ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

ASSESSMENT OF FACTORS AFFECTING PROJECT SCOPING: THE CASE OF NATIONAL SWITCHING SYSTEM OF ETHIOPIA

Project work submitted as a partial fulfillment of the requirement for M.A. degree in Project Management

By: Betsega Girma Teklegiorgis

Advisor: Wubeshet Bekalu (PhD)

Addis Ababa, Ethiopia

June 2018


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BY
BETSEGA GIRMA TEKLEGIORGIS

Approved By:

Wubeshet Bekalu (PhD)	_____	_____
Advisor	Signature	Date
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Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Declaration

I, the undersigned, declare that this study is my work and that all sources

Of materials that are used for this study have been dully acknowledged.

Betsega Girma

Signature_____

Date _____

Acknowledgments

Thank you my Lord for granting me the energy and leading me through the way.

Next I would like to thank my advisor Dr. Wubeshet Bekalu for his guidance and assistance. I would also like to thank the team at EthSwitch for their continuous assistance throughout. The survey and research participants have also been extremely helpful and this would not have been complete without them. I thank them for their cooperation as well.

My family and friends, thank you for your relentless support and love. You guys are truly a blessing.

And last but not least, my Heran. Even though you did not stay to see this, I know you're looking down with a smile on your face. You are forever irreplaceable.

Contents

List of figures and tables

Acronyms

ATM Automated Teller Machine

ACH Automated Clearing House

RTGS Real Time Gross Settlement

PMBOK Project Management Body of Knowledge

PMI Project Management Institute

Abstract

This research aims at assessing the major factors that affected project scoping efforts in the case of the National Payment Switch of Ethiopia. The project is being conducted in phases and this research covers the first phase of the project concerned with integrating the Automated Teller Machines (ATMs) in the country. EthSwitch S.C. is the project organization that has undertaken and still undertaking the project. The research is of qualitative type and has used interviews and questionnaires for primary data collection and reviewed publications for secondary data.

Upon analyzing the data, it was found that the project's scoping efforts have not been performed to the expected levels and in turn, the project's performance has been limited to only a moderate level. The major factors that have been affecting the project's scoping efforts have been found to be a lack of a properly stated project management plan, initial scoping problems, lack of stakeholder involvement, scope change management problems, lack of skilled information technology workforce and country wide infrastructure issues.

To improve the current performance of the project in the proceeding phases, the researcher suggested that improved stakeholder management and communication, planning that takes the locally available skill as well as infrastructure into consideration, availing high level trainings to team members and setting up a dedicated customer support center should be taken into consideration.

Keywords: Scoping, ATM, Payment Switch

Chapter One: Introduction

1.1 Background of the study

The Project Management Institute Project Management Body of Knowledge (PMBOK) defines product scope as the features and functions that are to be included in a product or service. It defines project scope as the work that must be done to deliver a product with the specified features and functions. Project scope management is defined as the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

In the process of defining scope in which projects are defined and prepared for execution, risks associated with the project are analysed and the specific project execution approach is defined. Hence this study tries to focus on the role of scope which influences the project's objectives and consequently affects the performance of a project.

Early stage project scope definition is an important task that should be done thoroughly by using input from all stakeholders. The purpose of project definition is to provide adequate information that is needed to identify the work to be performed in order to avoid major changes that may negatively affect project performance (Gibson et al., 2006). This information is needed before making the decision whether or not to proceed with the project execution (Kähkönen, 1999). Not performing this task comprehensively results in expensive changes, delays, rework, cost overruns, schedule overruns, and project failure. Having a well-defined project is crucial for successful project execution and for achieving a satisfactory project outcome.

In the public sector, project definition is very crucial as projects serves communities first, and their satisfaction and comfort are the main concerns, while private sector projects often aim at benefiting investors or owners. Therefore, they should reflect their needs and requirements. And this cannot be done without involving all stakeholders in defining the project from early phases. It is irrational to get stakeholders' opinions about the project outcome after the completion, when their involvement is limited (Mohammed & Ajibade, 2012).

Incomplete project definition can occur when the input of one or more stakeholder is intentionally or unintentionally omitted (Sharma & Lutchman, 2006), while at the same time inputs from others dominate. Failure to consider and clarify stakeholders' expectations and concerns at early stage in the project can result in extraordinary risks being ignored and may lead to difficulties in running the project, and hence poor performance (Atkinson et al., 2006). Therefore, project scope definition is critical for enhancing satisfaction of stakeholders as well as successful implementation of construction project (Heywood & Smith, 2006).

1.2 Background of the organization

EthSwitch was established with the aim to connect all banks to a central transaction switching platform that will provide customers with access to their money and other financial services via ATM, mobile and Internet channels, and POS devices, regardless of their home bank and make transactions easily accessible for the public. Interfacing with international payments schemes, such as Visa and Master Card and enhance local acceptance of these globally branded cards. The system will be linked to the national automated transfer system (comprising ACH and RTGS) to facilitate efficient clearing and settlement of all transactions.

The National Payment Switch of Ethiopia is a project undertaken by EthSwitch and it is planned to be conducted in phases. The first phase of the project which is concerned with connecting all ATMs is covered in this study. This phase of the project was started in 2012 and was planned to be completed in three years. EthSwitch is the company that has been undertaking the project. EthSwitch was formed in 2011 by all banks in Ethiopia, according to a June 2009 recommendation by the National bank of Ethiopia. It started off at paid-up capital of 80.5 million birr five years ago. EthSwitch has now incorporated all the banks and the national bank as equal shareholders and raise the paid-up capital to 300 million birr.

The goal of EthSwitch is to make interbank retail payments processing easier, while increasing security and transparency and looking forward to improve Ethiopia's payments landscape and maximize financial inclusion in the country. According to the plan, ethioPay will be the only payment card in Ethiopia in the future and it will offer 99 types of different financial services for customers.

The linkage among the different e-Payment players to be involved not only is expected to serve the financial inclusion agenda of Ethiopia but it is also expected to generate enough transaction volume for the different players mentioned, turning their e-Payment businesses to viable businesses, because of the economies of scale that would come. On the other hand, enhanced ease of access to e-Payment services is expected to boost demand for such services, i.e., the "network effect".

1.3 Statement of the problem

Defining scope is perhaps the most important part of the upfront process of defining a project. Uncertainty on what is going to be delivered and what the project bounds are can adversely affect project success.

The purpose of defining scope is to clearly describe and align all of the parties involved on the logical boundaries of a project. Scope statements are used to define what is within the boundaries

of the project and what is outside those boundaries. The more aspects of scope that are clearly identified, the more the project will succeed.

In the first seven months of its launch, EthSwitch announced to the board members of the National Switch System that it has completed 1,495,735 transactions valued at 1,175,089,410 birr though it faced a difficulty of being challenged by a high transaction decline rate of 40 percent per month. All in all, a total number of 427,732 cardholders have tried to use one of the payment facilities connected by the switch system out of it enjoyed a success rate of 352,920 times or 85 percent. Nevertheless, the monthly decline rate has been a major challenge to the switch system at 40 percent.

This study aims to fill the research gap as there are none done to understand the major factors affecting the scoping of the project.

1.4 Research questions

- What are the major factors that affect project scoping in IT projects?
- How well has been the project initially scoped?
- How well has the project been performing?
- What are the major setbacks it has faced?

1.5 Objectives of the study

1.4.1 General Objective

The objective of this paper is to assess the major factors that affect project scoping in the case of the National Switching System of Ethiopia.

1.4.2 Specific Objectives

- Identifying factors that affect project scoping in the case of the National Switching System of Ethiopia.
- Assessing how well the project has been performing up until now
- Identifying all possible issues that users and system administrators have been facing
- To understand how these factors were managed and to suggest better ways of doing them

1.6 Scope of the research

This research aims at assessing the major factors that affect project scoping in the case of the National Switching System of Ethiopia. Related Literature concerning the subject matter has been covered and empirical data to back the claim has also been collected. The geographical area covered has been limited to Addis Ababa, Ethiopia.

1.7 Organization of the paper

This study is organized into five chapters. The first chapter is the introductory part of the paper and it comprises of background of the study, statement of the problem, objectives of the study and scope of the study. The second chapter focuses on review of literatures related to the topic of this study. The third chapter deals with the research methodology, design, approaches used

throughout the data collection and analysis. The fourth chapter discusses the overall findings of the study and the last chapter covers the conclusion and recommendation part of the study.

Chapter Two: Literature Review

2.1 An Overview of Project and Project Management

2.1.1 Project

According to the Project Management Body of Knowledge (PMBOK), a project is a temporary endeavor undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end. The end is reached when the project‘s objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. Projects can also have social, economic, and environmental impacts that far outlive the projects themselves (PMBOK 5th edition). International Project Management Association (IPMA) defines a project as a time and cost constrained operation to realize a set of defined deliverables up to quality standards and requirements. On the other hand the Association of Project Managers (APM) defines a project as a unique, transient endeavor undertaken to achieve a desired outcome.

