researchers transcribed the results in a separate form for each interviewee. This form consists of the following: CIO's background, organizational and ICT characteristics, a list of factors from the literature to be confirmed if it is important or not, and a

space for any additional factors that can be added. In the data transcribing process, the researchers marked (✓) when the CIO and confirmed the importance of one of the factors that were listed in the interview results form. If, however, the interviewee suggested a new factor. The researchers also wrote down the interviewees' comments about each factor. After this, the process of transcribing the interview results was finished, and the data analysis process started in order to identify the factors which have influence on ICT project success.

### **3.5. Methods of Data Analysis**

Before data collection and analysis can be carried out to address the research question, sustainable groups needed to be selected. Data analysis is performed after data collection from the data source and some primary data processing activities. It is done according to the research objective. But in some qualitative research, data collection, analysis and reporting are often carried out in parallel, and the result of one activity alters the direction of the others.

In this paper interview responses were analyzed and coded using thematic analysis method. It is stored using NVIVO 10 software. Thematic analysis is one method for reducing data into meaningful information or smaller concepts or patterns.

Thematic Analysis is a type of qualitative analysis. It is used to analyse classifications and present themes (patterns) that relate to the data. It illustrates the data in great detail and deals with diverse subjects via interpretations (Boyatzis 1998). Braun & Clark (2006) defined thematic analysis as the identification and analysis of themes and patterns of similarity within research data. It is not grounded in any particular theoretical and epistemological framework and can therefore be applied across a wide range of qualitative research approaches (Braun & Clark, 2006). The researcher used the essential method, which looks at the experiences, meanings and realities of participants, in conducting the analysis.

Thematic analysis is considered the most appropriate for any study that seeks to discover using interpretations. It provides a systematic element to data analysis. It allows the researcher to associate an analysis of the frequency of a theme with one of the whole content. This will confer

accuracy and intricacy and enhance the research's whole meaning. Qualitative research requires understanding and collecting diverse data. Thematic Analysis gives an opportunity to understand the potential of any issue more widely (Marks and Yardley 2004). Namey et al. (2008) said,

*“Thematic Moves beyond counting explicit words or phrases and focuses on identifying and describing both implicit and explicit ideas. Codes developed for ideas or themes are then applied or linked to raw data as summary markers for later analysis, which may include comparing the relative frequencies of themes or topics within a data set, looking for code cooccurrence, or graphically displaying code relationships.” (p.138).*

Thematic Analysis allows the researcher to determine precisely the relationships between concepts and compare them with the replicated data. By using, thematic analysis there is the possibility to link the various concepts and opinions of the learners and compare these with the data that has been gathered in different situation at different times during the project. All possibilities for interpretation are possible.

### **3.6. Ethical Consideration**

An ethical consideration refers to the ethical principles that are used when tackling a particular issue. Ethics are codes or rules which govern those practices of a profession. It dictates how information and client's relationships should be managed. Ethical considerations occur when a researcher is required to use these rules to better serve the participants. Research ethics is significant as it relates to the behaving in appropriate manner when embarking on research study bearing in mind the rights of those who become the subject of research work or are affected by the work.

The standards in ethics require that participants must be respected and given maximum protection, especially where the participants refuse to answer any part of the questions. For example, where a participant wishes to end the interview before the researcher was able to ask all the relevant questions, their decision should be respected. This is particularly relevant with qualitative research rather than quantitative research of primary data collection, which involve questionnaires and interviews as collection methods. In addition, the researcher clearly explains to the participants the aim, purpose and objectives of the research study; this would enable them decide whether or not they are willing to participate, as transparency is often observed as vital part of validating any

collection of data from the respondents (Ghauri & Gronhaug, 2002; Saunders *et al.*, 2003; Yin, 2009).

### **3.7. Validity and Reliability**

In conducting research, it is important that the measuring of concept being researched is reasonably certain (Sekaran 2003). In other words, validity is the extent to which a test measures what it claims to measure and not something else (sekaran,2003). This concern is known as validity, and it can be determined by applying a validity test. As indicated by Diamantopoulos & Schlegelmilch (1997), validation is normally a complicated process and demands empirical investigation; depending on the type of validity concerned, different evidence is required in those investigations.

Content validity, sometimes also known as face validity, is the judgement to which the criteria adequately measured the concept (Sekaran 2003). In this study, the content validity was assessed by seeking views from ICT experts in project management, which included active practitioners and academicians in the area of project management and project implementer, who were based CGAA public-sector organizations. Based on their comments and recommendations, changes were made to the interview questions to remedy the vague statements and eliminate unnecessary or redundant terms. Furthermore, a pilot test was run to examine each item once again, before the real data collection exercise. A pilot test was carried out with two organizations to test the data collection instruments before the main survey. This enables the researcher to check the validity of the data collection instruments and estimate with some accuracy the average completion time. Some organizations in the pilot study were not included in the final sample. To complement the pilot test, this study made use of expert opinion to confirm the content validity of the instrument (Straub, 1989). The feedback was used to improve the data collection instruments by eliminating any ambiguities and inadequate terms. The interview focuses on how ICT projects were going so far, what problems was encountered during the implementation and future need to succeed with ICT in the public-sector organization.

To test validity, after interviews conducted the recorded audio files were transcribed into Microsoft word. To make the transcription valid, the transcribed data printed and given to the respondents back and then they checked whether the transcribed data was their words or not.

In a qualitative study, the basis of reliability is the researcher. Therefore, the reliability of the study should be based on the whole research process (Eskola & Suoranta 2005). Hirsjärvi & Hurme (2008) explain that the reliability of a research can be ensured by using high quality data, planning carefully the interview outline, planning additional questions in advance, analyzing the interview data carefully and by giving the interviewees an opportunity to comment on the interpretations of the interviewer. In this study, these factors were taken into consideration. In addition to the set of questions, some additional questions were used in some interviews to gain additional information to a specific question/topic. During the interviews, the respondents were also asked additional questions for the purpose of making sure that the researcher has understood the interviewee correctly. The interviews were recorded to be able to gain a realistic and thorough picture of the opinions of the interviewees when transcribing the data.

### **Summary**

In this chapter, the author has presented the research methodology, approach, strategy and techniques according to which the research was conducted. This case study was conducted under a mainly qualitative paradigm. However, after considering some pragmatic issues, this research also adopted quantitative approach especially in data collection and analysis. There were two sources data; primary data obtained through survey semi-structured face-to-face interviews, while secondary data resourced from various documents related to the programme. Analyses of data utilised qualitative analysis methods. The secondary data were analysed using *NVivo 10*, based on predetermined themes in accordance with the project success factors under investigation. The data collected was sorted and sifted and relationships between variables, patterns, themes, distinct differences and common consequences identified.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND ANALYSIS**

#### **4.1. Overview**

Data presentation is the process of presenting data collected through interviews, observation, and document survey into themes in such way that it can answer the research questions stated in chapter one. This chapter describes the study of empirically exploring challenges, sustainability and factors that play a significant role in the success of ICT project in CGAA public sector organizations.

This chapter describes Successful implementation of ICT projects factors and challenges of ICT projects in public sectors of CGAA. Data presentation is the process of presenting data collected through interviews, observation, and document survey into themes in such way that it can answer the research questions stated in chapter one. First the interviews were recorded onto digital media and each interview records were transcribed into Microsoft word. These transcribed interviews were imported into NVIVO software for coding them. During the coding texts are assigned to categories and themes. Based on the input given to the software, it will generate frequencies of references for each theme.

References are defined as the number of times concepts assigned to a theme which was mentioned by the respondents during interview discussions. References are more accurate figure to indicate the relative importance of one category or theme as compared to another category or them. The semi-structured interview data was analysed using content analysis to organize the data into general theme. The aim of the analysis is to discover the pattern, concepts, and themes that contributes ICT projects success implementation from the data set. Upon examinations of structured interview, respondents explained about success factors and challenges of project implementation.

#### **4.2. How ICT Projects are Implemented in CGAA Public Sector Organizations**

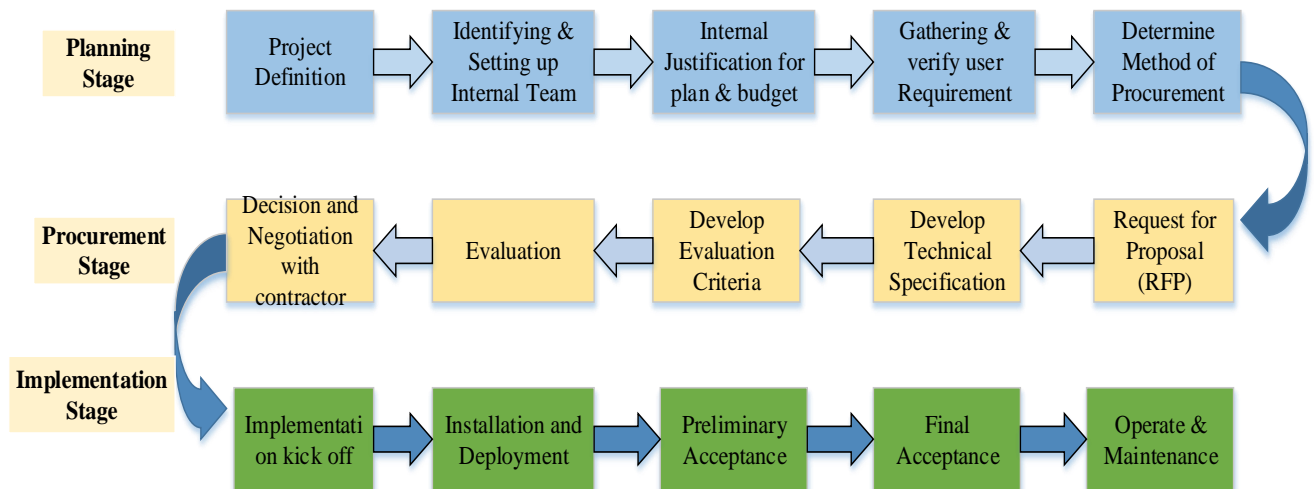
In the CGAA public sector organizations the ICT projects are implemented in informal way which does not follow guidelines or frameworks. From document review about the ICT project implementation it shows that; there is no formal methodology for ICT project implementation

process. The interview data also supported this idea. Project managers and project team leaders explained how they implement ICT projects in the public-sector organizations

*“...We do not have any formal ICT project implementation process model that we must follow during our project implementation, even we could not get from regulator like MCIT. This is one of our main problem we faced during implementation...”*

The study shows that at CGAA public-sector organization project implementation, there is no formal methodology for all ICT project implementation to follow. All of the respondents responded that there were no any formal procedures that project implementation follow, but contractors/vendors have a procedure and they follow vendors procedures. Because of the lack of formal procedures ICT project implementation at CGAA public-sector organization there is no project documentation of lessons learnt for the new project managers to fall back on when handling similar ICT projects. Generally, Project documentation is knowledge sharing tools that contain the past project experiences like good and bad practices.

From both document review and interview data, the following procedure is identified as the way that ICT projects are implemented in public sector organizations.



*figure 4.1: ICT project implementation process in CGAA public-sector organization.*

The above figure 4.1 shows ICT project implementation procedures in public sector organizations. From this it can be understood that public-sector organizations use their own procedures or methodology for project implementation process. But this procedure/methodology is not formal that all public-sector organizations use for project implementation. It is not industry standard.

