ADDIS ABABA UNIVERSITY

CRITICAL SUCCESS FACTORS FOR TELECOMMUNICATION NETWORK EQUIPMENT PROCUREMENT PROJECTS (THE CASE OF ETHIO TELECOM)

By: Yonas Mulugeta

COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE

GRADUATE PROGRAM IN PROJECT MANAGEMENT

June, 2022

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A Project Submitted to College of Business and Economics School of Commerce Graduate Program in Partial Fulfillment of the Requirements for the Degree of Master of Art in Project Management

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Approved by Board of Examiners

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Advisor	Signature
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Internal Examiner	Signature
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External Examiner	Signature

DECLARATION

I, Yonas Mulugeta, declare that this research entitled Critical Success Factors for Telecommunication Network Equipment Procurement Projects (The Case of Ethio Telecom) is the outcome of my own effort and study. All sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of MA in Project Management.

By: Yonas Mulugeta

Signature _____

Date_____

ENDORSEMENT

This is to certify that YONAS MULUGETA carried out his project on the topic entitled "CRITICAL SUCCESS FACTORS FOR TELECOMMUNICATION NETWORK EQUIPMENT PROCUREMENT PROJECTS (THE CASE OF ETHIO TELECOM)" This work is original in nature and is suitable for submission for the award of Master Art in Project Management.

Dr. Seifu Mamo

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LIST OF ABBREVIATIONS

CM -- CHANGE MANAGEMENT

CS/R -- CONTRACT WITH SUPPLIER/RELATIONSHIP

CSF -- CRITICAL SUCCESS FACTORS

EIR -- EQUIPMENT IDENTITY REGISTER

EIRs -- EQUIPMENT IDENTITY REGISTRATION SYSTEM

GSM -- GLOBAL SYSTEM FOR MOBILES

IT -- INFORMATION TECHONOLOGY

ICT -- INFORMATION COMMUNICATION TECHONOLOGY

KPI -- KEY PERFORMANCE INDICATORS

MS -- MOBILE STATION

PM -- PERFORMANCE MEASUREMENT

PMP -- PROJECT MANAGEMENT PROFESSIONAL

PR -- PRICE

PS -- PROJECT SUCCESS.

RK -- RISK

SC -- SECURITY

SF -- SUCCESS FACTOR

SI -- SYSTEM INTEGRATION

SP/T -- SUPPLY PROCESS/TIME

ST/D -- SYSTEM TRAINING/DOCUMENTATION

TM -- TOP MANAGEMENT

TS -- TECHNOLOGICAL STANDARDS

FDRE -- FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

GTP II -- GROWTH AND TRANSFORMATION PLAN II

ABSTRACT

The purchase of network equipment is a significant aspect of the mobile telecommunications industry. These items are quite expensive, thus obtaining them necessitates the formation of a strong procurement strategy. The majority of equipment is purchased to keep up with technological advancements, competitiveness, and client demand for high-quality services, among other factors. The current study aims to uncover crucial success elements that influence network equipment procurement initiatives, with a focus on one of Ethiopia's largest telecom company, Ethiop Telecom. To establish the conceptual framework of the study, several literatures were investigated and 11 variables were identified. The study used a descriptive research design and a qualitative research approach. Both Primary and Secondary data was gathered utilizing a questionnaire with procurement implementers, other departments involved network equipment projects and Literature Reviewed. SPSS Version 26 and Microsoft Excel were used to analyze the data. Technological standards, price, supplier process time, top management support, contract/ relationship with supplier, system training, security, change management, system integration, performance management, and risk are all well addressed and implemented in the company, according to the research's main finding. Using Ethio Telecom as a case study, this study looked at the essential variables that a project manager should be aware of when performing a telecommunication network equipment procurement project in Ethiopia. Several critical success variables were found and ranked from most important to least important. The procurement procedure was also examined, and a new method was proposed.

Keyword: Critical Success factors, Project success, project management, Procurement, Success, Network Equipment, Ethio telecom

CHAPTER ONE: INTRODUCTION

1.1. Background of study

Many businesses and organization have used the project management technique to bring about the change required to accomplish organizational goals and objectives since the mid-nineteenth century. It's impossible to find two project management circumstances that are identical everywhere on the planet. This is largely due to the fact that each project undertaken by a company, whether internal or external, offshore or onshore, is unique and presents its own set of obstacles. Projects are launched with the best of intentions to succeed. Quality and time are also distinct and ever changing due to the complex nature of project activities and the problems involved with managing a project restriction or budget limits. Many projects fail because of poor management of project limitations, even if it does not fully explain why.