According to Robert K. Wysocki (2014) definition Project is a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specification. A Business-focused definition of a Project by the same author Robert K. Wysocki (2014) is a sequence of finite dependent activities whose successful completion results in the delivery of the expected business value that validated doing the project. Gary R. H. (2003) also defines a project as a temporary endeavor undertaken to achieve a particular aim. A project is actually the response to a need, the solution to a problem. Further, it‘s a solution that promises a benefit—typically a financial benefit. The fundamental purpose for most projects is to either make money or save money.

By definition, a project is temporary in nature; that means that it has a specific start and finish. A project consists of a well-defined collection of small jobs (tasks) and ordinarily culminates in the creation of an end product or products (deliverables). There will be a preferred sequence of execution for the project‘s tasks (the schedule). A project is a unique, one-time undertaking; it will never again be done exactly the same way, by the same people, and within the same environment (Gary R. H., 2003).

Some of the special features of a project according to (Rory B. and Steve B., 2007) include:

- A project has a clear start and finish.
- A project passes through a number of distinct phases (initiation, design, implementation and handover).
- Projects are often time-limited (they must finish by a certain date).
- Projects have a clear budget which is usually broken down to a budget per work package.
- Activities are essentially unique and non-repetitive - you only get one opportunity to get it right.

- Resources may be sourced from different functional departments and contractors, and need to be coordinated.
- The project manager as project leader is responsible for the successful completion of the whole project.
- Multi-disciplined project teams are formed to manage the project. In large companies the project team would probably work within a matrix organization structure.

2.1.2 Project Management

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (PMI, 2013). This application of knowledge requires the effective management of the project management processes.

A process is a set of interrelated actions and activities performed to create a pre-specified product, service, or result. Each process is characterized by its inputs, the tools and techniques that can be applied, and the resulting outputs. Project management is accomplished through the appropriate application and integration of the 47 logically grouped project management processes, which are categorized into five Process Groups. These five Process Groups are:

- Initiating,
- Planning,
- Executing,
- Monitoring and Controlling, and
- Closing. (PMBOK 5th edition).

Initiating Process Group: Those processes performed to define a new project or a new phase of an existing project by obtaining authorization to start the project or phase.

Planning Process Group: Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.

Executing Process Group: Those processes performed to complete the work defined in the project management plan to satisfy the project specifications.

Monitoring and controlling Process Group: Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Closing Process Group: Those processes performed to finalize all activities across all Process Groups to formally close the project or phase.

The definition of project management that offered by Robert K. Wysocki (2014) is designed to be a working definition that includes the six-question litmus test to check its validity by using it to answer these six questions. Project management is a set of tools, templates, and processes designed to answer the following six questions: What business situation is being addressed by this project? What does the business need to do? What will you do? How will you do it? How will you know you did it? And How well did you do?

Project management is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives. Furthermore, project management utilizes the systems approach to management by having functional personnel assigned to a specific project (Kerzner H., 2009).

2.2 Project Scope management

Scope management includes all those processes that are absolutely and necessary required to ensure that the project is streamlined to only the required necessary work in order to achieve a necessary product or service. Scope means what is needed to be done and scope management is the managing of what needs to be done (Wysocki, 2009).

There are five fundamental processes relating to scope management. These processes interact with each other and interact with other processes in other knowledge areas. You will find that effective scoping of a project is much of an art as it is a science (Wysocki, 2009).

2.2.1 Collect Requirements

Requirements was defined by the IEEE in 1990 as

1. A condition or capability needed by a user to solve a problem or objective.
2. A condition or capability that must be met or possessed by a system or component of a system to satisfy a contract, standard, specification or other formally imposed document.
3. A documented representation of a condition or capability (Schwalbe, 2008).

Collect requirements is the process whereby the customer and stakeholder expectation of the project is recorded. The captured information must be elicited and analyzed in concrete detail. Requirement becomes the foundation of the work to be done and serves as a guide to the cost schedule and the quality of the project.

Requirements is usually classified into project requirement which include project management requirements amongst others and the product requirement which include technical detail of the product such as the security and performance requirements.

The project charter serves as a foundation for collecting requirements because it holds documented information on stakeholder and customer expectations and needs.

Requirement is usually collected in the form of interviews, by the use of focus groups and through facilitated workshops. Other methods maybe through group creativity techniques such as brainstorming among others. Requirements can further be collected through questionnaires, surveys, and observations. Another modern method of obtaining results is through the feedback on prototypes .This helps at an early stage to have a good picture on the product.

The main output of collecting requirements is to produce the requirement documentation, which describes how collected information qualifies the business need for the project. Another output of this process is the requirement management plan, which effectively describes how requirements will be managed and analyzed.

2.2.2 Define Scope

Define scope is the process of implementing a detailed documentation and description of the project and product. Define scope process usually qualifies major deliverables assumptions and initial constraints documented during the project initiation stage or phase.

Defining the scope needs high-level documents such as the project charter and the requirement documentation to fundamentally expand the project details.

This process makes use of expert judgment, product analysis and facilitated workshops in essentially defining the scope.

The major outcome of this process includes but is not limited to the project scope statement and an update to other various documents such as the project charter and the requirements document.

2.2.3 Work Breakdown Structure (WBS)

This is a process of subdividing the project goals and deliverables and work to be done into smaller, more manageable units.

Creation of the WBS requires the scope statement, requirement documentation and organizational process assets.

The method used to breakdown and subdivide task and deliverables into smaller units is known decomposition. The result of this process is the WBS, which effectively divides goals and tasks by setting milestones, cost estimates schedule activities among others. (PMI, 2008)

There are various identified ways of creating the WBS. Sometimes organizations have already developed and established guidelines. It is important to follow these guidelines in developing the WBS.

Another approach is by analogy where a similar projects starting point may be used (PMI, 2008).

Another method is by using the top down approach where the largest items of the project are broken down into subordinate items.

One other possible method is to use the bottom-up approach where the team first identifies tasks related to the project (PMI, 2008).

2.2.4 Verify Scope

Scope verification involves the official acceptance of the completed project scope by the customer or stakeholders (Schwalbe, 2008)

This process is involved with formalizing the acceptance of the project deliverables. Reviews are made with the customer concerning deliverables and the sponsor to en-sure that the scope is in line with the initial goals of the sponsor. Several documents may be used to achieve this process including project management plan, requirements documentation and validated deliverables. The main method of achieving this process is by review and inspection.

2.1.5 Control Scope

This is the process of monitoring and controlling the status of the project and product scope. Control is used to monitor the actual changes as they occur and integrated into the change control process. Controlling scope is a challenge to many ICT projects (Schwalbe, 2008).

2.3 Project scoping and project performance

The scope of the product identifies the boundaries of the solution. The decision on the product scope is concerned with determining which of the business requirements (bearing in mind the constraints) could be carried out the by solution.

Without an agreed upon and documented vision, there is little hope of achieving success. It is essential for each project to clearly define and document its scope so that the project can move forward in a coordinated manner and requirements can be written. The reaching of scope goals could be considered the most important item for portfolio management efficiency since scope as the product is the practical way to implement strategy (Muhammad et al, 2013).

That can be done by following steps:

Identify Stakeholders

Stakeholders should be accounted for and considered prior to writing requirements. Customers and users are some of the most important of the product's stakeholders (Muhammad et al, 2013). Knowing the needs of customers and users is critical to the success of the project. It is vitally important to project's success that key stakeholders are identified during the development of the project scope and are involved in the project scope definition.

Identify Project Drivers

Projects are driven by many outside influences, e.g. regulations, standards, laws, and other considerations. A major driver for many organizations is the set of existing equipment, software, or processes. Other drivers include security and safety concerns. Early attention to drivers is important to any project (Muhammad et al, 2013). Each driver needs to be identified, assigned for tracking, and included in the analysis of what the project is and is not.

Examining the Scope Statement

The scope statement provides justification for the project existence, lists the high-level deliverables, and quantifies the project objectives. Chung-Suk Cho and G. Edward Gibson Jr mentioned about the Construction Industry Institute (CII) funding several research projects focused on pre- project planning of capital facility projects into different intensities of pre-project planning effort and compared total potential cost and schedule performance. Because of

the significant savings associated with improved project predictability, the study concluded that a complete scope definition prior to project execution is imperative to project success.

Researches have shown that most of the project do not achieve much success because of lack of a clear definition for project and product scope as well as improper control of them. Scope, as a measurable concept, has been considered as either a criterion or factor. In fact, a project scope with clearly defined goals and objectives has been verified as a dimension for project success by some researchers. Collins & Baccarini considered a rigorous scope to be a factor which is necessary for meeting the owner's needs and thus achieving success. Shenhar, A.J & Dvir. claimed that, projects exhibit considerable variation, and their specific management styles seem different. Ward said that the scope of a project must be understood by all the participants, or stakeholders, who have to make decisions throughout the project.

Agarwal & Rathod state that both the customer and project teams agree that delivering the required product is the most important goal. If this goal is not met, the project is a failure. Within Kerzner's criteria for judging project success are considerations of time, budget, specification, customer satisfaction, and maintaining status quo within the organization. He emphasized that scope changes need to be curtailed or, failing that, controlled, for they have the potential to destroy not only the morale on a project, but the entire project.