The industry standard to implement ICT project has its own stages/processes as it discussed in chapter two literature review. But, the way that projects are implemented is not the formal way. There is no the way that they monitor and control as well as evaluate the project implementation. There is no project documentation for future use and reference.

### 4.3. ICT Project Implementation Status

The following summary tables showed that ICT project implementation challenges and its consequence on project success. As study revealed that projects were not successfully implemented based on project schedules.

Document review indicated that challenges such as Letter of Credit (LC) bank process, custom clearance, equipment shipping and other challenges such as telecom and electric power. These are by nature take a time to process. Because of these problems, project implementation was delayed unconditionally. Based on these implementation challenges the following table shows that most of ICT projects were delayed.

	Challenges								
	LC bank process			custom clearance			equipment shipping		
Duration in months	0-2	2-4	4-6	0-2	2-4	4-6	0-2	2-4	4-6
ICT projects	6	4	1	0	10	3	2	11	0
Percentage	46.15 %	30.77%	7.69%	0.00%	76.92 %	23.08 %	15.38%	84.62 %	0.00%

Table 4.1. The status of ICT project implementation based on challenges

Source: (Field data, public sector organization project documents, August, 2017)

From interview data and document review analysis the above table shows the extent of ICT project implementation status in public sector organization. According to document reviews, these ICT project were delayed; because of different challenges raised during project implementation. As respondents replied during interview, challenges like LC bank process, Custom clearance and device shipment and other challenges telecom and electric power issues were not included during

project planning. Bank LC process, Custom clearance, Government bureaucracy, equipment shipment were critical challenges. Individually they took from 3 to 5 months. This lengthy of time has a negative impact on ICT project implementation success. In the above table 4.2 showed that ICT projects were delayed. But the actual time to process for LC bank is 10 days to 30 days, for custom clearance it takes form 21 days to 30 days and for shipping from 30 days to 45 days. But the actual time that project implementation took as mentioned earlier it is from 3 to 5 months. So that, the study concluded that when projects are implemented public sector organizations were not managing and following the projects properly and also there it indicated during planning such kind of constraints were not considered. From interview CIO head, project manager and project leader confirmed this idea. From the document review and survey’s respondents interview summarized (see appendix iii, iv & v) in following table.

	Total number of projects	Within time schedule	ICT Projects delayed in months				
			[1-6)	[6-12)	[12-18)	[18-24]	>24
Total Number of ICT project implemented	18	0	3	9	1	4	1
	100.00%	0.00%	16.67%	50.00%	5.56%	22.22%	5.56%

Table 4.2: ICT project implementation success status

(Source: Field data from public sector organization document review, August 2017)

Based on the above table 4.1 ICT project implementation neither of them was not completed within time frame. 50% of the implemented ICT projects in public sector organization were completed late from 6 to 12 months, 22.22% of ICT project implementation were completed behind 18 to 24 months, 16.67% of ICT projects were completed after 1 to 6 months of project schedules and 5.56% other projects were completed after 24 months. From this analysis it can be summarized as regarding to time constraint ICT project implementation in public sector organization were not completed. This implication also has direct relationship with budget. Even if there were no extra budget added, indirectly there is a wastage of time.

#### 4.4. Factors Affecting Implementation of ICT Projects in Public Sectors

The critical factors influencing Successful implementation of ICT Project together with perceptions and experience of the various public sector that were considered in the study included:

technical team skill, User/Client involvements, proper planning, Project resources, Top management support, stakeholder active participations, and good selection and justification.

Respondents were asked or interviewed to describe the factors that contributes in the successful implementation of ICT projects in their organization. Respondents openly described the factors that contribute the success implementation of ICT projects in detail what they faced during their project implementation. The responses and references listed in the following table 4.3 below.

Success factors of ICT project implementation	Responses		References	
	Count	%	Count	%
Top management support	10	14.49%	55	19.16%
Technical team members skill & commitment	10	14.49%	48	17.02%
Project planning	9	13.04%	42	15.96%
Client/User involvement	8	11.59%	30	10.64%
Knowledge transfer	7	10.14%	28	9.93%
Communication	7	10.14%	24	8.51%
Stakeholder Participation	6	8.70%	20	7.09%
Project resource	6	8.70%	18	6.38%
Good selection & justification	6	8.70%	19	6.74%
Vendor Capacity	7	10.14%	24	10%
Total	69	100.00%	287	100%

Table 4.3 Respondents' response on Success factors of ICT project implementation

Source: Field data (from NVivo interview respondents reference)

#### 4.4.1. Top Management Support

Top management support accounts for 19.16% of the reference. Most of the respondents described that, top management support is a critical success factor for any projects whether it is ICT projects or other projects. CEO head and Project manager said during their interview

*“...Top management support is decisive for project success implementation. Because, top managers can decide any important issues, allocate resources, risk mitigate and other issues. For example, Addis Ababa Police commission projects top managements were involving in the project during implementation...”*

The projects which were supported and monitored by top management will successful. Because,

top managements make decision, mitigate risk decide and allocate a resource.

The findings from the study revealed that top management support for project implementation was not in the form of providing overall goals and objectives of the success of ICT project implementation. One respondent explained that top-management must understand the needs of the project and support the project manager. The respondents also noted that top-management should communicate to people in the project that everyone is needed and everyone should commit themselves to the project according to the needs of the project.

Projects implemented in the organization require the support of top management as it promotes acceptance and success of the project in the organization. ICT projects tend to require transformation to deliver value and this transformation can rarely be implemented without top management support. Top management communication with project team members is also essential for project success. According to project team leader there was poor communication between the project team members and top management.

*“During project implementation, the top management support and communication was poor. Most of the time top managements are prompted by technical teams to communicate and support”.*

It was explained by most of the respondents that in order to ensure top-management support, communication between the project manager and the top-management must be maintained open and honest. Project team leader said

*“... top-management is not interested in small problems faced in the daily life of the project, but rather in larger matters, such as the overall schedule and budget of the project...”*

The respondent further elaborated that the top-management must give a certain degree of power to the project manager for it to be possible for him/her to make the daily decision.

In general, all interviewees agreed that top-management support is important for overall project success. However, there were differences on how people perceive top-management support and why it is important.

#### **4.4.2. Users or Client Involvement**

Several statements on user involvement as an intervening determinant of ICT project success were identified and the respondents were required to discuss the extent to which each has been practiced in their sector organization during ICT project implementation. According to data from the respondent interview showed users or clients involvement in ICT project implementation is critical success factors of which 10.45% of references. However, their response was high for the success of projects, clients/users were not interested to involve in project implementation. Project manager replied

*“...user/client involvement in project implementation is the most important factor for project implementation. But most of the time users/clients were not interested in participating in the project; their intent is, technical team is responsible for project implementation....”*

CIO head and Project Team Leaders expressed

*“...They do not care whether the project is successful or not; even though the final output of the project is for them, they say like your ICT project implemented is not working...”*

The projects that are implemented by participating clients/users at early stage become success. However, the study indicated that the users/clients' involvement in project implementation was low. Client involvement in the project implementation enables the project to be success.

#### **4.4.3. Technical Team Skill and Commitment**

In the determination of how project technical team skill affects the implementation of ICT projects, the study took into account these factors and it accounts 17.02% of references; that is necessary trainings and workshops were conducted for the project team to foster team work; that the project team members were experienced, knowledgeable and skilled for delivery of the project; that project team showed commitment and achieved their targets and goal in time and that the project team representative of all key stakeholders. Taking these points into consideration respondents were asked. As CIO head and project manager response:

*“Technical team skill and commitment is very important for project success. Because technical team follows the project implementation daily. So, they must have a commitment and skills.”*

An ICT project implementation is not only implemented by IT experts. The project team must have different composition to implement projects successfully. Respondents also confirmed this idea as:

*“...An ICT project team member must be from different fields of the study. But during our project implementation the project technical team composition was not enough, not from different fields of study, not based on their experiences especially prior ICT project implementation and skill they owned...”*

As a result, projects which do not have a skilled and committed technical team, project success and quality become challenging and difficult.

Another important factor in this technical team skill is project manager management skill. If a project manager does not have skill to manage project, then project will be challenged. CEO manager confirmed this:

*“...ICT project must be managed by skilled project manager, because it is assumed that project manager has a good knowledge about the project currently he is involving in it...”*

The skill of project manager must be multidimension in managing the project. Project managing requires knowledge of project management and also skill of IT in case of ICT projects.

#### **4.4.4. Knowledge Transfer or Training**

This is a success factor that respondents replied during survey. Knowledge transfer is one of the factor that influences ICT project implementation and also project sustainability. From the table 4.3 above, the reference shows that 10.64% which indicates that it is necessary for any project implementation and sustainability. For example, CEO head put in words like this:

*“...if there are a good knowledge transfer during project implementation then the projects are completed on time, with the required user requirement, [...] also it enables the technical team to maintain the project product or services whether it is network or software or any others...”*

ICT project implementation needs knowledge transfer for technical experts and users. During project implementation knowledge transfer is not delivered for both technical experts and users. This has a negative side effect on project implementation and maintenance after project implemented. This is confirmed by project manager and CIO head:

*“...During our project implementation knowledge transfer is not properly delivered for technical experts and users. The delivered training was not sufficient and it was just for formality. This is one of the most serious limitation we have...”*

Training is a part of an ICT project that should never be neglected. It can be a turning point in managing the change resistance since in the trainings the users get to use the system for the first time and get their first empirical picture of the project. However, knowledge transfer or trainings during project implementation can also have a negative impact if not carefully delivered for both technical and users. It must be taken into consideration that trainings take time and all users must be trained before the projects are taken into use.

In general, regarding to knowledge transfer, it was very poor. Just for formality training is delivered for technical team. Most of the time, the ICT projects were implemented by outsourcing to external bidders, the CIO head said about this issue:

*“... projects are outsourced to international vendors to implement and to deliver a training for technical team they propose abroad. Even though external exposure has its own advantages, it has its own side defects. Because when the training is held in abroad, there are different factors like time because of budget, training content (only basic knowledge about project scope) and vendor training approach...”*

Because of this situation during training, it needs special attention before starting to initiate ICT project, it is necessary to identify which projects need outsourcing and in scope. So, during ICT project outsourcing risks and challenges must be identified by project manager with top managements.

#### **4.4.5. Proper Planning**

The importance of project Proper planning from the respondents it accounts 15.96% references.

This shows that, it is a great factor for ICT project success implementation.

According the question from interview provided for respondents planning as a determinant of ICT project success were identified and the respondents were required to indicate the extent to which it had been practiced in public-sector organization in a low level. This also confirmed by CIO head and project manager

*“...in our case planning does not have attention by top managements and it is not supported by them. Just CIO head planned it and top managers approve the plan, there is no discussion on plan with stakeholders, client and other stakeholders but the correct way it not this...”*

The goals for ICT project must be communicated to all stakeholders and all the project team members understood their roles and what was expected of them to a low extent.