Many project management specialists in a variety of industries have made assumptions based on the relevant situation. That if project and line managers can identify what constitute a project success and the factors that determine a successful outcome of a project, they can improve their performance (Erling et al 2006). Identifying the characteristics that can help a project succeed, on the other hand, is tough and time-consuming. (Erling et al 2006) stated that there are no clear proof linking a project success factor and actual project success. Again, different industry sectors have their own perception of success and failure, and what factors can contribute to either.

The most dynamic and inventive sector is information communication technology (ICT). New technologies emerge and compete with one another. Because the telecommunications business, which is a large part of the ICT industry, is constantly at the frontier of technical advancements. Information and communication technology (ICTs) have an impact that goes well beyond productivity improvements as a general-purpose technology. By improving access to essential services, enhancing connection, and offering job possibilities, ICTs operate as a vector of social growth and transformation. ICTs have an impact on how people live, communicate, interact, and connect with one another in these ways (Morcilio, 2016).

ICTs have the potential to revolutionize our economies in a variety of ways. They increase output by lowering transaction and information expenses. They enable new collaboration models that boost worker efficiency and flexibility, allowing for a better work-life balance. (The Global Information Technology Report, 2015).

The telecom business is part of the huge ICT industry that is on the cutting edge. Telecom services are utilized to boost economic growth and social welfare. It is a fundamental instrument for accelerating long-term development. This industry is undergoing a significant shift with far-reaching effects now more than ever before. ICTs have become fully interwoven into modern lives as a result of the development of new and developing technology, the rise of social networks, and changing consumer needs. (Fenote Telecom, 2018; The Global Information Technology Report, 2015).

Telecommunications companies are responding and adapting to the social, economic, and other changes brought on by the rapid advancement of information technology. As part of this sector, the Ethiopian government has given the telecom industry a lot of attention and has embarked on substantial new communications infrastructure and expansion projects. Ethio Telecom Ethiopia's primary telecom provider has executed the Telecom Expansion Program (TEP) in order to become a world-class operator, providing access to telecom infrastructure and services to all Ethiopian residents, providing quality service, and increasing mobile penetration and data users. Fenote Telecom (Fenote Telecom, 2018)

According to Ethiopian telecom's annual report released in February 2018, the country's total subscribers for all telecom services were 59.7 million at the conclusion of the 2009 fiscal year. At the end of the 2009 EFY, there were 58.1 million mobile users, 1.2 million fixed line subscribers, and 16.4 million internet and data subscribers (2017 GC). (Ministry of Communication and Information Technology, 2018; Fenote Telecom, 2018).

As stated in the FDRE Growth and Transformation Plan II (GTP II), significant investments have been made to acquire cutting-edge technology and extend telecom services, not only in terms of technology but also in terms of human resources.

Through vendor financing, Ethio telecom invested in a total of 1.6 billion dollars in various projects. (Fenote Telecom, 2018; Adam, 2012; Federal Democratic Republic of Ethiopia Growth and Transformation Plan II (GTP II)). The projects were performed by Huawei, Zhongxing Telecom Corporation (ZTE), and Ericson companies. To list some of the projects performed and to be performed are construction of main microwave route, 4G expansion, Installation of 14 Rural Telecommunication Systems and Procurement of Power Plant, Air-conditioning and auxiliary equipment, Procurement of telephone apparatus 370 PABXs and other subscriber equipment, Trunk and Junction Network are to list a few (Afdb.org, 2022)

1.2. Statement of the Problem

"According to a 2014 Economist survey, just 56% of all projects were effective in achieving their specified outputs and/or outcomes." (Paul, 2016). Many projects are terminated before they are done, many go over budget and over schedule, and many that are completed are unable to meet the demands of consumers or organizations (Maritta, 2013). For example, Telecom network procurement projects such as (Network expansion, 4G second phase and network security Operation Center) also have delay and Organizational dissatisfaction problems. Based on the preliminary assessment made on the area, the researcher discovers the following projects with one or more problems. To mention HUAWEI Network expansion project which was intended to encompass different modules such as Base Station installation (BS) and Mobile station procurement (MS) delivered with partial output, late arrival and also lacks the required hardware functionalities. Similarly, the 4G second phase Network projects encountered the same problem where on the second phase, some modules delivered six months delayed with lack of Professionals and it's still under construction. (G/Hiwot, 2017).