2.3.1 Improving Project Success with Better Scope Management

The Project Management Institute defines product scope as the features and functions that are to be included in a product or service. It defines project scope as the work that must be done to deliver a product with the specified

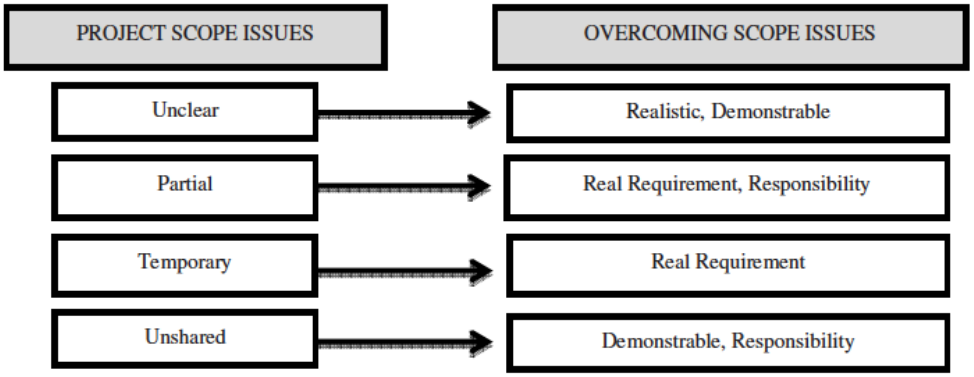

Figure 1: Issues with scope and how to overcome them

features and functions.

Tom Kenderick based his analysis on (PERIL) database, which serves as the basis for the analysis of high-tech project risk. The two broad categories of scope risk in PERIL related to changes and defects. By far the most damage was due to poorly managed scope change. Of the most damaging 127 risks in the (PERIL) database, 64 just over half were scope risks.

2.3.2 Problems with Project Scope

Poor scope definition has been linked to project failure. Inadequate or poor scope definition negatively correlates to project performance, has long been recognized as a significant problem. If boundaries are not appointed, final project costs tend to be higher because of changes that interrupt project rhythm, cause rework, increase project time, and lower the productivity as well as the morale of the field work. Charlie C. Chen, Chuck C. H. Law, and Samuel C. Yang subjectively carried out their research failures of ERP implementation in Taiwan based MNC. Since five different vendors were tried and tested over a period of two years. They deduced that scope management should be strictly exercised to control the extent of customization. The proper scope management helped to reduce gradually the number of user requests.

It is best practice to involve stakeholders because of the real contribution they can make to the scope document, which helps to increase buy in and commitment, and cement relationships. Fichter carried out research on the failure of Web Projects. She chalked out that a major reason for project failure is a dislike of planning. When planning in any of the project phases is shortchanged, the foundational work of the project does not exist. The problems that may arise with the project scope are: 1) unclear definition of scope, 2) incomplete or partial scope, 3) not finalizing scope documents and 4) not sharing scope statement.

2.3.3 How to Overcome Scope Issues

In addition, without firm scope definition, the project team may also find that external stakeholders such as suppliers will cause problems around conflicts over cost and quality/delivery of materials. A superior quality scope will also dictate boundaries within the scope of work which in turn will act as alerts in the event of added works: even a product description such as a blueprint can be a source for defining scope and setting limits on scope creep. In conclusion, the process of delineating the scope of a project at the pre-planning stage would include stakeholders and their needs or responsibilities. Following aspects should be kept in mind before finalizing scope: Specifying real requirements, being realistic in writing requirements, demonstrating requirements and being responsible against individual requirements.

Defining project scope using input from all stakeholders is a vital task that needs to be adequately carried out at the early stage. The purpose of project definition is to provide adequate information that is needed to identify the work to be performed in order to avoid major changes

that may negatively affect project performance (Gibson et al, 2006). This information is needed before making the decision whether or not to proceed with the project execution (Kähkönen, 1999). While adequate front-end project planning with clear project scope definition can alleviate the potential for cost overrun, inadequate project planning and poor scope definition can lead to expensive changes, delays, rework, cost overruns, schedule overruns, and project failure. Changes often reflect the uncertainties that occur during the early stages of the project (Assaf & Al-Hejji, 2006). Changes are requested as a result of the different perspectives that each stakeholder has on the project. Therefore, having a well-defined project during the pre-project planning stage is crucial for successful project execution and for achieving a satisfactory project outcome.

In the public sector, project definition is very crucial as projects serves communities first, and their satisfaction and comfort are the main concerns, while private sector projects often aim at benefiting investors or owners. Therefore, they should reflect their needs and requirements. And this cannot be done without involving all stakeholders in defining the project from early phases. It is irrational to get stakeholders' opinions about the project outcome after the completion, when their involvement is limited.

Incomplete project definition can occur when the input of one or more stakeholder is intentionally or unintentionally omitted (Sharma & Lutchman, 2006), while at the same time inputs from others dominate. Failure to consider and clarify stakeholders' expectations and concerns at early stage in the project can result in extraordinary risks being ignored and may lead to difficulties in running the project, and hence poor performance (Atkinson et al., 2006). Therefore, project scope definition is critical for enhancing satisfaction of stakeholders as well as successful implementation of construction project (Heywood & Smith, 2006).

A high level of pre-project planning effort can save up to 20% from cost and 39% from schedule in facilities projects (Cho & Gibson, 2001). In order to address the problem of poor project definition, a scoring tool called the Project Definition Rating Index (PDRI) has been developed by the Construction Industry Institute (CII) of America. The tool can be used to evaluate the definition completeness on projects. The philosophy of PDRI tool is to allow a project planning team to determine the level of definition needed for each of the elements in the project definition list. Project team, owner and/or contractor evaluate each of the list's elements. Overall score is then calculated for the whole project, the lower the score the better defined project (Cho & Gibson, 2001). Although the PDRI is a useful tool, evaluation of the level of project definition is less reliable. The evaluation process does not consider external stakeholders' perspectives and input. External stakeholders refer to individuals or groups who are affected by a project but are not formal members of the project team or are directly involved in the project; rather they originate from the environment of the project. They may include the neighborhood, community, general public, and/or industry connection (Olander, 2007). In addition, the PDRI assumes that the influence and input of the project team into different elements of project definition are the same.

However, in practice, different levels of involvement and input are required from different stakeholders when defining each element on the project definition list. Thus a more reliable rating tool needs to consider stakeholders' importance to a project in order to identify their relative involvement as well as their contribution to the different project definition elements. Olander and Landin (2005) stated that conflict and controversies about the implementation of a construction project can arise if stakeholders are inadequately engaged and their concerns and expectations are not managed well. To avoid this, project managers need to engage all stakeholders when making decisions on project definition. They need to acknowledge the concerns of all stakeholders and mitigate conflicting interests. Any negative perception by stakeholders on the project definition can have an impact on a project.

A well-defined project scope enables successful completion of a project within the planned time, budget, and quality parameters. In the field of project management, scope definition is carried out during the pre-planning phase, which is a period that requires investing a substantial amount of time and resources in activities leading to the final investment decision. This effort is proven to be an effective way of increasing the chances of project success while significantly decreasing the risks that could arise during project implementation. It is also prudent, especially in public infrastructure projects, to include the time for this pre-planning in the overall duration of a project. This can also assist in managing public delivery time expectations and thus, in some sense, even positively influence project success.

Project pre-planning efforts focus on defining a project in enough detail to increase the visibility of what needs to be accomplished to meet the requirements of the beneficiaries of project deliverables. At the same time, care is taken not to spend too much time on defining the project, since quick service or product delivery is required by the end-users. It is believed that projects that have a well-defined scope during pre-planning are less likely to encounter surprises such as scope creep, schedule slippages, cost overruns, and poor quality of deliverables. By defining a project thoroughly, all likely risks are identified and proactive action can then be taken either to reduce the likelihood of the occurrence, or to reduce the impact, of the risk if it occurs. Project scope definition is therefore recognized as a risk management technique. If, on the other hand, it is recognized that the project has somehow been poorly defined in pre-planning, one could possibly allow sufficient contingencies — a measure also considered in fast-track projects.

2.4 What is an Electronic Payment System?

According to Humphrey et al (2001), electronic payment refers to cash and associated transactions implemented using electronic means by using computer networks such as the Internet. The system allows bills to be paid directly from bank accounts, without the account holder being present at the bank, and without the need of writing and mailing cheques. Electronic payment (E-payment) can be defined as payment by direct credit, electronic transfer of credit card details, or some other electronic means, as opposed to payment by cheque and cash" (Agimo, 2004). It was also defined as "a payer's transfer of a monetary claim on a party acceptable to the beneficially" (European Central Bank, 2003). According to Kalakota &

Whinston (1997), electronic payment is a financial exchange that takes place online between the buyer and the seller. The content of this exchange is usually the form of digital financial instrument such as encrypted credit card numbers, electronic checks, or digital cash that is backed by a bank or an intermediary, or by a legal tender.