In the process of determining how project influenced the successful implementation of ICT projects, what issues should be considered during project planning; the following factors were considered; that the structures were in place to ensure effective project communication within the project team and at all levels of the organization; That the top management ensured establishment of effective communication structures to ensure flow of project information to and from all stakeholders; that goals/objectives for ICT project was communicated to all stakeholders; and that project team members understood their roles and what was expected of them. Respondents also confirmed this idea during interview:

*“...Due to improper planning, most of our project implementation were not completed specially according to time frame. This situation affected our organization performance...”*

Moreover, from the document review it also confirms this idea (reference appendix -iii). According to document reviews and also observation, all ICT projects in public sector organizations were not implemented according their time frame. The document review indicated that all ICT projects were extended at least from six to 24 months.

#### **4.4.6. Managing Relationships / Communication**

A good relationship among those who involved in the project implementation is very important to make sure that the projects run smoothly. The respondents also agreed that the relationships/communications between project parties must be managed. The result from NVivo software confirms this idea, which of 8.36% of references. Managing relationships/communication between different parties of project is important. Communication must be undertaken between Technical team, stakeholders, clients/users, top management and vendors. It can be seen as a key factor of ICT and business alignment. Effective communication directly determines mutual

understanding, and consequently, project success. The case studies showed that goals of an efficient communication include communicating often and openly with a high measure of transparency, integration of Technical team, clients/user, vendors, stakeholders, and relationship built on trust. CIO Head, project managers and project team leader explained this as

*“Communication is way of conveying a necessary information between different parties in order to effectively manage and implement the project successfully. Also, the communication between these parties must be managed.”*

Communication is substantial for project implementation. It requires a communication between internal project members, top management, users/clients, vendors, internal and external stakeholders. Problems and risks are solved within a time if there is a regular communication during project implementation.

#### **4.4.7. Good Project Selection and Justification**

ICT Projects need to be justified its familiarity and adaptability for the organizations. The respondents interview shows that good project selection and justification is a success factor that contributes the projects to be success.

As respondents replied on good project selection and justification regarding to ICT project implementation, CIO Head stated that

*“...any project should be assessed its importance, values and familiarity with our country and users... [...] and also the capacity of the country must be assessed. For during project implementation of Integrated Land Management Network infrastructure, the vendor requested that 50Gb/s band width speed for Land Network installation and Land Information System projects, whereas the country bandwidth capacity was 1Gb/s.”*

The respondents responded that concerning about good selection and justification of the projects, it is decided by top management. Functional managers like technical team and business experts from the various departments are usually not allowed to initiate and select projects. CIO head and project managers confirmed:

*“Most of the time projects are initiated by top managements, technical expert/functional managers could not justify project...”*

The same situation was happened in case of public sector ICT project implementation. Before implementation technology familiarity and adaptability must be assessed.

Concerning to this, the survey from observations and interview showed that there was a duplicate project implementation. CIO head and project manager express:

*“...during ICT project implementation in public sector organization there were a duplicate project were implemented with the same type of projects...”*

Before planning, assessment must be held instead of avoiding duplicate project implementation and identify problem of the previous project implemented. For example, the same type projects in the same public-sector organization. So, care must be taken during project selection and justification.

#### **4.4.8. Project Resource**

Project resource is one of the factor that affects ICT project implementation success. This must be taken into account specially during project initiation, planning and execution/implementation. Respondents replied that adequate project resource allocation for project implementation is a significant success factor. CIO head and project managers were explained:

*“... in our opinion project resources are a factor that influence the project implementation success. projects are executed by the use of allocated resources. So, projects must have adequate resources to be implemented within the appropriate schedule....”*

The purpose of resource planning is to ensure that adequate, suitable or appropriate factors of production (money, equipment, manpower, places, and others) are optimized and timely deployed in the process of generating value projects.

However, resources are success factor for successful implementation of projects, there was a low extent in properly delivering the allocated resources for projects during implementation.

Project manager and project team leader expressed:

*“... Resources are allocated on a paper during planning but when implementation starts only limited amount of resources are available. [...] this situation affected our ICT project implementation; projects were not completed within the time bound...”*

According to respondents' explanations even though project resource is success factor that contributes ICT project success, there was a limitation in project implementation. If such kind of

situation occurred, then project success will become difficult. Due to lack or insufficient of project resources, projects become late because project resources are not regularly all allocated within the time required.

#### **4.4.9. Stakeholders' Participation**

To accomplish ICT project implementation successfully, stakeholders must participate in project implementation. The Project manager supported this idea

*“...stakeholders specially, service providers must participate in project implementation, they must give attention and participate to project...”*

All of the respondents were or had been working in an ICT project that involved an external service provider like Telecom company, Power Authority and other service provider stakeholders. Questions about the role of the external operator as well as the relationship between the project managers in the company and in the external provider were asked. The company uses different vendors for different projects but on the other hand, a single vendor can be working for multiple projects with the company at the same time. The relationship between the company and a vendor can be established for only one short project, but often the relationship lasts longer especially if a large project includes sub-projects or is conducted in all operating countries during several years. It can be seen in the interviews that in a longer relationship, the history with the vendor has an effect that can be both positive and negative. However, the participation / involvement of stakeholder was low. For example, CEO deputy head and project managers confirmed this as:

*“...Because of service providers problems or lack of communication between them our projects were not implemented according the time frame. For this reason, our project lagged about two years...”*

Also, from the document review most of the ICT projects were not completed according to their plan. The finding distinguished that stakeholder involvement improves the accuracy and speed of project implementation at the foundation. However, according to data from interview is stakeholder involvement in project implementation was very poor. Moreover, the observations and document reviews confirmed this situation.

#### **4.4.10. Vendor capacity**

Vendor capacity is one of success factors that affects the ICT project implementation. The respondents like CIO heads, project managers and team leaders explained as

*“...for the success of project implementation vendor capacity is essential. Because, if vendors have enough capacity to implement within a time, then the project will be completed successfully...”*

Projects are performed by vendors. So, vendors must have the capacity, experience and fast in response to implement the project.

CIO head and project managers expressed that

*“...during our project implementation we faced problems from vendors like insufficient capacity, experience and low in responding the given comments. The vendors took long time to do the given comments...”*

Any projects need a fast response for the given comments to fix any defects. If the comments are not properly and timely fixed, then the project implementation cannot be success.

#### **4.5. Challenges of ICT Project Implementation in Public Sectors**

Implementation of IS/ICT projects in public sector organizations were Challenged. ICT project implementation in public sector organization was very challenging. Because in public sector organization project owners, stakeholders, implementers, clients and government issues are different dimensions that hinder success of implemented ICT projects. These challenges are resistance, trust and commitment from employees/experts, lack of senior management commitment, negative employee attitude and resistance to change. In line with above findings, all respondents described different challenges that can hinder ICT project successful implementation. From the following table 4.4, challenges that influence ICT project implementation success are user related problems accounted for 30.77% of the references and followed by Government bureaucracy 16.92%, Custom clearance and LC bank process is 13.85%, other inefficient service provider is 11.54% and others factors together are accounted for 26%.

Challenges influence ICT project implementation	Responses		References	
	Count	%	Count	%
User related problems	11	22.92%	40	30.77%
Government bureaucracy	8	16.67%	22	16.92%
Custom clearance & LC bank process	6	12.50%	18	13.85%
Inefficient service provider	6	12.50%	15	11.54%
Organizational structural instability	6	12.50%	9	6.92%
Employee turnover	5	10.42%	9	6.92%
Constant follow up	4	8.33%	10	7.69%
Individual technical team commitment	2	4.17%	7	5.38%
Total	48	100%	130	100.00%

Table 4.4: Challenges that influence the success of ICT project implementation

Source :( NVivo result Respondents ' reference on challenges)

#### 4.5.1. User Related Problems

This is the most frequently cited problem and it accounts for 30.77% reference. This indicated that users' constraints affect the project implementation. In this study, user related problems are user resistant, attitude, low trust on a system if in case software. The CIO and project Team leader responded as

*"...The most encountered problem during our ICT project implementation to complete the project according to the schedule. These problems were because of low trust on a system, resistance, attitude, commitment and preparing site.*

Although a lot of formal communication has been used in many of the projects during implementation, practically all of the respondents agreed that the formal communication was not enough. CIO head stated:

*"Formal communication is not enough, people need to be personally engaged to the project. Repetition is a good tool; a person might refuse to listen at first but as you repeat the message often enough, the message starts to sink in."*

During and after project implementation users resist to use the implemented ICT projects. In line with this Project manager and CIO head replied:

*“Another problem related to the users is that ...Sometimes, the real end user does not involve in the user acceptance process. It happens when the user who is involved in the requirement process is different from the user or officer who verifies the UAT (User Acceptance Test), and sometimes the UAT is not signed and the verification process is not complete. But, the implementer puts the project in operation anyway.*

Due to user related problems, projects were implemented behind their schedule. As it is stated in the above respondents’ explanation projects were challenged. For example, BSC City Network infrastructure and Land Information systems were challenged by uses. The empirical result shows that most of projects were not completed based on schedule. Table 4.1 and 4.2 show this result.

#### **4.5.2. Government Bureaucracy**

This is one a challenge that affect successful project implementation in the public sector of CGAA. Table above shows that, 16.92% of reference was government bureaucracy which affects ICT project implementation in CGAA public sector organization context. According to respondents’ government bureaucracy includes purchase process, political issues, fast decision making from top managements. In line with this result, Project managers said during their interviews:

*“Government bureaucracy has a negative impact on success implementation of ICT project.”*

This has direct effect on ICT project implementation and also on sustainability of the project to run for long time. Procurement procedures, decision and government bureaucracy is a major challenge that contributes to ineffective implementation of ICT projects.

#### **4.5.3. Custom Clearance and Letter of Credit (LC) Bank Processes**

Here custom clearance and LC bank process is one the challenge that affects the success of ICT project implementation specially in the government ICT projects. In line with this idea, CEO deputy manager and project manager replied:

*“custom clearance and LC bank process specially for Network ICT project implementation, hardware devices are shipped from outside country. For these devices, it requires custom clearance and LC bank process. So, to process these activities, it takes a long time.”*

Table 4.1 and table 4.2 show that ICT projects were affect different types of challenges. Custom clearance, equipment shipping and LC bank process took at least from four to five months. Due to these problems projects were delayed.

#### **4.5.4. Inefficient Service Provider**

From the above table 4.4 it shows that inefficient service provider was a challenge during project implementation and it accounts 11.5% reference. This implies that service provider response has a positive impact on project implementation success. But CEO deputy manager and project managers responded that

*“...service providers like Telecom, Electric power authority, and other service providers do not response within the required time and also sometimes the required service is not available. for example, (NG11 trunked network police commission project and LTE radio communication), public mobile phone IMEI registering was not available during project implementation. So, this affected our projects not be completed within the schedule ...”*

Service providers also indirectly parts of project implementation, so that they must provide the requested services to their customers. CEO deputy, CIO head and project manager also confirmed this:

*“...Specially network installation requires WAN connection service from Service provider. If they do not response timely directly affect our project implementation. For this reason, our project lagged about two months. Example School Net Cloud Modular Data center”*

During project planning significant stakeholders who deliver a for project implementation must be identified and their roles must be included in planning. There should be a holistic integration between the service providers with project owners like public sector organizations.

#### **4.5.5. Organizational structural instability**

Respondents reflected that organizational structural instability is one of the challenges that affects ICT project implementation. This challenge has a negative impact on ICT project implementation. For example, if the organization structure changed after a project implemented, then it is not possible to include the new department with the implemented projects.