All those projects that fail not only in our country but also all over the world, causing organizations to lose millions of dollars and Time. Many project management experts have attempted to determine the important aspects that must be addressed head-on in order to generate a successful project management outcome as a result of this ongoing difficulty. There is a lot of literature on critical success variables for specific industrial sectors or country situations, but there is relatively little empirical study on key success factors for specific organizational operational units, such as procurement, network roll-out, and so on. According to (Mobey and Parker ,2002), in order to increase the chances of a project's success, the organization must first understand what the critical success factors are, then systematically and quantitatively assess these critical factors, anticipating potential effects, and finally choose appropriate methods of dealing with them.

A few literatures exist on the important success aspects of project management on a specific phase of the project life cycle, such as risk management, planning, and so on, but procurement management is rarely discussed. This has prompted me to do preliminary study into the most crucial success variables that must be properly handled during Ethio Telecom's telecommunication network equipment procurement project.

Ethiopian telecom projects are challenged by delayed decisions, capacity and skills shortages such as a lack of project development and management experts, a lack of ongoing analysis of

the cost benefits of various investments to correct failures, cultural and language barriers with vendors, and in managing integration issues raised in various projects. (Adam, 2012).

In Ethio telecom, there are no documented critical success factors to follow in order to bring procurement projects to success. As a result, the goal of this study is to identify critical success factors and challenges in network equipment procurement projects, articulate them, and proposes possible solutions for how these projects can be supported to achieve success. The research is conducted in Ethio telecom, with a focus on telecom network equipment projects.

1.3. Research questions

The main research questions in this project work that the researcher wants to answer are

1. What are the critical factors affecting the success of network equipment procurement project?
2. What are the orders of importance of the critical factors?
3. What is Ethio telecom procurement management looks like?

1.4. Research Objective

1.4.1. General objective

The general objective of this research is to identify key telecom network procurement project management success factors that can help project managers succeed in the execution of their projects in telecom network equipment procurement.

1.4.2. Specific objective

The following are the specific goals of this paper: -

- To identify the success factors of Ethio telecom's network equipment procurement projects
- To determine critical success factors in the order of their importance.
- To analyze the existing procurement practice in Ethio Telecom with the standards.

1.5. Scope of the study

The effectiveness of an organization's project implementation is determined by a number of crucial and interconnected elements. As a result, it is critical to consider this and observe the challenges that arise while executing new network equipment procurement initiatives. In

order to assure the success of those projects, the key success criteria should be examined and identified in order to act on them and allow a project to succeed.

This study investigates the empirical relationship between a collection of project CSFs as seen through the eyes of Ethio telecom personnel (officers, Teams and Team Leaders). To accomplish this, the study relied heavily on a literature review and a questionnaire survey. As a result, the purpose of this study is on evaluating the following critical success factors: - "Supplier Process and Time", "Price", "Technological standard", "Relationship with Supplier", "Top Management support", "System training and documentation", "System integration", "Security" "Change management", "Performance measurement" and "Risk" to the successful accomplishment of those project.

Furthermore, the research participants were chosen from the Ethio Telecom Head Office, i.e. 1. Project management, 2. Procurement and 3. Transmission, 4. Network Roll-Out, and 5. Contract management are the core process units responsible for all network equipment procurement projects from planning to implementation, as well as design and bidding the required equipment to installation testing and commissioning. However, data from regional and branch offices was left out of the analysis because this type of acquisition is only done at the main office. A Questionnaire survey was conducted from May 07– June 3, 2022.

1.6. Significance of the study

CSF in network equipment procurement projects are identified in this study, and possible solutions are recommended to Ethiotelecom in order to plan and implement efficient strategies to improve project performance.