“For the achievement of effective and efficient retail payment systems, the following considerations that shape the choice of payment method for consumers and businesses should be taken into account; the convenience, reliability and security of the payment method, the service quality, involving such features as the speed with which payment are processed; the level and structure of fees charged by financial institutions; taste and demographic; and technological advances which have improve the speed, convenience and flexibility of different payment systems” Pariwat & Hataiseere (2004),.

According to (Cobb, 2004), the value of electronic payment goes way beyond the immediate convenience and safety of cards to a greater sphere of contributing to overall economic development.
“More than two thirds of all non-cash transactions payments in the United States are made electronically, with the biggest increase in electronic payments occurring between 2003 and 2006 according to a US central bank. The central bank’s non-cash payments study found that about 19 billion more electronic payments were made in 2006 than 2003”.

There are several payment markets that can be identified each using specific forms of money. “The business-to-consumer (B2C) payment is used in commercial activities where the merchant is paid directly by the consumer for goods and services” (Radu, 2003). This type of payment is also called retail payment. The direct payment between two persons is called person-to- person (P2P).

Administration-to-consumer (A2C) payment addresses the payment of taxes toward the government. Finally, the payment intervening between companies buying and those offering products and services is referred to as Business-to –Business (B2B) (Radu , 2003).

2.5 Modes of Electronic Payment

“Commerce always involves a payer and a payee who exchange money for goods or services, and at least one financial institution which links “bits” to “money” (Asokan, et. al., 2000).There are two roles in this transaction; the payer who issues the payment and the payee or the receiver who acquires the payment.

2.5.1 Credit Cards

In pay-later (credit) payment systems, the payee’s bank account is credited the amount of sale before the payer’s account is debited (Asokan, et. al., 2000). Credit card systems fall into this category. Credit cards allow customers to make purchases up to a prearranged ceiling. The credit that is granted is either settled in full by the end of a specified period, generally a month, or can

be settled in part, with the remaining balance extended as credit (Asokan, et. al., 2000). Credit cards are internationally known to customers and accepted by merchants. They are also easy to use on the internet, as only the credit card details need to be sent to the beneficiary in order to effect a payment (Vassiliou, 2004).

2.5.2 Debit Instruments

In pay-now payment systems, the payer's account is debited at the time of payment. ATM card based systems fall into this category. According to (Vassiliou, 2004), debit instruments allow the payer to have purchases directly charged (debited) to funds on his/her account at a deposit-taking institution such as a bank. Debit instruments include direct debits, debit cards and cheques.

2.5.3 Prepaid Payment Services

In prepaid payment systems, a certain amount of money is taken away from the payer by debiting that amount from the payer's bank account before purchases are made (Asokan, et. al., 2000). This amount of money can then be used for payments later. This payment system requires that consumers make the provision of funds before engaging any payment transaction. Smartcard-based electronic purses, electronic cash as well as (certified/guaranteed) bank cheques fall in this category (Asokan, et. al., 2000)..

Asokan argues that, both pay-now and pay-later could be classified as direct payment systems: a payment requires an interaction between payer and payee. There is also indirect payment systems where either the payer or payee initiates payment without the other party (payee or payer respectively) involved on line (Asokan, et. al., 2000).

2.5.4 Cumulative Collection Services

Cumulative collection services are mainly used for the processing of smaller e-payments which are cumulated and then paid (Vassiliou, 2004). The payment service provider collects all transactions of registered customers and submits them periodically (e.g. at the end of each month) as a single charge to the customer. The collection procedures could be compared to the delayed payments to settle credit or delayed debit card bills (Vassiliou, 2004).

One benefit of cumulative collection services as indicated by Vassiliou (2004) is that customers who do not have access to, or do not wish to use their credit or debit cards online might be able to use these services. A further benefit is that no sensitive information needs to be transmitted in a transaction.

Vassiliou (2004) further argues that, cumulative collection services are capable of providing a more cost-efficient facility for micro-payments than traditional payment instruments.

2.5.5 Payment Portal Services

"Payment portals are payment service providers that offer a wide range of the different payment options described in the previous sections and provide merchant accounts to online retailers in general" (Vassiliou, 2004). Payment portals take care of the payment side of e-commerce operations for merchants. Merchants can redirect the customers to the payment portal's site when

making online payments, where customers are given a choice between several means of payment. After successful completion of the payment, the portal notifies the e-merchant that the order can be shipped. (Vassiliou, 2004).

2.5.6 Mobile Phone Payments

Several initiatives have emerged for initiating e-payments from mobile phones by using short messages (SMS) or phone calls. These have also been referred to as m-payments (Vassiliou, 2004). Vassiliou further indicates that most m-payments initiatives follow a simple model where the customer (payer) first identifies him/herself to the merchant by providing his/her phone number or by calling the merchant. The merchant forwards the payment and customer information to the payment service provider (e.g. through the mobile network). The service provider then presents the payment information to the payer for confirmation and upon confirmation (e.g. with a PIN number) records the transaction. The communication between the customer and the payment provider and/or merchant can take place through phone calls and/or short messages.

The paid amount is collected by direct debit from the payer's account and credited to the beneficiary's account. Operational examples of this model in the EU include Paybox (Austria, Germany, Spain, Sweden and the United Kingdom), Mint (Sweden) and e-pay (Finland) (Vassiliou, 2004). According to Vassiliou, Mobile devices are well positioned for making payments, because the penetration level of digital mobile phones is higher than that of personal computers. "It is also possible to use mobile phones for all types of payments, both at manned and unmanned payment terminals, for internet payments and possibly for payments between consumers" (Vassiliou, 2004).

2.6 Benefits of Electronic Payments

A study by the Federal Reserve Financial Services Policy Committee indicates that electronic payment transactions in the United States have exceeded check payments for the first time in history. The total number of electronic transactions equaled 44.5 billion dollars in 2003, while the number of checks paid totaled 36.7 billion dollars. Obviously a trend among consumers can be identified; consumers are becoming more comfortable in doing business electronically and using a digital medium to conduct their business.

According to a study by (Fiallos & Wu, 2005), the arrival of the internet has taken electronic payments and transactions to an exponential growth level. Consumers could purchase goods from the internet and send unencrypted credit card numbers across the network, which did not provide much security and privacy. But a wide variety of new secure network payments schemes have been developed as consumers became more aware of their privacy and security.

Digital money has significant benefits for financial institutions, banks and e-merchants (Fiallos & Wu, 2005). Digital Money is an electronic payment technology, which can provide anonymous flexible electronic payment, like paper cash, but with added security requirements needed for internet transactions. In a related work by (Lee, et. al, 2003), a secure electronic cash

system can guarantee anonymity of legitimate users but also provides traceability about illegally issued cash or laundered money. If illegal activity did take place, it can cancel anonymity of the digital cash in order to protect the bank (Lee, et. al , 2004) added that since digital money can trace double spending, and double spending protects content by exposing the double spender's identity, digital cash is a fool proof way of guarding against illegal redistribution of intellectual property and materials. Digital Money can also be used to deter illegal content copying and distribution by inserting tracing content factors into the digital cash payment scheme that prevents users from individual replication activity (Lee, et. al.,2004). By using this function, legal, anonymous purchasers can spread contents to other paying anonymous users while abiding by copyright laws. Using digital money in industries like digital entertainment can increase the demand for products through easier and safer dissemination channels. Digital Money can trace who is illegally reproducing and distributing copyrighted intellectual material, therefore increasing security for authors and at the same time deterring lost revenue and sales for digital media entertainment companies (Lee, et. al., 2004).

Digital Media entertainment, as well as intellectual property providers and distributors, can also implement this technology and its safety features in order to ensure greater copyright compliance between consumers (Fiallos & Wu, 2005). By adopting such a method of payment and distribution, software and intellectual property piracy can be halted and eventually eliminated.

Digital Money can provide financial institutions with decentralized structures, faster transaction and decision making processes, and more cost effective ways of doing business. (Fiallos & Wu, 2005).

Electronic Payments as argued by (Cobb, 2005) have a significant number of economic benefits apart from their convenience and safety. These benefits when maximized can go a long way in contributing immensely to economic development of a nation.

Automated electronic payments help deepen bank deposits thereby increasing funds available for commercial loans – a driver of all of overall economic activity. According to (Cobb, 2005), efficient safe and convenient electronic payments carry with them a significant range of macro-economic benefits. "The impact of introducing electronic payments is akin to using the gears on a bicycle. Add an efficient electronic payments system to an economy, and you kick it into a higher gear. Add better-controlled consumer and business credit, and you notch up economic velocity even further."(Cobb, 2005)

"While the high level of cash transactions creates an opportunity for the electronic payment industry, it also imposes a cost on local economies. Cash has to be minted, securely transported, counted and reconciled, kept secure and maintained for re-use time and time again. The per-payment cost is high, and will always remain high whereas the costs of electronic system are fixed. Once the infrastructure has been built, the costs per-transaction is very low" (Cobb, 2005).

When cardholders use their cards at the point of sale they are helping to keep money in the banking system. EPS can help displace shadow economies, bring hidden transactions into the banking system and increase transparency, confidence and participation in the financial system. (Cobb, 2005).