CIO head also replied

*“...what we faced in our organization after project started new department was created, then we faced a problem to include another requirement for this department...”*

Actually, after project started, new requirements from the clients affect all project design and also project success. Because, project is scheduled based the former user requirements. Due to this, projects were not completed based on the schedule. Document reviews and interview analysis also approved this. For instance, CIO head, Project manager and project leader described about their ICT projects:

*“Because of organization structure instability projects were lagged, in order to add additional new requirements. Due to this problem projects were affected by their time, budget and quality.”*

Instable organization structure affects project implementation success because the projects planned and started based on the previous organization structures. If other departments added in the organization then, project implementation become challenged. It needs change requirements of project scope. Change managements also required and it must be resolved properly.

#### **4.5.6. Employee Turnover**

Employee turnover is one of the challenge that affect ICT project implementation and after project implementation. The skilled employees determine the success implementation of projects. However, employees in public-sector organizations are not stable. Employees leave for the organization for many reasons. In public sector organization IT experts and technical users' turnover is high. This confirmed by CEO and CIO head:

*“IT experts and other employees leave for the organization after they gained an experience on project and other works.”*

Employee turnover has a negative impact on project implementation. Public sector organization top managements must retain an experienced employee especially technical expert or must retain their knowledge to organization. To decrease turnover top managements may use like reward after project completion, give incentives and appreciate them. However, CEO and CIO head explained as:

*“...In case of our organization, there was no mechanism that employees stayed in the office and there was not a mechanism that hold experts' knowledge for further use...”*

#### **4.5.7. Continuous Follow Up**

Continuous follow up is monitoring and following the project implementation specially from the executive management support. This requires top management commitment to follow the project implementation regularly. CIO head and project manager responded:

*“...A continuously monitored and integrated formal process for defining objectives, identifying sources of uncertainties, analysing these uncertainties and formulating managerial responses, to produce an acceptable balance between risk and opportunities...”*

Poor ICT project monitoring and control were another factor mentioned by the respondents. The monitoring process should start from the strategic planning stage of an ICT project implementation until the operational stages. It should provide understanding into the project’s progress so that appropriate corrective actions can be taken when the project performance deviated significantly from the plan. As said by one of the project manager and CIO head:

*“...if you don’t know what’s going on, corrective action can’t be taken early when it’s least expensive... but sometimes it is not easy to monitor every project progress...”*

Another idea that Project manager replied:

*“...Starting a project is often more important than finishing it; officials take credit for ambitious initiatives rather monitoring and controlling project implementation. If projects were delayed due to vendors, then top managements are not interested in taking measures on vendors...”*

Top managements able to control everything activity of the project and evaluate the project progress, otherwise project will not be completed within the schedule, requirements and quality. Here top management involvement, support and commitment are very crucial for the success of projects.

#### **4.5.8. Individual Technical Team Commitment or Effective Project Team Commitment**

As seen from table 4.4 individual technical team commitment respondents reference indicates 5.38%. This shows that individual technical team commitment was a challenge during ICT project.

i.e. some individual technical team members were not committed to perform project implementation tasks. Project manager and project team leader replied like this:

*“... some individual technical team members are not committed and they are not interested to work in group, discussion, knowledge transfer, [...] some of them are committed to perform project implementation tasks. [...] Not only individual technical team members, but also top management support was challenging, most of them do not give an attention whether projects are success or failure...”*

Project implementation needs individuals technical team commitment, because team work is good for project implementation. Specially ICT project implementation is not a single person involvement and commitment, it needs all technical team commitment and involvement.

As it is indicated from the finding there were different types of challenges that hinder the successful implementation of ICT project in case of CGAA public-sector organizations. The above challenges can be categorized as

First, Government related challenges these are Bureaucracy like purchase procedures and Decision making, Bank LC process, custom clearance and Equipment shipment

Second, Organization challenges this include: organization structure instability, top management support and commitment and Inefficient stakeholders service provider and

Third, Human Challenges which consists of user related problems (resistance, attitude, acceptance, readiness, trust, commitment and turn over) and Technical related problems (commitment and skill). These challenges hinder the ICT project implementation success. In addition to success factors challenges raised during project implementation.

- Government related challenges
  - Bureaucracy (purchase & Decision making)
  - Bank LC process & Custom clearance
  - Government policy on shipment
- Organizational challenges
  - top management
  - stakeholders
  - site readiness
  - organization structure instability

- Human Challenges
  - user related problems (resistance, attitude, readiness, trust, commitment, turn over)
  - Technical related problems (commitment and skill)

#### **4.6. ICT Project Success**

The purpose of this section was to assess how the various respondents defined and measured overall ICT project success within their organizations. As discussed in chapter there is a considerable ambiguity regarding to the definition of project success. Measuring or evaluating project success is subjective as it is explained in literature reviews. But based on the empirical results from interview data, observation and document reviews ICT project success in CGAA public sector organizations were not success based on the criteria time, budget, quality and user satisfaction.

##### **4.6.1. Time**

Any project is time factor. As it was discussed with respondents about the completion of projects with a time any projects were not completed within the time frame. Table 4.2 describes about the project success status time frame. Based on the data from table 4.2, all of the ICT projects were not completed according to the schedule. All respondents replied as:

*“... during ICT project implementation, the projects faced many problems. For example, vendors took a long time to start the project. This is because of LC bank process and device shipments...”*

Projects to be completed within the time schedule, projects must start on time unless the project implementation will become late.

This idea also supported by the data from document review, projects were delayed because of LC bank process, device shipment and custom clearance. CEO head and project managers described:

*“...in case of network installation project after the equipment shipped to Ethiopia, there is also a challenge which takes a long time. i.e. custom clearance...”*

The question for “*Do you think that your ICT projects were completed within the time frame?*”.

Respondents replied as “NO” from this it can be understood that projects were completed behind the time schedule (reference Table 4.1, 4.2 and appendix -III)

#### **4.6.2. Budget /cost**

Budget is one of the criteria that project success can be measured or evaluated. The researcher asked for the questions:

*“Do you think that your ICT projects implementation were completed within the budget allocated?”*

All most all respondents replied “YES”. CEO head and Project manager explained

*“...Because additional budget after project agreement is taken as another direction which is taken as a bribe. But if there are additional requirements which are major component of specification or requirements which were not included during project document preparation and also if clients/users request additional requirement then additional budget is allocated otherwise if requirements are minor, then we will deal with contractor to include these without additional budget...”*

Even if budget is not added, it has a negative impact on the project requirement and quality of the project success. Such kind of situation must be taken into consideration during project planning.

Also, the researcher asked respondents *“if extra budget is not considered, do you think that vendors can include all necessary requirements and complete with quality?”*

Then CEO, CIO head and project manager replied as

*“...of course, yes because vendors need a good will of successful completion of projects, for this reason they consider our request...”*

This situation always not true because if the company is more experienced they do not care for the good will. But for small company and low experience this can be true. A project which was completed in this way will be encountered a problem. For instance, BSC Network installation, data from document review and field observation confirmed this. There were additional devices that are important for the project completion. Due to this user resist to accept and finally the project became unsuccessful.

#### **4.6.3. Quality**

One aspect of measuring project success is quality. CEO head, Project manager and CIO head described about the implemented project quality as:

*“... in principle quality cannot be compromised in any way and we believe that projects must be completed with a better quality...”*

This shows that project owners need a quality project that achieves the goals for an organization. From observation, there are a lot of complaints on the implemented ICT projects. For example, School Net, Vital status and MSE zone projects. Also, CEO and CIO head described:

*“... quality of a project may come from the user involvement and commitment. Which means if they define their requirements and involve in project implementation the quality of the project becomes good...”*

Moreover, from document reviews and field observation indicated that most of ICT projects did not meet the required quality. For example, school Net cloud modular data center and vital status and registration system were complained by users.

#### **4.6.4. User Satisfaction and Expected Benefits**

From the interviews, users were not satisfied in the project implemented according to the respondents' explanation. Furthermore, from the observation it shows that users are not satisfied by the project product or services. The researcher asked CEO head, CIO head and project manager the question:

*“what is users' satisfaction towards the implemented ICT projects?”*

they responded:

*“...always users complain on the project whether it is network installation or software/application, of course most of the time users complain if they do not satisfy on the system...”*

Actually, satisfaction is subjective and it also has criteria to measure, it can be measured by the usefulness, ease of use and accessibility. Of course, users complain specially on ICT project product or service, because of the change resistance and trust. This condition makes the project not to be accepted and implemented.

Another issue in project success that project parts or owner consider is expectation. Project parts/owners expect a lot of benefits from the implemented projects. If expectation and actual is

not the same then users/owners become dissatisfied. This is also confirmed during interview by project manager and CIO head:

*“...as it is known public sector organizations there is a limitation in ICT skill. Because of this project owners/users expect the implemented ICT projects perform everything. If this is not the case then they are not satisfied...”*

The study identified that project owners or users always expect benefits from project product or service in case of ICT projects. This situation occurred when there is no user/client/project owners' involvement in the project during implementation.

## **4.7. Discussion**

This chapter gives a summary of the findings gathered from the analysis of the data, discussion, conclusions and recommendations. The findings are summarized alongside the objectives of the study, discussions are made, conclusions are drawn from the study and recommendations for action and further studies are given.

### **4.7.1. How ICT Projects are Implemented**

The study showed that at CGAA public sector organizations there is no formal methodology for all ICT project implementation. As it is indicated in data presentation the data from interview and document review indicated that the project implementation process is not formal procedure. Gichoya (2005) recommended that project management process and implementation process must be formally taken place during project implementation. However, the study indicated that; there were not standard procedures or methodology. When there are no formal project implementation procedures are not taken place, the project implementation will not be well documented. So, because of the lack of formal methodology, there is no documentation of lessons learned for new project managers to fall back on when handling similar projects. The study revealed that there is no formal project implementation in the public-sector organizations of CGAA.

#### **4.7.2. Success Factors**

The respondents strongly believed that the factors are important and valid for the success of public-sector organizations ICT projects in the case CGAA public-sectors organization, respondents' views agree with the success factors already suggested by Wateridge, (1995); Thomesett, (2002); Horine, 2005; Hastie, 2006; Standish Group International, (2010); Nkwe, (2012).

##### **4.7.2.1. Project Planning**

The CGAA public sector organization put plans in place in order to implement ICT project successfully. In addition, during project goals setting for ICT project, the communication between all stakeholders and all the project team members must be understood their roles and what was expected of them to be a high extent. The findings however showed that only few of public sector top management supported ICT project implementation.

Also, the findings showed that to planning by top management and the involvement of all stakeholders in ICT project a low extent. Top management does not have effective communication structures to ensure flow of communication between all stakeholders, users/clients and project team members. However, from the finding of Kastner (2011) clear organizational objectives well-articulated at the beginning of the project help to focus and prioritize solutions whilst guiding problem solving and decision making throughout the duration of the project and help measure the project for completion towards the tail end.

In nature projects are complex endeavors and planning is difficult. In every project, there are some constraints that either the customer/clients or the project team is able to recognize at an early stage and during planning (Perminova et al. 2008). In line with this the finding indicated clients/users, technical team and other stakeholders were not recognized during project planning.