The findings of this study will assist Ethiopian telecom in identifying weak points in their network equipment procurement projects. Identifying the issues can assist the company in addressing them, and the outcome can be used to improve future project deliverables. Furthermore, project managers and others involved in project-related activities can be proactive in preparing for identified challenges, paving the way for identifying ways to improve project performance.

Moreover, the analysis that will be presented in this study will convey valuable information for interested researchers to carry out more detail studies in the area and will help them as a starting point to explore the various critical success factors.

1.7. Limitation of the study

In addition to the common limitations such as time, and resources constraints, this preliminary study faced specific drawback such as;

- The research focuses only on Ethio telecom side of the procurement system, it excludes the supplier perspective.
- Difficulty to get feedback on the procurement department performance from suppliers' side. This is due to that the company's procurement department does not have given out due to privacy reasons and each purchase is handled with open Bid procurement system according to the FDRE Public Procurement Law.
- Lack of other telecommunications companies from direct competitors of Ethio Telecom for their inputs.

1.8. Organization of the study

Introduction, background, objectives, scope, and relevance of the Critical success factors: telecommunication network equipment procurement projects are the first chapter of the project work. The review of related literature to the topic is defined in Chapter 2. The third chapter addressed the study's methods and approach. Chapter four describes the study's results and discussion, while Chapter Five presents a conclusion and recommendation based on the previous chapter's results and discussion.

CHAPTER TWO: REVIEW OF LITERATURES

The dynamic nature of the business environment, as well as political and social uncertainties, rapid technological advancements, financial market instability, budgetary constraints, and development challenges, make it extremely difficult for project managers to achieve the desired results when executing projects.

In all industry sectors, project management is now more challenging than previously anticipated, making it far more difficult and complex to define the phrase "SUCCESS." Because of the enormous changes that project managers confront throughout their project execution, the factors used to determine success are much more uncertain. According to (Salleh 2009), the study of project success or failure and critical success factors is a means of gaining a better knowledge of the project management process and making improvements to it.

This section will examine the literature to gain a better knowledge and explanation of crucial project success variables. Project success factors, critical success elements, and procurement management will all be covered in the literature study.

2.1. Theoretical Review

2.1.1. Project Success

The term "project success" can be defined in a variety of ways, (Salleh 2009). PMBOK 4th edition (2008) stated that a project is successful if it achieves the triple objective outcome of within time, scope, and quality. According to Munns and Bjeirmi, this is the traditional approach of project management. It entails meeting time, cost, and quality targets, as well as the project's overall quality, according to (Erling et al 2006). Whereas (Turner 2004) identifies on time, within budget and to specification especially for information technology projects as the standard for judging success. (Erling et al 2006) stated that overall project success deals with the wider and longer term impact of the project, which means both project management success and project product success.

(Erling et al 2006) stated that overall project success deals with the wider and longer term impact of the project, which means both project management success and project product success. They noted that project management can be determined at the end of the project, which means in many cases, success criteria will be determine months or years after finishing the project, especially public projects. Hence, determining if a project is successful is difficult if viewed from the above two success criteria, (Erling et al 2006).

However, (Lim and Mohamed 1999) project managers should not only evaluate project success as the completion of some defined project goals, such as time, cost, performance, quality, and safety, but also users who do not have similar predetermined project goals at all. As a result, everyone's expectations for the project's end and judgment of project success or failure would be different. The literature reviewed above supports (Steinfort's 2011, p.3) conclusion that "success needs to be investigated from the perspective of active project team stakeholders as well as from that of their client/benefit recipients and in the theoretical and empirical/practical review of critical success criteria and factors on any project". Furthermore, critical success factors (CSFs) are components of project success, according to (Müller and Turner 2012). Project success refers to the dependent variables (principles, measures, and standards) that assess and evaluate the successful outcome of a project, whereas project success factors are the independent elements of a project (a set of conditions, facts and elements) that can increase the likelihood of success.

2.1.2. Critical success factors (CSFs)

Over the years, numerous researches has been undertaken to discover which project management success criteria influence success. (Fortune and White 2006) stated that there is a distinct lack of agreement among researchers and authors about the factors that influence project success. (Baccarini, 1999) and (Liu and walker, 1998) agree that defining critical success factors for a project is contentious and intricate. (Daniel 2009) created the concept of critical success elements in his work on how to manage information system crises, and (Rockart 2014) expanded on his work by identifying the usage of key success factors to build competitive advantage. Critical success factors are a group of project variables or elements that are significantly linked to project success and lead to project success when these variables are managed well.