As also mentioned by (Al Shaikh, 2005), there is a correlation between increase in point of sales volumes and rise in demand deposits. “Automated electronic payments act as a gateway into the banking sector and as a powerful engine for growth. Such payments draw cash out of circulation and into the bank accounts, providing low cost funds that can be used to support bank lending for investment – a driver of overall economic activity. The process creates greater transparency and accountability, leading to greater efficiency and better economic performance” (Al Shaikh, 2005).

In a similar narrative by (Hord, 2005) electronic payment is very convenient for the consumer. In most cases, you only need to enter your account information -- such as your credit card number and shipping address -- once. The information is then stored in a database on the retailer's Web server. When you come back to the Web site, you just log in with your username and password. “Completing a transaction is as simple as clicking your mouse: All you have to do is confirm your purchase and you're done” (Hord, 2005).

Hord (2005) further emphasizes the fact that electronic payment lowers costs for businesses. The more payments that is processed electronically, the less money is spent on paper and postage. Offering electronic payment can also help businesses improve customer retention. “A customer is more likely to return to the same e-commerce site where his or her information has already been entered and stored” (Hord, 2005)

According to (Cobb, 2005), “electronic payments can thus lower transaction costs stimulate higher consumption and GDP, increase government efficiency, boost financial intermediation and improve financial transparency”. She further added that “Governments play a critically important role in creating an environment in which these benefits can be achieved in a way consistent with their own economic development plans”.

(Humphrey et al, 2001) also support the fact the introduction and use of electronic payment instruments holds the promise of broad benefit to both business and consumers in the form of reduced costs, greater convenience and more secure, reliable means of payment and settlement for a potentially vast range of goods and services offered worldwide over the internet or other electronic networks. One such benefit is that electronic payments enable bank customers to handle their daily financial transactions without having to visit their local bank branch. Electronic payments products could save merchants time and expense in handling cash (Appiah & Agyemang, 2006).

According to (Humphrey, Pulley & Vesala 2000), the resource cost of a nation’s payment system can account for 3 percent of its GDP. Since most electronic payments cost only about one-third to one-half as much as paper-based non-cash payment, it is obvious that the social cost of a payment system could be considerably reduced if it is automated (Appiah and Agyemang, 2006). Automating and streamlining electronic payments made from self-serve channels such as ATMs, branch office terminals and point-of-sale (POS) systems can reduce paper-based errors and costs.

A research work carried out by Visa Canada Association in collaboration with Global Insight (A leading economic and financial consulting firm) revealed that electronic payments provide transactional efficiency to consumers, merchants, banks and the economy. Electronic payments

have contributed $C 107 billion to the Canadian economy since 1983 and represents nearly 25% of the $C 437 billion cumulative growth in the Canadian economy over the same period.
Over the same two decades, $C 60 billion of the increase in Personal Consumption Expenditures was directly attributable to electronic payments, with credit card holding a commanding share of this growth ($C 49.4 billion) over debit cards ($C 10.4 billion). (Visa Canada, 2004).

The use of any electronic transaction as a common platform for the financial sector would reduce physical circulation of cash. The use of Information Communication Technology (ICT) products to simplify and speed up financial transactions has become part of everyday life in the developed world, whereas several parts of Africa had no such experience. (Ackorlie, 2009).
The use of the electronic transactions system to do business is indeed not common in Africa. In the advanced economies, physical circulation of cash is limited because most people use electronic means to buy and pay for goods and services. The physical handling of money currencies is therefore reduced and the advantage here is that the government does not spend huge sums of money to print new currencies to replace worn out ones.

2.7 Challenges of Electronic Payments

Electronic payments comes with its own challenges despite its numerous benefits even in the developed world. The identified challenges as revealed by previous research works are Security, Infrastructure, Regulatory and Legal issues and Socio-Cultural challenges.

2.7.1 Security

The Security of Information and data is crucial in all Information systems. Information Security is the practices, procedures and technology put in place which ensure that information is safeguarded from

- Modification or accidental change (integrity),
- Unauthorized access (confidentiality), and
- Is readily available (availability) to authorized users on request.

Electronic payments systems are no exception; an unsecured e-payment system may not get trust from its users. Trust is very critical to ensure acceptance from users. According to (Worku, 2010) , e-payment and e-banking applications represent a security challenge as they highly depend on critical ICT systems that create vulnerabilities in financial institutions, businesses and potentially harm customers. “It is imperative for banks to understand and address security concerns in order to leverage the potential of ICTs in delivering e-banking applications” (Worku, 2010). A secure electronic financial transaction has to meet the following requirements:

INTEGRITY AND AUTHORIZATION

Integrity is defined as the accuracy, completeness and validity of information in accordance with business values and expectations (CISM Review Manual, 2006). Integrity of payment systems means that no money is taken from a user unless a payment is authorized by him. In addition, users might require not receiving any payment without their explicit consent; this is desirable when users want to avoid unsolicited bribery (Asokan et al, 2000).

CONFIDENTIALITY

Confidentiality is defined as the protection of sensitive or private information from unauthorized disclosure (CISM Review Manual, 2006). Some parties involved may wish confidentiality of transactions. Confidentiality in this context means the restriction of the knowledge about various pieces of information related to a transaction; the identity of payer/payee, purchase content, amount etc. Typically, participants involved want to ensure that communications are private (Asokan et al, 2000). Where anonymity or untraceabilty are desired, the requirement may be to limit this knowledge to certain subsets of the participants only (Asokan et al, 2000).

AVAILABILITY AND RELIABILITY

Availability is ensuring that information systems and data are ready for use when they are needed; often expressed as the percentage of time that a system can be used for productive work. All parties require the ability to make or receive payments whenever necessary (Asokan et al, 2000).

ENHANCING E-PAYMENTS SECURITY

According to (Taddesse & Kidan, 2005), the most common method of securing e-payments is using cryptographic based technologies such as encryption and digital signatures. Applying these technologies reduce speed and efficiency and as a result compromise has to be made between efficiency and security. The following are some of the technological means to secure e-payments:

***Secure Electronic Transaction (SET*):** This is an open standard developed by Master Card and Visa to provide a solution to security problems for online credit card payment system (Ullah, 2010). This is achieved by providing digital certificate for both customer and merchant. According to (Taddesse & Kidan, 2005), this did not found acceptance because it was complicated and required both customer and merchant to download 5MB of software.

3D Secure is Visa alternative to SET and does not require certificate to authenticate (Ullah, 2010).

Smart Card Security: Data stored on a smart card is encrypted and cannot be assessed without password/PIN and thus provide strong security. Taddesse & Kidan(2005) argue that magnetic strip cards i.e. debit cards, credit cards etc are being replaced by smart cards.

Proper policies, procedures and appropriate Government laws must also be put in place to ensure technologies provide maximum security.

2.7.2 Infrastructure

Infrastructure is necessary for the successful implementation of electronic payments. Proper Infrastructure for electronic payments is a challenge (Taddesse & Kidan, 2005). For electronic payments to be successful there is the need to have reliable and cost effective infrastructure that can be accessed by majority of the population.

Electronic payments communication infrastructure includes computer network such as the internet and mobile network used for mobile phone. In addition, banking activities and operations need to be automated. A network that links banks and other financial institutions for clearing and payment confirmation is a pre-requisite for electronic payment systems (Taddesse & Kidan, 2005).

Mobile network and Internet are readily available in the developed world and users usually do not have problems with communication infrastructure. However, in Africa mobile networks and internet are not easily accessible. “Poor communication infrastructure is one of the reasons that hinder the e-payment system in Africa” (Taddesse & Kidan, 2005). According to Worku (2010), low level of internet penetration and poorly developed telecommunication infrastructure impede smooth development and improvements in e-commerce in Ethiopia. A study by Microfinance Nigeria indicated that efforts by the Nigerian, Government and other financial and ICT stakeholders to move Nigeria’s payment system from a cash-dependent platform to the globally acceptable electronic-driven alternative may be impeded by dearth of critical telecommunication infrastructure. In developing countries many of the rural areas are unbanked and lack access to critical infrastructure that drives electronic payments. According to Microfinance Nigeria (2010), some of the debit cards technologies like Automated Teller Machines (ATMs) are still seen by many as unreliable for financial transactions as stories told by people suggested that they could lose their money through fraudulent deductions, debits and other lapses for which the technology had been associated with by many over the last few years.