The study revealed that, most of the ICT projects have been given 6 months to be completed. In most cases the delivery of the projects was not really within a time when compared to a realistic timescale, but delivery was behind the unrealistic schedule set by the project owners (Kerzner 2006). Moreover, as it was described chapter four analysis part, ICT projects were completed behind time frame to the minimum of six months, average twelve months and maximum were

twenty-four months. This indicates that there was a problem on planning. Appendix -III showed project duration of each projects were all most the same. This reveals that projects are not based on their actual situation and they were not scheduled based the previous project implementation practices. Wekasa (2016) and Farazi (2010) discussed in their study that ICT project planning requires the involvement different of project stakeholders, clients or users or project owners and project team members. However, the study identified this and planning was not well done.

#### **4.7.2.2. Top Management Support**

Top management support has been examined in various studies as one of the critical success factors in project implementation. Tukel (1996) and Jordan (2008) have argued that top management support is the most critical success factor in projects. Various authors have agreed upon the necessity of top management support as an independent variable for ICT project implementation. Top managers in an organization play a crucial role in providing and creating the required conditions for the project to succeed (Staeher,2010). Top management support has been widely identified and highly ranked as a critical success factor in most ICT projects. Generally, research findings in this area indicate that this level of support is critical for the planning, implementation and eventual success of ICT projects.

The study finding indicates that majority of the ICT projects did not get necessary support from top management and also the top management support for allocating required resources and their support was not visible throughout the project phases implementation. According to Bingi and Buckhout (1999) cited top management support as one of the critical success factors in ICT project implementation and management while effective executive involvement would significantly improve ICT project success throughout the implementation. Project must always receive approval from top management.

According to respondents' response the finding indicated that, top management support in decision making, communication with all stakeholders and risk mitigation was poor.

Most of the respondents indicated that incentive and compensation for the project team was considered to a small extent. It is critical that organizations implementing ICT projects

communicate and provide incentives and compensation for their project team in order to motivate them, and hence increase productivity and commitment of the team which in turn leads to the success of the ICT project implementation.

Project management and leadership as a factor affecting implementation of ICT projects was addressed to a high extent in public-sector. The public-sector had put in place project leaders who had track record of success in major ICT projects. Effective project management methodology tools were followed while goals and targets set out were realistic and attainable. The management ensured adherence to state regulations and policies to a very high extent. However, there was moderate consensus on how employees perceived the effectiveness of monitoring and evaluation process to ensure delivery of project and in time.

The above findings agree with Holland et al, (1999) submission that a project must be formally defined in terms of its milestones and critical paths determined. Managers without the right experience, profile and authority will not be able to manage projects properly. According to Rosario (2000) an individual or group of people should be given responsibility to drive success in project management.

However, the study findings show that, there is need for ICT sector organizations implementing ICT projects to ensure quality leadership and management. There should be openness and accountability in monitoring and evaluation of the process, to ensure that the ICT project is on track and hence ensure effective implementation.

In general, Top Management is also required to conduct regular review meetings to ensure and monitor the progress of the project, follow up with customers to determine general customer satisfaction and finally to recognize and reward the project team members upon the successful completion of the project (Cleland, David 2004).

#### **4.7.2.3. Client or User involvement**

The respondents agreed that client/user involvement is crucial for project success implementation. But, during ICT project implementation the clients'/users' involvement was very poor.

The study found that users/clients were not involved in ICT project implementation processes at all public-sector. Their involvement was not at the implementation stage where they were educated and trained on a new developed system. Most of the time they involved after the projects are completed. In contrary to this, finding with that of Mooney (2008) who subsequently showed that user/client participation has a positive relationship with user satisfaction and also argued that four factors affect this relationship; task complexity, system complexity, user influence and user-developer communication.

Specially for the clients/users, the project product in case ICT project product is a service or an output, ICT project services have a greater impact than project process. For this situation, there are reasons according finding, why clients/users were more concerned about ICT project output or services. Firstly, they were not involved in the project planning, selecting and justification, implementation, undertaking or monitoring of the projects. Hence, clients/users had no detailed expectations or knowledge about the project progress. Therefore, the clients/users focused more on their requirements rather than project process. Secondly, clients are parties who utilize the project output, they are the best party to evaluate and accept the project.

It is known that ICT project implementers often request client/user participation. This participation has multiple dimensions: overall responsibility that the user may have with the project, the relationship between the user and the system/project, and hands-on project-related tasks. Increasing client/user participation in one or more of these dimensions enhances post-development user involvement and attitude. The effectiveness of involvement as a success factor is also be enhanced if implementers recognize that: A user is involved when he or she considers a system to be both important and personally relevant Barki and Hartwick (2010).

#### **4.7.2.4. Good project Section and Justification**

Before any project implementation during planning good selection and justification of the project planning must be identified and the right ICT project must be selected. In line with this, (Falkowski, et al 1998) said in the finding, there should be a justification for the ICT project investment based on a problem and the change tied directly to the direction of the company.

However, the finding indicates that selection and justification was to by executive top managements. This finding in line with that of Millicent (2009) the interviewees claim that most projects originate from the executive management. That means there was no justification from the technical experts or functional managers.

#### **4.7.2.5. Communication**

Communication is one of the key element which has to be applied effectively throughout a project's life cycle from the beginning till the end. So, communication between each party is vital for project implementation. The finding also shows this, all respondents agreed communications and managing these communication between different parties is very important. Communication parties must be identified and managed properly. In line with finding, according to researchers' study (Henrik e, Falk and Walter r, 2009) Communication is distinct from collaboration in that it deals with the accurate conveyance of information.

Good communication amongst the project team is one of the important factors that could affect the project success, especially during the execution stage. A good rapport between parties involved in the project is crucial to make sure the project runs smoothly. Coordination between parties can benefit the projects in two ways. First, it helps the projects running smoothly, and second, it would resolve most of the project issues faster. A clear direction and firm decision is essential in order to make sure the smooth implementation, while proper feedback is a key to the resolution of any issue. Farazi (2010) also explained this idea in his finding.

Another suggestion by Wee (2000) who insisted that Management of the communication, education and expectations are critical throughout the organization during the ICT implementation. It is therefore critical for any organizations to have a well-defined and elaborate enhanced system of communication to enable feedback reach those it is intended, and open communication flows in order to succeed in implementing ICT projects.

To conclude that, effective communication and managing communication between parties indeed important for a successful project and in order to achieve effective communication in projects,

communication planning is essential and putting processes in place to ensure daily effective communication during project implementation will overcome the challenges and contribute to a more successful project.

#### **4.7.2.6. Technical Team's Skill and Commitment**

Project team work composition is important throughout the project life cycle and sustainability of ICT project. Prabhakar (2005) emphasized that in order to successfully conduct a project, the project team should be in total control of the implementation and the project itself must have implications to the client that are well comprehended.

The research finding shows that respondents were in consensus on the importance of the project team and composition. Majority of the respondents agreed that their project team showed commitment and achieved their targets and goals in good time to a high extent. The findings further revealed that most of the project teams were not all inclusive and representative of all key stakeholders and clients. This trend should not be encouraged during ICT project implementation in any organization to overcome ICT project implementation failures.

#### **4.7.2.7. Stakeholder participation**

The responses of the respondents'' show that stakeholders' participation has a role in project success implementation. But finding indicates the participation of stakeholders is limited in public-sector organizations during project implementation. However, to achieve successful implementation of ICT project in Botswana, Nkwe (2012) recommends that the project must be acknowledged and supported by all stakeholders for successful implementation.

Due to the complex and inter-connected nature of the public-sector organizations in government, even small ICT projects have multiple stakeholders who participate and have a great role in project implementation. These stakeholders have their duties they perform.

#### **4.7.2.8. Knowledge Transfer or Training**

As finding indicates that knowledge transfer is also a success factor ICT project implementation, but mostly it is a key factor for sustainability of ICT projects. Knowledge transfer during project implementation enables the technical team to monitor and evaluate the implemented projects.

ICT project training and capacity building should not only focus on basic computer literacy, but also ensure that the skills acquired respond to the job market need, assist trainees with job placements, and equip them with proactive skills for finding jobs (The World Bank, 2003). An effort should be made to retain human resources, in-house skills, and intangibly support project participants, thereby motivating and providing incentives for local staff to continue working in the community telecentre (Bridges,2006a; Dyrnond and Oestman, 2004; Ferguson et al., 2002).

Training or knowledge transfer is an essential part of any ICT implementation. Without proper training, the benefits of a new ICT project will not be reached and the investment does not pay off as planned. Some important factors concerning training should be taken into consideration. First of all, training must be included in the planning and the structure of the trainings has to be very well described. Second, all necessary people must be trained during project implementation, in order to keep business momentum going on after the implementation. Williams & Williams (2007) also confirmed this idea in his findings. However, study finding was different from this in knowledge transfer was not properly conducted to project members and users. Because of the ICT project implementation in CGAA public sector organization was affected.

#### **4.7.2.9. Vendor Capacity**

From the findings, it can be understood that vendor capacity is one of the factor that affects ICT project success. As it is identified from the study there was a vendor capacity limitation to implement the project. This was raised during selection of vendors. The vendor selection must carefully be identified during vendor selection.

### **4.7.3. Challenges in implementing ICT Projects**

The researcher findings indicated that user related problems, government bureaucracy, Custom clearance and LC bank process, employee turnover, top management commitment and individuals

technical team commitment or effective technical team commitment, service provider response, inadequate training of the implemented was some major challenges that affect the project success. These were some of the challenges cited to influencing the success of ICT project Implementation by most respondents. In line with this, Nyaga (2014) in his finding one of the challenges established is that administrative support in terms of financial assistance to sustain ICT projects is very little. The empirical result from the documents reviews showed this result.

If government officers or users do not have the right attitudes, then they will not be motivated toward using ICTs, denying the initiative key support. For example, Heeks (2004, p. 27) serves that "knowledge and skills are important but so too are the right attitudes". One problem with developing countries is a lack of interest from senior officers.

The finding shows that, the big challenge was the project parties were not regularly monitoring and evaluating the project. However, Cleland and David (2004) finding shows project owners like top management and clients/users is also required to conduct regular review meetings to ensure and monitor the progress of the project, follow up with customers to determine general customer satisfaction and finally to recognize and reward the project team members upon the successful completion of the project. But, the finding of this study shows that there is not such kind of regular follow up from the all project parties.

This empirical research illustrated the challenges of defining success in projects (Cooke-Davies 2004): a project can be a product success despite discrepancies in the project process. In addition to project process challenges, there are challenges regarding to vendor capacity and their selection. Generally, as the data collected from the interview and documents review there are a lot of challenges that inhibit ICT project success implementation in CGAA public sector organizations. There are different challenges like government related challenges such as bureaucracy in custom clearance, LC bank process, shipping process, finance process, organization related (organization structure instability), user related challenges (resisting change or technology, attitude, acceptance, turnover), external stakeholders like service providers and indirect project beneficiary and technical team commitment equally participating and regularly following the project during and after implementation. The empirical result indicated that these challenges affected project success. For instance, Appendix- III & IV described these challenges and the delay of ICT projects.

Several papers confirm that government bureaucracies, user attitudes can cause resistance or acceptance (for example, Angst and Agarwal 2004; Donat et al. 2009; Alsajjan and Dennis 2010; Lee 2011). In line with this, the empirical result shows these same finding in case of CGAA public sector organizations. Based on data collected from interview, observation and document reviews indicated that the implemented ICT projects in public sector were challenged.