According to (Remus 2007), the strength of vital success elements comes from their discovery and validation through collaboration with senior management teams and other teams close to the work on how to involve and focus on key design characteristics for success. (Zwikael and Globerson 2006) describe critical success factors are the main reasons responsible for project failure or success. They identified that project failure is still very high because critical success factors are rarely specific enough for project managers to act on. Critical success factors are the primary causes of project failure or success. They observed that project failure is extremely common because essential success criteria are rarely explicit enough for project managers to act on. (Erling et al 2006) defined critical success factors as

"those features which have been identified as necessary to be achieved in order to create excellent results: if the critical success factors are not present or taken into consideration, one can largely expect that problems will be experienced which act as barriers to overall successful outcome".

(Anderson and Jessen 2000) stressed the need to separate the actual task and people oriented issues while evaluating project results. They identified crucial success variables using a step-by-step structure that reflected project growth. Scope (project mission and goals, terms of reference), planning (global planning, detailed planning), execution (activities, choices), and control were all covered (financial and technical control, internal and external communication).

The important success criteria were divided into four categories by (Belassi and Turkel 1996): The project (scale, uniqueness, urgency, etc.), the organization (structure, management support), the external environment (technical, financial, political), and the project manager and his team (background, skills, experience etc.) are all factors to consider. (Cooper and Klienschmidt 1996) focused on the identification of critical success factors for new product development, including a defined strategy and adequate research and development spending.

(Barbara 2010) used a People were identified as essential success variables for projects using a multi-method approach, and they were classed as: (right mix of people, in terms of skill-based, role, and the type of people), Process (short timeframe, tight deadline, time for celebration, practice run), Task (meaningful and real, well-defined, client accessible), and Location (appropriate venues with range of facilities). (Lester 1998) discovered a new set of important success characteristics, including senior management commitment, organizational structure, and risk management.

The advantages of identifying CSFs are their simplicity, ability to focus attention on significant concerns, ease of communication with colleagues, ease of monitoring, and frequent usage in conjunction with strategic planning approaches. Critical success elements are used extensively to describe or define a few major characteristics in which firms might focus in order to attain success.

2.1.3. Critical success factors for Procurement Projects.

(Zhu et al 2009, p. 1) stated that: "In the trend of convergence and transformation, telecom companies are presenting more investment demand for updating networks or deployment new technologies, and that will need more equipment procurements; result in large amount of

procurement costs. Then how to optimize procurement decisions to reduce relative costs is critical for telecom companies' development, especially in the circumstance of financial crisis."

Procurement management within and as a project has been written about in the (PMBOK 2008), (Kerzner 2009), and other literatures. A summary of a few literatures on important success elements for procurement projects is provided below:

Table 1. Critical success factors from selected literatures

No.	Study	Context	Identified CSF
1	Khanapuri et al (2014)	Factors that can provide impetus to e-procurement implementation in India	1. Cost savings 2. Centralization of procurement 3. Re-engineering of process 4. Budgetary control 5. Supplier management 6. Change management
2	Klafft (2009)	Success factors and technology acceptance	Trust-building measures for partners
3	Vaidya et al (2016)	Evaluation of e-GP CSFs from implementation and project outcome perspective	1. Security and authentication 2. Systems and technology 3. Supplier adoption 4. Technological standards 5. User uptake and training 6. System integration 7. Top management support 8. Business case/project mgt 9. Change management 10. Re- engineering of the process 11. Performance measurement

2.2. Empirical study

The fact that their opinions of success or failure differed is a basic difficulty in procurement project evaluation (Maritta, 2013). According to (Kingsley 2012), the criteria for measuring success are executing projects on schedule, under budget, and to specification, especially for information technology initiatives. Combining project management ideology and techniques with information technology procurement throughout the implementation of procurement projects is highly important for achieving network equipment projects, according to (Athar et al 2013). Many elements influence the performance of network equipment initiatives, and it's crucial to identify the most significant ones.