2.8 Conceptual Framework

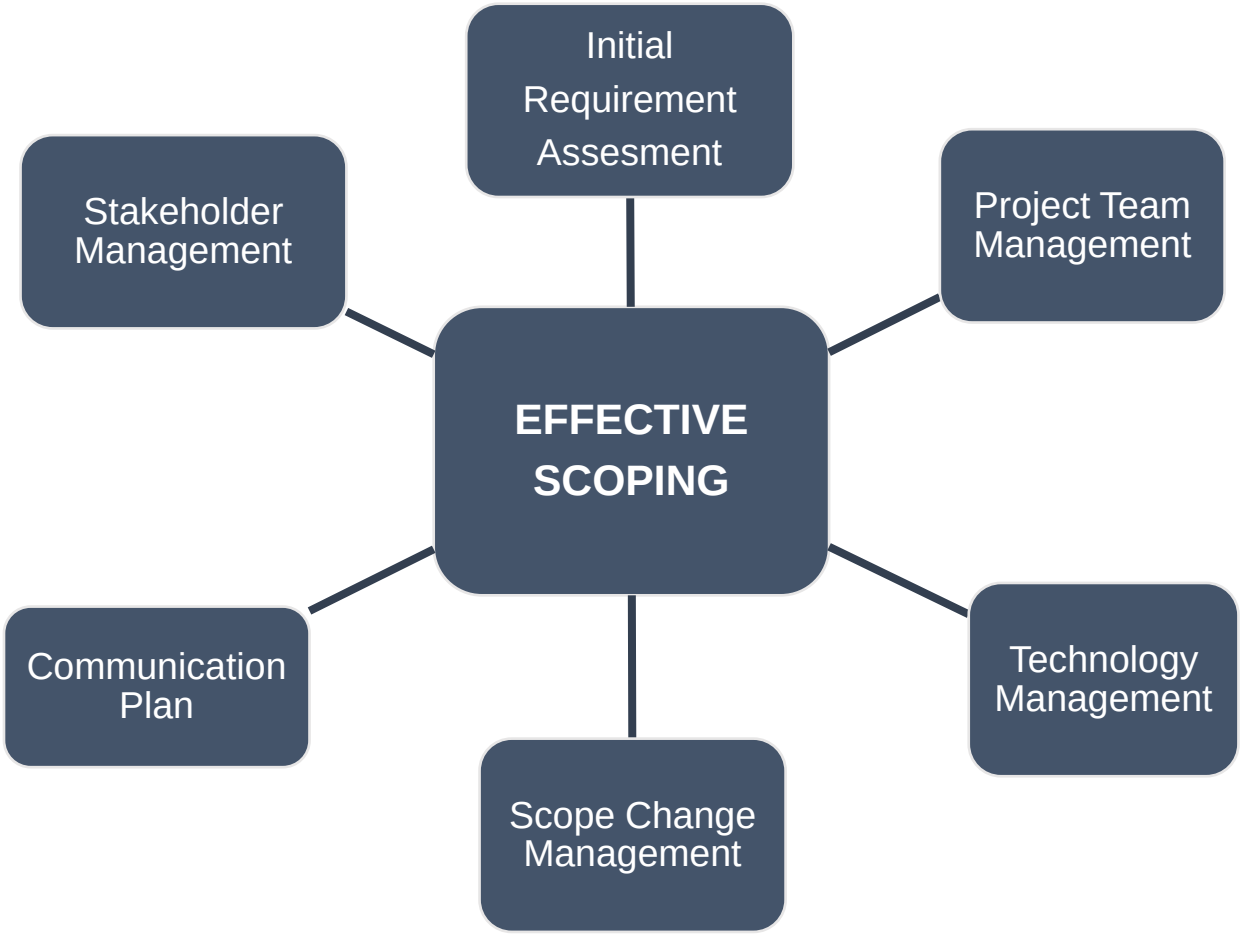

Figure 2: Conceptual Framework

Chapter Three: Methodology

This section provides the basis through which data is obtained to answer the research questions and the research problem. This chapter focuses on the method that was employed to collect the data for the study. It discusses the research design, population for the research, sample and sampling procedure, the research instruments, data collection procedure, data analysis procedure and ethical issues.

3.1 Research design

This study is of exploratory type since it aims at obtaining the extent of effect variables make in a project. Exploratory study also is flexible in addressing questions of various types such as what, why and how questions.

Exploratory type of study is vital in situations where the issue in case is relatively new and data on that area is not readily available.

Qualitative research design was employed in this study. It involved survey of documents, 5 point likert type questionnaires, and semi structured interviews were done. Descriptive statistics were used as interpretations and discussions and percentages were used to present the results of the study.

3.2 Data and Variables

Qualitative data collected from the primary and secondary sources is used in this research.

3.3 Sources of Data

Both primary and secondary data were used in this research:

Primary sources:

Primary sources of data for this research were questionnaires filled by senior staff at EthSwitch, Bank IT staff and end users of the system and semi structured interviews done with senior team members at EthSwitch. The purposive selection of these respondents was based on the assumptions that they were better fitted to giving a more reliable and conclusive information.

Secondary sources:

Regarding secondary data, reviewing documents written about unified ATM card systems in general and how they have been deployed as well as reports, government publications, official documents served as secondary sources of data. This type of data helped to better understand on the findings from the primary data and also helped get information that was not found in the primary data findings.

3.4 Target population

The target population of this research are:

- Project team members of EthSwitch
- IT team staff of the member banks of the National Payment Switching System
- Users of the system

3.5 Sampling Procedure

Purposive (non-probability, deliberate) sampling technique was used in this research because of the very limited time available to complete this research. Under this sampling technique, purposive sampling was used. Another reason why this was chosen was that purposive sampling technique was better for getting respondents who are knowledgeable and well abreast with the subject matter of interest.

3.6 Data collection instruments

To collect the relevant data and information, two basic instruments were applied; questionnaires and semi structured interviews. 5 point Likert type questionnaires were distributed to EthSwitch project team members, Similar 5 point Likert questionnaires were given to bank IT team members to understand the facts about the current performance status of the system. Questionnaires were also given to end users of the system so as to understand their level of satisfaction about the service.

Semi structured interviews were done with senior team members of EthSwitch. This instrument was used because it was an appropriate tool for getting an in depth information about the issues from the project organization. This helped to get information that was not provided by the questionnaires and because of its flexibility and ability to give new ideas on the issue.

3.7 Method of Data Analysis

Qualitative analysis of the collected data will be performed on the data collected through the questionnaire and interviews.

And since the study is purely qualitative, no use of analytical software will be applied. The results of the analysis are presented through a narrative description.

3.8 Presentation

The findings of the data collected and analysis findings will be presented in two documents. A narrative document that contains the summary of all literature reviewed, data collected and analysis with every reference used and a Power Point presentation of the final narrative report to be presented to examiners.

3.9 Data Collection and Validation of Data

Participation in the study was voluntary but was encouraged by the researcher through emails and follow up calls. Whenever possible, data was obtained directly from primary sources. Responses were reviewed for consistency and compared with other submissions.

Chapter Four: Analysis & Discussion of Results

This chapter is a presentation and analysis of the research conducted to assess which factors affect project scoping efforts in the case of the national payment switch of Ethiopia. It gives a

detailed explanation of the problems identified by employees of EthSwitch, the stakeholders' employees and end users of the service.

The research conducted an in-depth interview with 5 employees of EthSwitch who are in a managerial position, 10 people from banks to represent the stakeholders of the National Payment Switching System and 15 current users of the service. The key findings and analysis from these interviews is presented below.

4.1 Demographic Data of Respondents

At the beginning of the interviews or questionnaires, respondents were requested to indicate their educational level, years of experience and current working position.

Educational Level	**Postgraduate**	**Undergraduate**	**Technical & Vocational**	**High school**
	6	18	4	2

Table 1: Educational level of respondents

Years of Experience	**1-5**	**5-10**	**10+**
	22	6	2

Table 2: Work experience of respondents

4.2 Performance of the Project

The National Payment Switch of Ethiopia has been in operation since May 2016. At the inception, not all eighteen banks were on board; but gradually, all eighteen banks were on board. Initial awareness of the system's deployment was very low among ATM users. In its first seven months of operation, it has been announced that the system has completed transactions valued at almost 1.18 Billion Birr.

According to a February 2018 press release by EthSwitch, the performance of the system has improved to a 68% success rate as compared to the previous year's success rate of 60%. Although there is some improvement, there still is a significant gap that has not been addressed yet. The first phase of the project was completed in 2016 a year later than planned. Cost wise, it has spent Birr 200 Million but the planned cost was Birr 120 Million.

The national switch has also started issuing its national payment card called ethioPay. Some five banks are currently issuing ethioPay side-by-side their own payment cards. ethioPay will be the only payment card in Ethiopia in the future and it will offer 99 types of different financial services for customers.

4.3 Initial requirements identification and scoping of the project

The finding from the interviews and questionnaires conducted with the project team indicates that they believe that the requirements of the project were defined moderately well but not to the required level.

According to the findings, the requirements of the projects were not clearly understood by the project team. As the payment switch system was a new and innovative service, the team did not have previous experience that would assist in the scoping of the project. This has caused for limited scoping and continuous re-consideration of scoping.

The interviewees were also asked on how much importance and attention they paid to developing of the project scope. A vast majority of them claimed that a moderately well effort was put in although some of them believed that the effort put in was insufficient.

Another issue raised regarding the scoping of the project was that the project team wasn't fully formed at the inception of the project. They claim that this had inhibited the team from fully understanding the requirements of the projects as well as contributing in decisions that affected the performance of the project.