#### **4.7.4. Project Success**

As it was discussed in literature review chapter two ICT project success measuring is subjective and problematic. Generally speaking, as it can be seen from various studies (i.e. Chaos reports) ICT projects continue to fail. However, it is not an easy task to characterize an ICT project as successful or failure. Milis (2004) states an ICT project cannot always be seen as a complete success or a complete failure. Moreover, the parties involved may perceive the terms *success* or *failure* differently. What we know is that if we want to lead an ICT project towards success, we should know in advance the criteria of success. Fulfilling these criteria should be organizations' prime concern.

The data presented in analysis 4.6 part depicted that project success does not have a history. i.e. regarding to project success, from respondents' explanation based on the criteria the implemented ICT projects were not successfully completed. Based on literature review different authors described an ICT project is success if it is completed within time, cost/budget, quality, user satisfaction and organization expectation. As it was described in analysis part from interview data and observation the implemented ICT projects do not have a good success story.

Furthermore, the user satisfaction criterion will be a useful tool for any project team in order to develop a successful project. The users' view of success can provide information about the project problems and precise by how much the project has fulfilled the needs of the customer. This empirical study proved that for ICT projects, the customer acceptance depends on the users' acceptance and satisfaction.

Kerzner (2001) agreed with Pinto and Slevin's (1996) findings, as he stated that the concept of project success was always linked to the completion of project activities in the due term, budget,

and expected quality. Additionally, he mentioned that recently, this has changed to include limitation of minimum changes in the scope of activities without interruptions in the workflow, without shifts in the corporate culture, and with full acceptance of results by the project client (Kerzner, 2001).

Project success is not only by measured the triple constraints, but also by the user satisfaction and benefits. As finding indicated that users always measure ICT projects in terms of their satisfaction and their expectation benefits. This also supported the finding by Camilleri (2011).

In general, during the implementation, there need to be regularly scheduled task reviews (Frimpong et al., 2003). These reviews can be between team lead and implementation team members, project management and team lead, project sponsorship and project management or a combination of these but they need to occur. In the task review not only are the task plans themselves reviewed for success, failure, delay and reschedule points but ability to deliver and work completed is assessed and evaluated (Macomber, et al., 2008). At this point, the implementation team at all levels can receive feedback both positive and negative that allows them to adjust as necessary to meet delivery requirements. According to Jugdev and Muller (2005), the project implementation process is complex, usually requires extensive and collective attention to a broad aspect of human, budgetary and technical variables. In addition, projects often possess a specialized set of critical success factors in which if addressed and attention given will improve the likelihood of successful implementation. Business today is operating under high level of uncertainty, projects implementations are open to all sorts of external influence, unexpected events, ever-growing requirements, changing constraints and fluctuating resource flows. This clearly shows that if projects are undertaken and critical process steps not taken in order to manage them effectively and efficiently, the chances of failure are high.

To sum-up measuring ICT project success is subjective and it is dependent i.e. it depends on individuals consent. This case study revealed that the ICT project implementation was not successfully implemented in the public-sector organizations. Generally, the following points are findings that were identified during the study.

- ICT projects in CGAA public sector organization are implemented just as a routine works, that is there is no procedure or methodology to follow t. And also, the projects are not well

managed by the top managements and technical team, projects were not successful. The final objective of the is not met.

- The study identified the factors and challenges that contribute the success of ICT project implementation.

As it is identified from the study challenges are moderate that hinders process of ICT project implementation. The identified challenges are considered as a chain that project implementers must pass through to implement the project.

#### **4.8. Developing Framework**

The empirical data analysis indicates that, there are various success factors that contributes ICT projects implementation success. These can be success factor and challenges. For instances, success factors are client involvement, communication between parties, Good project selection and justification, knowledge transfer, project planning, project resource allocation, stakeholders' participation, technical teams' skill, top management support. Challenges are Government Bureaucracies, Organization related problems and Human related problems. As shown from NVivo software result both have a direct relationship to project success and they contribute ICT project success. NVivo 10 Code Matrix tool is used to identify the frequency of association between project success on the one hand and success factors on the other hand for interview respondents. The software counts co-occurrence of concepts that are assigned to project success and success as a measure of association. Higher value of frequency indicates the strength of association (see Table 4.3 and table 4.4).

Below node code matrix table 4.5 which was taken from NVivo 10 software counts the co-occurrence concepts both challenges and success factors have direct interrelation with each other. This implies that project success factors must be identified during ICT project implementation. Not only implementation success factors but also identifying challenges is important for project success. Here below the diagram shows success factors and challenges.

The following conceptual framework shows the successful implementation of ICT project. It is derived from table 4.3 describes that project process contributes to project success, table 4.4 indicates that challenges contribute to successful implementation of ICT project and table 4.5

shows that the interrelationship between success factors and challenges to project process. Both success factors and challenges are interrelated and they contribute to ICT project success.

	Project success	Project factors	ICT project challenges
Project factors	78		
ICT project challenge	24	5	

Table 4. 5: The extent of association between influencing factors and project success  
Source: NVivo node matrix result

The association of challenges and success factors value show that they both have a contribution to project success. Here below figure 4.1 the proposed conceptual framework depicts that, there is a relationship between success factor and challenges. For instance, if we take top management support and commitment in success, internally which is not visible but affects top management support is challenge like bureaucracy in decision making and low commitment of top managers also a challenge.

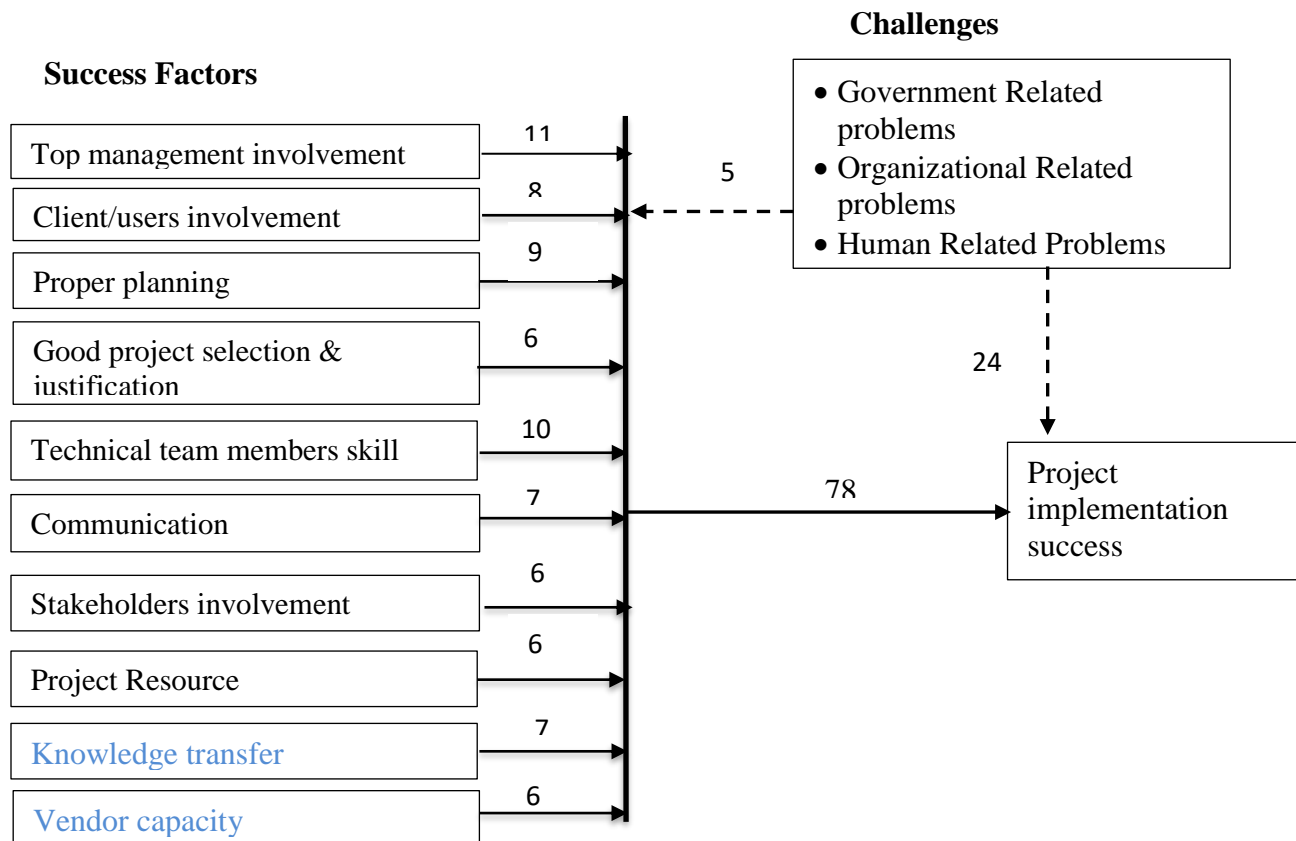


figure 4.2: The proposed successful implementation of ICT project framework

Figure 4.2 is a proposed framework that ties the project success factors together and can serve as guideline in ICT project implementations in public sector organization environments. The proposed conceptual framework has two main components. These are: success factors and challenges. These success factors and challenges determine the success of ICT project implementation. From the above framework it can be understood that first, there are challenges that hinder ICT project successful implementation which can affect its successes. As it is known challenges are inhibitors which pause the implementation in the normal conditions. So, during project implementation these must need attention. The above diagram shows that during ICT project implementation project success factors and challenges contribute project success. There are interrelationships between each success determinant and also challenges. For instance, project implementation challenges and success factors are interrelated. i.e. during project implementation both success factors and challenges have influence on project success implementation. The above diagram showed that during project implementation the project success depends on independent variables (success factors) and moderate variable (challenges). The broken line from challenges to success factors shows that challenges are influencing the success factors. For instance, if we take top management support he can support project implementation, but there is a limitation like commitment and dedicatedly following the project implementation. And also, another example, if we take client or user involvement, they may participate in the project during implementation; but their involvement has a limitation like commitment, attitude and change resistance.

The proposed framework model incorporates factors identified in previous studies and from empirical data as influencing implementation of ICT projects. The researcher extended these works and adapts them to the successful implementation of ICT projects context by combining factors discussed in the literature, empirical data thus resulting in the development of an integrated model for ICT project implementation process. In addition, the concepts of the proposed model can be used as a guide for the implementation of Successful implementation of ICT projects in public sector organization. The researcher suggested that the framework may serve as a guideline for ICT project implementations in public sector organizations for CGAA.

The empirical data showed that new findings of success factors are vendor capacity and

knowledge transfer which can determine the success implementation of ICT projects in case of public sector organization of CGAA. These new factors which were identified from the case study they determine the success of ICT project implementation. The result showed that vendor capacity and knowledge transfer determine the success of ICT project implementation like other success factors identified from literature. As it is indicated in the conceptual diagram vendor capacity and knowledge transfer are determinant for during project implementation. As the study revealed that the vendor capacity determines the project success and performance and also knowledge transfer for technical team. If technical team members and other stakeholders and clients do not share a project knowledge, the project success will be affected. This idea is supported by the respondents and document reviews.