Three fourths of the project team believed that there were project planning issues and that it could have been better improved. The major problem pointed out was that at the beginning, the project management procedures were not defined adequately. To mention some of them, one of the respondents from the EthSwitch employees mentioned that the initial estimations of schedule were not realistic and hence, were not successfully met. The project has also faced time management planning weakness because there were no clear regulations/deadlines that were set for delivery of work. This has resulted in the delay of all of the deliverables for the work. Another issue the team raised was that there were unaddressed project issues during the planning phase that came to light in later phases of the project. These issues brought the team back to the drawing board again leading the project to unnecessary time lags and costs.

The other challenge that was mentioned by the employees was that there was no proper documentation. The fact that the project planning documents were not adequately documented and distributed to the project team made it difficult for the team to understand the project requirements in the required detail and at the required time. Requirements documentation was also inadequately performed as well and there was not sufficient documentation of all necessary requirements of the project according to the project team members' responses.

4.4 Issues that affected the project's scoping efforts

4.4.1 Scope Change Requests

The project team indicated that there were a lot of scope change requests coming from multiple stakeholders, i.e. National Bank of Ethiopia (NBE) and member banks of the system after the project was in the implementation phase. They also believe this in turn has had a significant impact on the performance of the project.

Even though scope changes are an expected character of projects and are unavoidable but most of the scope changes they faced in this project occurred as a result of the lack of synergy among the member banks. Lack of communication among the banks in putting the system in place is one problem that could be mentioned. This lack of synergy turn has hindered the performance of the team members in turn affecting the project's own performance.

Another issue contributing to the frequent scope change requests was the difference in strategy, vision, goals, technology level among the big banks (CBE for example) and the newer and smaller banks. This reason led to a lot of back and forth among the project team with the stakeholder banks of the company. In addition to this, since the structure does not have a defined structure of authority to accept and deny changes, it resulted in confusions about who had the authority to approve or reject the scopes raised by the banks.

The project team members also claimed that there wasn't enough project team integration means in place so that these scope change requests could be done as efficiently as possible.

Finally, the timing of the scope change requests was another difficulty in terms of timeline for the implementation of the changes. The requests were presented when the project has gone deep into the project life cycle.

4.4.2 Stakeholder Issues

The other major problem the company faced with regards to stakeholders was the lack of buy in from most of the banks. The respondents indicated that there was not much interest shown by the banks concerning the project even though they had shares in EthSwitch and they were doing it just because they were obliged by the National Bank.

This coupled with the fact that the technology being new to the country led to problems of not understanding how the project works and hence the frequent change requests.

A related problem that was raised by the manager was that there was a weakness of stakeholder management from the project organization. Enough awareness wasn't created among the stakeholders so that they would understand the value of the national payment switching system. This led to a lack of enthusiasm among the stakeholders leading to the aforementioned problems.

Another issue also was the proper identification of all stakeholders and regular engagement and communication with them. This was one reason for the scope change requests to be untimely as some stakeholders knew about ongoing activities once the work was started.

4.4.3 Lack of Skilled IT Staff

The implemented technology in the project was more or less new to the country. And an unanticipated problem was the amount of shortage of skilled personnel in that specific area. The project manager specified the gap in the education system of the country as a possible cause of the problem. Although other possible reasons could be the rapid and ever increasing demand of skilled personnel that the IT industry requires.

This problem has affected the project in such a way that recruitment became difficult and the required team members could not be on board at the required time and this in turn leading to a bigger workload on the existing team, affecting the team's performance.

The second problem raised was the willingness among the existing team members to learn and adapt to new technology. Some of the team members were not able to keep up with the ever changing nature of the project's requirements and this eventually led to burnout eventually leading to turnover.

Another point raised was the lack of trainings provided to the team members by the project organization and the lack of proper project documentation in the project organization. This lack of proper project documentation led to a knowledge gap among the project team whenever a staff turnover occurred.

4.4.4 Technology Lag

Being a third world country, Ethiopia does not yet satisfy the demanding infrastructure needs of such new, innovative and demanding projects. Even though it exists to a certain magnitude, it has not yet reached the required levels. Hence, one of the main challenges the system faces is the frequent telecom network failure and power outages. These two coupled have made it difficult for the system to operate to its required levels.

The ICT Development Index (IDI) is one of the indices that measures ICT readiness using three sub-indices: infrastructure and access, use, and skills (ITU, 2012). Despite marginal improvement, Ethiopia remains one of the least connected countries in the world. Ethiopia ranked very low, at 150th out of 155 countries, on the 2011 IDI. Ethiopia's standing was well below Rwanda, Mozambique, Tanzania, and Zambia, countries that also scored low in the IDI.
The limitation of available infrastructure and technology is a constant nuisance in Ethiopia. The landline technology for broadband provision within Ethiopia is substantially limited, and must be built up along with transportation and electricity infrastructure; this is a large-scale development project that has not yet been implemented (Chekol, 2009).

4.4.5 Communication Issues

Communication is always important for the success of any project whether it is within the team or other parties involved. When asked about the communication efforts of the company, the project team members pointed out that communication from management to team as well as among the team members was weak as there were no clearly specified procedures to process and transmit data among the project team members. The lack of communication has created a gap on transferring of the adequate information throughout the team which has also resulted frustration among the team.

Some of the specific issues they raised were information not being sent on time, and when sent it may not have been processed and sorted appropriately and in general, the frequency of communication being less than satisfactory. One of the project team member mentioned that he has been facing challenges of executing a task because information that he asked for was not trickled down properly.

As part of the stakeholders of the company from the Banks' side, they have stated that the major problem they faced was that their requirements were mostly misunderstood and that the time between communications was very extended which eventually led to the problem of unclear requirements by the project team. Some issues went as far as the implementation of features that were no longer necessary or even outdated. The interviewees said that there was lack of coordination among the project team which resulted in extended time on back and forth with no results.

4.4.6 Customer Support Issues

Customer service is a crucial part of a service business. Customers are an integral part of any business. Companies should be able to respond to customer's request promptly. Otherwise, the company slowly loses its customer base. In order to understand the experiences of the customers with regards to Ethiopia, an in-depth interview of 15 users was conducted.

According to some users of the system, they have faced issues at various times. They said whenever the system fails and the ATMs retain money they were supposed to withdraw, it is difficult to get the money back quickly. There is a significant communication gap among the banks. This occurs especially when the user is using an ATM that is not owned by their own bank. The communication among the banks takes a lot of time. There is lack of proper follow up and the process of returning the money takes a while. The return of the money to the customer's bank account takes a timeline from weeks to sometimes months.

When asked what the issue is towards the delay of the return of the money, the banks claim that the system developed by EthSwitch is to blame for the inconvenience it is creating for customers. On the other hand, during the interview with the project staff, they clarified that this problem is purely the banks' own.

As explained by the manager, a transaction through the ethioPay system between two banks takes place when a customer uses an ATM other than his own bank. The banks have a database where they can access all bank users' accounts to deduct money which is created through this system. So, EthSwitch creates this platform that assists the various banks to communicate to each other about their customers' bank accounts but it cannot modify the sent or received messages. If any problems occur it will be purely because of the failure from the backs side.

The manager went on to add that unless there is a network or power outage, these problems are attributable to the failure of the ATM machines themselves or the software the banks use.

4.4.7 Lack of Training and Development

Three of the project team members mentioned not being provided with timely and sufficient trainings by their organization. There is no structure in place to develop the skills of the employees throughout their stay within the company. "*Since the technology we are trying to implement is more or less new to us, trainings were an absolute necessity. However, these opportunities were not provided to us as they should have been."* said a programmer at the company.

According to the findings, the lack of sufficient knowledge has had an influence on the smooth operation of the system even though the managers' claim there was a training given to the employees'. The learning culture within the organization is not well developed yet.

Chapter Five: Conclusion & Recommendations

This study tried to investigate the effect of project scoping on the performance of projects in Ethiopia in the case of the National Payment Switching System of Ethiopia. To conduct this research, existing literature relating to project management and existing payment and banking technology was reviewed.

To have a deeper understanding of the problem, an in-depth interview was conducted with senior team members, questionnaires were administered and secondary data from existing publications was reviewed. The study answered qualitatively the questions regarding how well the project was initially scoped, how well the project has been performing, the major issues it has been facing and is still facing and finally how the scoping and related issues have affected the current performance of the project.

Defining, communicating and agreeing on a clear vision and path is mandatory to deliver a project that meets the required quality, time and budget requirements. In order to have a successful execution of a project, active involvement and alignment of ideas from stakeholders and clear product scope, goals, project drivers, constraints, assumptions, operational concepts should be done before starting the project.

The major factors that have affected the project scoping efforts of the National Payment Switch of Ethiopia were found to be: Limited effort spent in the development of the project scope and requirements gathering was inadequately performed, lack of involvement of stakeholders from the initial stage of the scoping of the project has caused for repetitive request of changing the scope, shortage of skilled IT staff and trainings for the employees to advance their skills, Infrastructural issues with regards to telecom accessibility has affected the project in turn creating an inconvenience for customers and the project overall, weakness of both internal and external communication as well as improper documentation and finally a lack of proper customer support team.

5.1 Conclusions

Insufficient or inadequate scoping has been known to negatively affect the performance of a project and it can be deduced from the research output that the same thing is observed from the project in case. The lack of understanding or defining project and product scope at the beginning of the project should not be allowed to happen because a properly defined and managed scope leads to delivering a quality product or service.