At a conceptual level, project implementation is determined on different levels. Lecomber (2013) argues that poorly planned projects are hard to implement. But this is one components of success factors. The conceptual framework for this study considers Successful implementation of ICT projects as a critical component of project implementation. According to this framework, successful ICT project implementation is determined by Success factors and challenges. Evaluating project success should cover factors in all segments of the project ICT implementations factors in the project. Identifying factors and challenges during the project process would verify project management success, while evaluating factors related to the project success factors would judge the project success.

### **Summary**

This chapter presented the results of the qualitative study examining the data collected through interviews and data from secondary data resources. Evidence derived from public sector based on their genuine experiences and observations as well as official documentation helped to answer the research questions. Even though, the researcher did not use the personal experience in the project as a main data source to avoid research bias, some of the knowledge gained during his involvement in the project was used to verify the reliability of the data collected.

Results of the qualitative data analyses showed that the projects were not implemented using proper procedure/methodology. Some of the important success factors were either not sufficiently

taken into consideration or were ignored at all. The other important factors during project planning were also not treated accordingly. The reason given by main stakeholders was that they were given a very limited time prior to the implementation of the project

In general, the success factors identified in the framework all in all they are not new. But, some of them like vendor capacity and knowledge transfer However, organizing them in the manner suggested here provides a means to understand in greater detail how the factors might influence project success in developing country environments. For example, political influences are present even in developed country environments. Examples of launched projects being undertaken in specific public-sector organizations of CGAA. However, it is noticed that here, the influence can occur in the project that is already completed and underway.

The study concluded that there were gaps in ICT project implementation in CGAA public sector organizations as discussed above. In addition to identified success factors by respondents, which is formal methodology which was identified during observation and document review there is no formal methodology in managing project implementation. Because of the lack of formal methodology at CGAA public sector organizations, there is no documentation of lessons learned for new project managers to fall back on when handling similar projects.

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1. CONCLUSION**

The government's ICT project implementation process is complex, usually requiring simultaneous attention to a wide variety of factors and challenges. This kind of study is significant for the Ethiopian government context specially for CGAA public-sectors organizations.

ICT projects area dynamic and involve the synergy and ideas of groups of experts and professionals where the knowledge of ICT one group varies from one to another. Hence, ICT projects are subject to the vagaries of group dynamic, interactions, coordination and communications.

ICT projects in public-sector organizations need a special attention to implement successfully. Performing project process steps, identifying success factors like top management support, project planning, project resource, client involvement, stakeholder participation, Technical team skill, knowledge transfer, communications, Good selection & justification, vendor capacity and challenges are key entities that enable ICT projects implementation success. Public-sector organizations must focus on these issues.

The huge investment in ICT projects demands that they are planned in light of overall corporate strategy. Planning and implementation of the ICT projects requires a breakdown of a project into stages, each with a control point for estimating timescales, allocating resources and measuring progress against evaluating objectives and requirements of the project and also with strategic plan. The inability to realize value from the ICT investments is, in part, due to the lack of alignment between organizational and ICT strategies of the organizations concerned.

From the empirical investigation, the implemented ICT projects were not completed with the time allocated. From this all ICT projects whether they are network infrastructure or software application development they were challenged. Not only the previous projects, but also current projects are not within their schedule.

By reviewing the existing literature, it becomes evident that ICT projects are indeed an area that has been studied extensively but still ICT projects have a very high failure rate. This was found to be the result of success factors, but most scholars seem to agree that the most common reason for ICT project failure is the lack of adequate identifying success factors and challenges.

About eight factors were identified as major contributors to the project success in project implementation. In addition to this, challenges were identified which could hinder the project implementation success; many of the projects in CGAA public sector organizations were completed far later than scheduled. In general, the study conclusion is as follows: -

The study concluded that there are various success factors identified during survey. According to respondents determined all factors have a great contribution to project success. These success factors are top management support, proper planning, users/clients' involvement, good project selection and justification, knowledge transfer, communication, stakeholder involvement, project resources. However, these are success factors that contribute to ICT project success, the study indicates that during project implementation public sector organizations did not consider these factors for their project implementation. As a result of this ICT projects in CGAA public sector organizations were not successfully implemented.

The study also explored challenges that affect project implementation success. These challenges are: -

- ✓ government bureaucracy such as purchase process, decision making, custom clearance, LC bank process and device shipment process,
- ✓ Human related such as resistance, attitude, low trust, commitment and acceptance
- ✓ Organizational related problems such as organizational structure instability, low top management commitment and continuous follow up monitoring and controlling the project.

As described in analysis part these challenges were affecting the ICT project implementation in CGAA public sector organization, as a results of this ICT projects were challenged and not success. The study tried to assess both success factors and challenges together produced framework that enables the successful implementation of ICT projects in public sector organization. Finally, the researcher developed framework that enables ICT project implementation success.

## 5.2. RECOMMENDATIONS

The study reveals different findings regarding to assessing implementation ICT projects in public sector organizations. Based on the finding the research drew the following recommendations

- ❖ Based on the factors and challenges discovered to have effect on success of ICT-Project implementation, it is recommended that experts in ICT Industry should embrace project management technology skills and methodologies. This will go a long way to enhancing the role of ICT-experts and system analyst as project managers. It is only an ICT-expert that have good project management training or capabilities that can develop a realistic schedule for any project and been able to win the support of top management.
- ❖ The study indicated that ICT project implementation in public sector organizations did not have success story in terms of time, cost, budget, quality and user satisfaction. Hence, the researcher recommended that the CGAA public sector organizations must give attention to project implementation success and also sustainability of the implemented projects. Public sector organizations' top management should measure the project success at the end of the project product or services with respect to project success criteria;
- ❖ The study showed that there were different success factors that contribute the ICT project implementation success. These success factors are top management support and commitment, proper planning, Communication, good project selection and selection, clients/user involvement technical team skill and commitment were identified. The researcher recommends the CGAA public sector organization must give attention on these success factors. Furthermore, these factors should be included in plan how these factors must be performed and also, the finding revealed that top management support was not in conducting regular review meetings to ensure and monitor the progress of the project, follow up with clients, project technical team and stakeholders to determine general project requirements and finally to recognize and reward team members upon the successful completion of the projects. So, CGAA public sector organization top managements must consider the above issues;
- ❖ The study assessed the challenges that hamper the project implementation success in public sector organizations. Hence, the CGAA public sector organizations must consider these challenges during project planning and implementation;

- ❖ Despite the numerous challenges related to ICT project implementation in the CGAA public sector organization, the organizations and project managers should learn useful lessons from these failures which will give them an opportunity while focus on areas which is more likely to fail, thus reducing the possibility for project failure, the researcher recommends that the public-sector organizations must have formal procedures or methodologies in any type of ICT projects. Hence, the researcher recommended project documentation is one knowledge sharing mechanism that contain the past project experiences of good and bad practices. So, for such kind of environment knowledge sharing system is recommended which enables the project managers and technical team to perform project effectively and efficiently.

### **5.3. Future Research Study**

This study was conducted to assess factors affecting the success of ICT projects implementation in public sector organization at City Government of Addis Ababa. The basis for this study was sufficient to offer some clear contributions to the body of knowledge and recommendations for improving project and project management offices. Study tried to propose success implementation of ICT project framework which can be applied in public sector organization for the implementation of ICT project. However, there are some limitations which could be addressed in further research. First, the research study was qualitative study the proposed new framework needs validation. Quantitative data requires to validate or test this framework. Having this as initial point, researchers extend this and conduct a research in all public-sector organizations like ministries and other government agencies.

Second, the study data was collected from the perspective of project owner, but the study also needs in the perspective of vendors to identify challenges and success factors.

Third, based on this research study academicians will make study in success and failure rates in public sector organizations, according to research study success factors and challenges are identified.

#### **5.4. Limitation of the study**

The research study took place in Ethiopia specifically in CGAA of public sector organizations. The limitation in this study was the inability of the researcher to study the whole population. Due to the size of study population, only a sample of the population was studied; and the findings was used to generalize the conclusions of the study to the whole population. So, from this limited size of population it is not possible generalize the study.

And also, since study took place in public sector organization, there are a lot of bureaucracy that must be followed. First, contacting the respondents according the time schedule was a challenge. Even though, they appointed at a certain time, they cancel it and they go to for another issue. second, sometimes some respondents hide information. Third, during document review getting and finding was challenging. Because, documents are in different public-sector organizations finding and getting the required information was very difficult.

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## APPENDICES

### APPENDIX- A INTERVIEW QUESTIONS

Date: -----

Dear Sir/Madam;

I am studying my MSc in information science at Addis Ababa University. I am required to research my MSc. thesis on ICT project implementation in public sectors (PS).

As you know the City Government of Addis Ababa (CGAA) started to focus on ICT implementation for service delivery in effective and efficient way for its citizens. To achieve this ICT implementation objective in the public sectors, the city government has been started to launch ICT projects in public sectors for a decade. Among these ICT project implementation types include Network infrastructures, Applications & software systems, Database management system, LED integrated information system to public, integrated physical security systems (CCTV) and others. However; these ICT project implementations have been implemented in public sector bureaus, the implementation faced challenges and problems like there is no a well-defined framework for project implementation, there is no ways to select the right ICT project for PS, no monitoring and evaluation system during implementation and as well as post implementation.

The purpose of this thesis to assess challenges and impacts, identify factors that affect successful ICT project implementation in PS and finally to come with solution for these problems and challenges.

Kindly, I request you that, please do not hesitate to describe my questions in details, because your information is a very decisive for my research findings and so that I can finalize the research on time to meet the deadline.

Thank you in advance for your valuable time and cooperation.

With regards;

## Interview Questions

### I. Background survey

1. Name of organization: \_\_\_\_\_
2. Gender:  Male  Female
3. Level of Education:  10+3  Diploma  BA/BED/BSc  
 MA/M.Sc.  PHD Other: \_\_\_\_\_
4. Field of Study: \_\_\_\_\_
5. Position Currently you hold: \_\_\_\_\_
6. Experience since you joined this organization  
 1 to 3 years  4 to 6 years  7 to 10 years  more than 10 years

### II. ICT project status and its challenges

1. What types of projects are implemented in your organization?
2. How ICT project is implemented?
3. Is there any guideline you follow during project implementation?
  - a. If yes can you explain?
  - b. If no why
4. Do you think that your projects are completed according project plan or time, budget and user requirements or goal?
  - a. If No why?
5. What are the challenges you faced during ICT project implementation?
6. How was the participation potential stakeholder?

### III. Success factors of ICT project implementation

7. What are the factors that contribute for your ICT project success?
  - a. How was the support of top managements and planning?
  - b. How was the staffing?
  - c. How was knowledge transfer taken place?
  - d. How was the managing relationship or communication?
8. Do you have project closedown reports (Good and failure experience)?
  - a. if yes explain
  - b. if No why?

#### **IV. Project Success**

9. How you measure your project

**a. Time**

- i. Do you think that your ICT projects were completed within the time frame? Explain How

**b. Cost/Budget**

- i. Do you think that your ICT projects implementation were completed within the budget allocated? Explain
- ii. if extra budget is not considered, do you think that vendors can include all necessary requirements and complete with quality?

**c. Quality**

- i. How you measure quality of your implemented ICT projects

**d. Satisfaction and Expectations**

- i. what is users' satisfaction towards the implemented ICT projects?