In the case of National Payment Switch of Ethiopia, because of the problems associated with the scoping, there was a very high initial decline rate of ATMs, multiple design changes, reworks and unnecessary or outdated works, delays in project schedule. The he project team was not performing to their maximum capabilities as well.

Since scope management was not done appropriately at the beginning, this has led to multiple scope change requests which in turn led to extensions in schedule and cost as well as compromising the quality of the work.

Stakeholder management was another issue that was found as a setback in the research. The buy in from the stakeholders was lacking and hence necessary inputs from all concerned stakeholders was not obtained. As a result, there were disagreements and dissatisfactions concerning the project's deliverables that resulted due to the weakness in communications among the stakeholders.

Overall, even though the project is currently functioning moderately, a better initial scoping, proper project management, team management and coordination among the project teams and the stakeholders would create a better service delivery system for its customers and undertake the upcoming phases of the project successfully.

5.2 Recommendations for the Next Phases

- Project documentation should be improved and there should be an organized way to make it available to all concerned stakeholders.
- Stakeholder management system should be in place for the active involvement of stakeholders and avoidance of unnecessary misunderstandings.
- Ways of communication with stakeholders should be improved.
- High level trainings to staff regarding the implemented technologies are necessary.
- Increasing awareness of the system's importance to all concerned stakeholders.
- In the long term, improving the national information technology skill pool should be carefully considered because the currently existing skill gap in the country is a big hindrance.
- Future project planning should take into consideration the currently existing infrastructure capabilities of the country.
- Customer support should be improved as it is the main problem that the users of the system have complained about. If possible, a standalone unit that handles these kinds of issues should be set up.

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Appendices

Appendix I: Questionnaire for project managers and engineers at EthSwitch

Dear respondent, thank you for your valuable time and effort in responding to this questionnaire. Please note that all information, including all results and personal information from participating individuals will be kept strictly confidential and be used only for research purposes.

Rating Scale	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5

Please mark 'X' in the box corresponding to your response

How long have you been in the project management environment?	1-5	5-10	10-15	15-20	20+
Educational Level	PhD	MA/MSc	Degree	Diploma	High School
	1	2	3	4	5
How well are the project requirements understood?					
Was the technology implemented in the project state of the art?					
How well were the members of the project team familiar with the work?					
How well were the performance objectives of project described?					
Were there enough trainings for the team members?					
Were the objectives of the company and the communication plan documented to staff?					
Do you believe the performance of the team members was up to the required standards?					
How would you rate the attention paid to the development of the project management plan?					
How would you rate the attention paid to the development of the project scope?					
How important do you believe is effective scope management towards the IT project success rate?					
Were there any scope changes? If so, how would you rate their effect on the project?					

How well has the project performed?					
How do you rate the stakeholder support and involvement in the project?					
How receptive are banks of the new system?					

What are the setbacks the project has faced and what are the possible reasons for the setbacks?

What steps should be taken to alleviate these problems?

What feedback and complaints have been received from banks regarding the system?

Appendix II: Questionnaire for bank IT staff regarding the National Payment Switching System

Dear respondent, thank you for your valuable time and effort in responding to this questionnaire. Please note that all information, including all results and personal information from participating individuals will be kept strictly confidential and be used only for research purposes.

Rating Scale	**Very Low**	**Low**	**Moderate**	**High**	**Very High**
	1	**2**	**3**	**4**	**5**

Please mark 'X' in the box corresponding to your response

Work Experience	**1-5**	**5-10**	**10-15**	**15-20**	**20+**
Educational Level	**PhD**	**MA/MSc**	**Degree**	**Diploma**	**High School**

	1	**2**	**3**	**4**	**5**
How long have you worked in this position?					
How important do you believe is the national payment switching system project?					
How successful do you believe the project is?					
Do you believe the performance of the switching platform was up to the required standards?					
Describe the current decline rate of the system in your bank?					
What complaints have you received from your bank's customers?					
If not, what were the possible reasons and how do you believe they could have been improved?					
Please indicate the extent to which you agree with the following statements regarding the challenges in the adoption of the payment switching system.					
Lack of knowledge and skills in basic computing					

Complex procedures for conducting payments					
Preference for human tellers to machines					
Preference for cash/paper payments					
Lack of trust in non-cash payments					
Inadequate point of sale terminal					
Inadequate marketing campaigns/advertisements					
Personal preference of customers					
Poor attitude to new products and services					

Appendix III: Questionnaire for users of the National Payment Switching System

Dear respondent, thank you for your valuable time and effort in responding to this questionnaire. Please note that all information, including all results and personal information from participating individuals will be kept strictly confidential and be used only for research purposes.

Rating Scale	Very Low	Low	Moderate	High	Very High
	1	2	3	4	5

Please mark 'X' in the box corresponding to your response

Work Experience	1-5	5-10	10-15	15-20	20+
Educational Level	PhD	MA/MSc	Degree	Diploma	High School
Do you have an ATM card?	Yes		No		
How many times per month do you use ATMs?	1-5	5-10	10-15	15-20	20+
Are you aware of ethioPay/ National Switching System?	Yes		No		
How often do you use other banks' ATM?	1-5	5-10	10-15	15-20	20+

	1	2	3	4	5
How often have you had difficulties when using the system?					
Did you get timely tech support when the difficulties happened?					
How would you rate the performance of the switching system?					

What improvements do you suggest for the system?

Appendix IV: Analyzed data from questionnaire for project managers and engineers at EthSwitch

How long have you been in the project management environment?	1-5	5-10	10-15	15-20	20+
	80%	10%	10%	0%	0%
Educational Level	PhD	MA/MSc	Degree	Diploma	High School
	0%	40%	60%	0%	0%

	1	2	3	4	5	Mean
How well are the project requirements understood?		40%	60%			2.6
Was the technology implemented in the project state of the art?			80%	20%		3.2
How well were the members of the project team familiar with the work?	20%	60%	20%			2
How well were the performance objectives of project described?		40%	40%	20%		2.8
Were there enough trainings for the team members?	80%	20%				1.2
Were the objectives of the company and the communication plan documented to staff?	80%	20%				1.2
Do you believe the performance of the team members was up to the required standards?			60%	40%		3.4
How would you rate the attention paid to the development of the project management plan?	20%	20%	60%			2.4
How would you rate the attention paid to the development of the project scope?	40%	40%	20%			1.8
How important do you believe is effective scope management towards the IT project success rate?				20%	80%	4.8
Were there any scope changes? If so, how would you rate their effect on the project?				40%	60%	4.6
How well has the project performed?		40%	60%			2.6
How do you rate the stakeholder support and involvement in the project?	40%	40%	20%			1.8
How receptive are banks of the new system?		60%	40%			2.4

Appendix V: Analyzed questionnaire from bank IT staff

Work Experience	1-5	5-10	10-15	15-20	20+
	80%	20%			
Educational Level	PhD	MA/MSc	Degree	Diploma	High School
		30%	70%		

	1	2	3	4	5	Mean
How important do you believe is the national payment switching system project?		20%	60%	20%		3.6
How successful do you believe the project is?		70%	20%	10%		2.4
Do you believe the performance of the switching platform was up to the required standards?	10%	70%	20%			2.1
Describe the current decline rate of the system in your bank?			30%	60%	10%	3.8
Please indicate the extent to which you agree with the following statements regarding the challenges in the adoption of the payment switching system.						
Lack of knowledge and skills in basic computing	20%	20%	30%	30%		2.7
Complex procedures for conducting payments	80%	20%				1.2
Preference for human tellers to machines		30%	50%	20%		2.9
Preference for cash/paper payments		40%	50%	10%		2.7
Lack of trust in non-cash payments		30%	30%	40%		3.1
Inadequate point of sale terminal		20%	60%	20%		3
Inadequate marketing campaigns/advertisements	20%	60%	20%			2
Personal preference of customers				20%	80%	4.8
Poor attitude to new products and services			20%	20%	60%	4.4

Appendix VI: Analyzed data from questionnaire from users of the National Payment Switching System

Work Experience	**1-5**	**5-10**	**10-15**	**15-20**	**20+**	
	80%	10%	10%	0%	0%	
Educational Level	**PhD**	**MA/MSc**	**Degree**	**Diploma**	**High School**	
	0%	6%	54%	26%	14%	
Do you have an ATM card?	**Yes**		**No**			
	80%		20%			
How many times per month do you use ATMs?	**1-5**	**5-10**	**10-15**	**15-20**	**20+**	
	33%	50%	17%			
Are you aware of ethioPay/ National Switching System?	**Yes**		**No**			
	67%		33%			
How often do you use other banks' ATM?	**1-5**	**5-10**	**10-15**	**15-20**	**20+**	
	33%	67%				
	1	**2**	**3**	**4**	**5**	**Mean**
How often have you had difficulties when using the system?			17%	66%	17%	4.01
Did you get timely tech support when the difficulties happened?	17%	60%	23%			1.43
How would you rate the performance of the switching system?	17%	25%	50%	8%		2.24