10. If you any other comments Explain

**APPENDIX-B                      RESPONDENTS PROFILES**

<b>ID</b>	<b>Gender</b>	<b>Level of Education</b>	<b>Field of study</b>	<b>Year of experience</b>	<b>Position Holds</b>
1	Male	BSC	MIS	4-6 years	CIO head
2	Male	MSC	Information science	more than 10 years	CIO head
3	Male	MSC	Computer Science	4-6 years	Team Leader
4	Male	BSC	Computer Science & IT	more than 10 years	CIO
5	Female	BSC	Computer Science	4-6 years	project manager
6	Female	BSC	Computer Science	4-6 years	CIO head
7	Male	BSC	computer science &IT	7-10 years	project manager
8	Male	BSC	computer science &IT	7-10 years	case team leader and project manager
9	Male	BSC	Software Engineering	more than 10 years	CEO General Director
10	Female	BSC	MIS	7-10 years	project manager
11	Male	BSC	Computer science	7-10 years	project manager
12	Male	BSC	Computer Science	7-10 years	case team leader and project manager
13	Male	BSC	Communication Engineering	more than 10 years	CEO General Director
14	Male	BSC	Information science	more than 10 years	CIO head
15	Male	BSC	MIS	7 years	CEO General Director

## APPENDIX -C ICT PROJECT STATUS

Types of ICT project implementation status in CGAA pubic-sectors organizations starting from May 2011 – August 2017

S. No	Types of ICT projects	Project Name	Project Scope	Project duration	Project Agreement Start date	Project Completed date	Date of LC Bank process opened)	Custom Clearance Duration	Shipment of Equipment	Delayed days
1	Network Infrastructure	BSC City Network	Network infrastructure, data center HQ with 32 sites	6 months	June 14, 2011	November 2012	July 13,2011	3 months	2.5 months	10 months
2		Integrated Land Management Network	Network infrastructure, data center HQ with 10 sub cities	6 months	May 28, 2011	January 01, 2013	June 28,2011	2.5 months	2.5 months	12 months
3		AA police Commission Network and integrated physical network	Network infrastructure, data center and CCTV physical security	12 months	July 05, 2013	December 20, 2014		2 months	2 months	5 months
4		911 NG and LTE Radio Communication	HQ and 10 sub cities police stations	7 months	July 16, 2015	July 25,2017	August 5, 2015	2 months	1 month and 20 days	17 months
5		School Net Cloud Modular Data Center	Network infrastructure, cloud data center, studio, IP PBX and VDI HQ with 65 schools	6 months	June 14, 2014	October 24, 2016	October 20,2014	3 months	2.5 months	18 months 4 days

S. No	Project Name	Project scope	Project duration	Project Agreement Start date	Project Completed date	Date of LC Bank process opened)	Custom clearance Duration	Shipment of Equipment	Delayed days
6	Woreda 96 BSC phase II Network infrastructure	96 woredas/districts	6 months	June 14, 2014	October 02,2015	October 12, 2014	3 months	2.5 months	6 months & 10 days
7	Integrated LED Screen Information Display phase-I	5 sub city and head office	6 months	May 16, 2011	April 12, 2012	June 28, 2011	3 months	2.5 months	4 months
8	Integrated LED Screen Information Display phase-II	5 sub city and head office	6 months	July 18, 2014	May 26,2017	September 26,2014	3 months	2 months	28 months
9	Sport commission Network infrastructure and data center	One Building	6 months	June 18,2014	December 24 2015	July 25, 2014	3 months	2 months	11 months
10	Meles Zenawi Management Academy Network infrastructure and physical security	Network infrastructure, data center and CCTV physical security	6 months	July 11,2014	October 18, 2015	October 09,2014	3 months	2 months	6 months and 7 days
11	Yeka sub city & Traffic office Network infrastructure and integrated physical security	Network infrastructure, data center and CCTV physical security 2 sites	6 months	July 08, 2016	Not completed until August 20,2017	July 13,2016	5.5 months	3 months	6 months but project progress is 70 %

S. No		Project Name	Project scope	Project duration	Project Agreement Start date	Project Completed date	Date of LC Bank process opened)	Custom clearance Duration	Shipment of Equipment	Delayed days
12		TVET Metropolitan Cloud Modular Data center	Network infrastructure, cloud data center, VCS, immersive studio, IP PBX and VDI 13 sites	8 months	May 24,2016	Not completed until August 20,2017	July 13,2016	5 months	4 months	5 months but project progress is 75 %
13		Four Sub Cities Network infrastructure	4 sub cities	6 months	June 23, 2016	Not completed until August 20,2017	July 19, 2016	5 months	3.5 months	6 months but project progress is 60 %
1	Software Development	Land Information System	HQ with 10 sub cities	6 months	March 12,2011	September 19,2014	-	-	-	19 months
2		Vital and Resident Registration System with hardware devices	HQ with 127 sites	6 months	June 24, 2013	February 1, 2016	July 25,2013	3 months	2 months	24 months
3		AA Police Commission Crime investigation system	Police commission offices	6 months	April 15, 2013	January 25, 2014	-	-	-	3 months & 10 days
4		ERP system	6 public-sector bureaus	6 months	July 08,2014	September 08, 2016	-	-	-	21 months
5		MSE zone	1HQ, 10 sub cities and 116 woredas	6 months	May 14, 2014	November 12, 2016	-	-	-	10 months 21 days

*source: public-sector organizations ICT project related documents*

**Information about the above projects**

- ✓ The project start date starts from date of LC opened date.
- ✓ Completion date is the date that final acceptance certificate is given to vendor. So, the project duration is calculated from LC opened date to final acceptance certificate date signed.
- ✓ Custom clearance duration is the date it takes to process the procedures to withdraw project devices from the dry port.
- ✓ Shipment all equipment which are imported to Ethiopian country, the importer must use Ethiopian ships
- ✓ The software project start date is from the project agreement date

**APPENDIX-D CHALLENGES THAT INFLUENCE THE ICT PROJECTS IN  
CGAA PUBLIC SECTOR ORGANIZATIONS**

S.No	Project Name	Project Agreement Start date	Project Completed date	Challenges		
				Date of LC Bank process opened)	Custom Clearance Duration	Shipment of Equipment
1	BSC City Network	June 14, 2011	November 2012	1 month	3 months	2.5 months
2	Integrated Land Management Network	May 28, 2011	January 01, 2013	1 month	2.5 months	2.5 months
3	AA police Commission Network and integrated physical network	July 05, 2013	December 20, 2014	21 days	2 months	2 months
4	911 NG and LTE Radio Communication	July 16, 2015	July 25,2017	10 days	2 months	1 month and 20 days
5	School Net Cloud Modular Data Center	June 14, 2014	October 24, 2016	4 months	3 months	2.5 months
6	Woreda 96 BSC phase II Network installation	June 14, 2014	October 02,2015	4 months	3 months	2.5 months
7	Integrated LED Screen Information Display phase-I	May 16, 2011	April 12, 2012	1 month and 12 days	3 months	2.5 months
8	Integrated LED Screen Information Display phase-II	July 18, 2014	May 26,2017	2 months and 8 days	3 months	2 months
9	Sport commission Network infrastructure and data center	June 18,2014	December 24 2015	1 month 6 days	3 months	2 months
10	Meles Zenawi Management Academy Network infrastructure and physical security	July 11,2014	October 18, 2015	4 months	3 months	2 months
11	Yeka sub city & Traffic office Network infrastructure and integrated physical security	June 08, 2016	Not completed until August 20,2017	1 month and 5 days	5.5 months	3 months

S.No	Project Name	Project Agreement Start date	Project Completed date	Challenges		
				Date of LC Bank process opened)	Custom Clearance Duration	Shipment of Equipment
12	TVET Metropolitan Cloud Modular Data center	May 24,2016	Not completed until August 20,2017	1 month and 21 days	5 months	4 months
13	Four Sub Cities Network infrastructure	June 23, 2016	Not completed until August 20,2017	1 month	5 months	3.5 months

*The extents of some challenges that hinders ICT project implementation  
Source: Field data July, 2017*

**APPENDIX-E ICT PROJECT IMPLEMENTATION DELAY TIME**

<b>S.No</b>	<b>Project Name</b>	<b>Project duration</b>	<b>Delayed days</b>
1	BSC City Network	6 months	10 months
2	Integrated Land Management Network	6 months	12 months
3	AA police Commission Network and integrated physical network	12 months	5 months
4	911 NG and LTE Radio Communication	7 months	17 months
5	School Net Cloud Modular Data Center	6 months	18 months 4 days
6	Woreda 96 BSC phase II Network infrastructure	6 months	6 months & 10 days
7	Integrated LED Screen Information Display phase-I	6 months	4 months
8	Integrated LED Screen Information Display phase-II	6 months	28 months
9	Sport commission Network infrastructure and data center	6 months	11 months
10	Meles Zenawi Management Academy Network infrastructure and physical security	6 months	6 months and 7 days
11	Yeka sub city & Traffic office Network infrastructure and integrated physical security	6 months	6 months but project progress is 70 %
12	TVET Metropolitan Cloud Modular Data center	8 months	5 months but project progress is 75 %
13	Four Sub Cities Network infrastructure	6 months	6 months but project progress is 60 %
14	Land Information System	6 months	19 months
15	Vital and Resident Registration System with hardware devices	6 months	24 months
16	AA Police Commission Crime investigation system	6 months	3 months & 10 days
17	ERP system	6 months	21 months
18	MSE zone	6 months	10 months 21 days

*Extent of ICT project implementation in CGAA public sector organization*

Source: Field July 2017

## **APPENDIX-F            LISTS OF DOCUMENTS**

1. Public Sector Organization Annual Plan
2. Public Sector Organization Annual Reports
3. Contract Document of ICT Projects
4. ToR and Specification of ICT Project Documents
5. LC bank and Custom Clearance Document
6. Preliminary and Final Acceptance of ICT project documents

## **APPENDIX -G      OBSERVATION CHECK LISTS**

1. Project is completed within a time?
2. How users rate Satisfaction on implemented ICT projects?
3. What is the expectation on implemented ICT projects?
4. Is there Client/user involvement in ICT project implementation?
5. How projects are implemented and managed?
6. What is users' opinion on the implemented projects?

APPENDIX-H

NVIVO NODE MATRIX RESULTS (PROJECT SUCCESS, SUCCESS FACTORS AND CHALLENGES)

The screenshot shows the NVivo software interface with the 'Query' tab selected. The main window displays a Node Matrix for the query 'Project success to'. The matrix compares the node 'Project success' (Node A) against two other nodes: 'ICT Project challenges' (Node B) and 'ICT project factors' (Node C). The data is as follows:

	A : project success	B : ICT Project challenges	C : ICT project factors
1 : ICT Project challenges	24	24	5
2 : ICT project factors	55	5	55

At the top of the interface, a table lists the nodes and their associated statistics:

Name	Sources	References	Created On	Created By	Modified On	Modified By
project success	12	94	9/15/2017 8:36 PM	MR	9/25/2017 11:44 AM	MR
ICT Project challenges	7	33	9/15/2017 8:36 PM	MF	9/9/2017 12:44 PM	MR
ICT project factors	12	61	9/15/2017 8:37 PM	MF	9/24/2017 7:37 PM	MR
project success criteria	0	0	9/24/2017 9:45 PM	MR	9/25/2017 11:45 AM	MR

The bottom status bar indicates: MR 76 items | Cell content : Coding references count | Unfiltered