Project critical success factors were regrouped into four groups by (Steinfort and Walker 2011, pp. 11-12). The suggested groups are: 1) leadership factors (project mission, top management support, communication), and 2) stakeholder involvement factors (client consultation, communication, client acceptance) 3) operational planning and control factors (project schedules/plans, monitoring and feedback, troubleshooting), and 4) technical expertise factors (personnel, technical task, troubleshooting).

Another study of Critical Success Factors Influencing the Performance of Development Projects in Kenya was conducted by (Christopher and Debadyuti 2015), who used a similar approach of grouping critical success factors into six categories. They claimed that project-related, client-related, consultant-related, contractor-related, supply chain-related, and external environment-related factors all play a role in the success of development projects. According to the study's empirical findings and subsequent analyses, the project-related factor is the most important, followed by the client-related factor, and the contractor-related factor is the least important.

(Ofori, 2013) used an exploratory approach to conduct research in Ghana, identifying and analyzing the quality of project management practices and critical success factors for projects. When analyzing the study's findings, he divided the critical success factors into two categories: factors that hinder project success and factors that promote project success. Lack of support/finance; lack of communication; lack of coordination and commitment; lack of experienced and competent personnel; high bureaucracy in government institutions; and lack of consultation with stakeholders are among the factors preventing the project's success. Effective communication, coordination, and commitment; top management support; effective

planning; having experienced and competent project personnel; teamwork; and good leadership were found to be factors that facilitate project success.

Lavagnon, Amadou, and Denis used an interpretive approach in their study to look at project success factors for World Bank-sponsored projects using a questionnaire and unstructured data collection interviews. The study also sought to determine the relationship between critical success factors (CSFs) and project success as perceived by Task Team Leaders (project supervisors). According to the study's statistical findings, there is a positive relationship between project success and five identified CSFs. The five CSFs are monitoring, teamwork, architecture, preparation, and the institutional environment. According to the study, the most important CSFs for project supervisors are design and monitoring (avagnon, Amadou, and Denis, 2011).

Researchers conducted by (Bethlehem 2019) CSFs were the subject of one of the most recent Ethiopian studies. Client objectives, client core competency, project team leader's performance, project management actions, economic environment, and physical environment were all identified as critical success factors in the context of real estate development projects in Addis Ababa, according to her research. Project management actions, project team leader performance, and client core competency were found to have a strong positive relationship with real estate development project success among the critical success factors.

Similarly, (Mamaru, Dr. Ing-Esayas & Sintayehu Assefa's 2016) study sought to research The Case of Bole Sub City, Addis Ababa's Major Success Factors in Building Construction Project manager's leadership skills; project clear objective; adequacy of funding; decision-making effectiveness; project monitoring; project manager's commitment to satisfy quality, cost, and time; project manager's early and continued involvement within the project; contractor's cash flow; Site management; project manager's coordination ability and rapport with contractors/subcontractors; project manager's authority to form a financial decision, sel A project manager's organizational skills are among the top ten most important success factors on a construction project in Bole Sub City, according to their importance in completing projects successfully.

(Stefani 2017) thesis is another Ethiopian study focused on CSFs. The study was conducted to determine critical success criteria for Ethiopian Airlines' cargo terminal expansion projects. The main CSFs that have an impact on project success, according to the findings, are: "Project objective," "Top management support," "Project scheduling and planning,"

"Resource," "Monitoring, evaluation, and feedback," "Technical competency," and "Communication."

Based on a review of the literature, the researcher has come to the conclusion that there is no coherent CSF structure. Instead, different perspectives on what constitutes CSFs exist depending on the project type and how researchers describe and define them. The unique nature of projects, according to Yang, Shen, and Ho (2009), means that critical success factors identified in one project cannot be directly transferred to another. Furthermore, the success factors are typically listed as either very general factors or very specific factors that only affect a specific project. However, the lack of a comprehensive list makes it difficult for project managers and researchers to assess projects using these criteria.

As a result, the researcher classified CSFs into eleven factors in this study after conducting a thorough review of previous literature in order to identify a number of factors that influence the success of various projects.

2.2.1. Critical success factors of network procurement projects

The importance of procurement and related factors in project success cannot be overstated. The project's acquisition method is critical to project success, as it leads to problems obtaining necessary equipment and equipment delivered with incorrect specifications (Imran Mehmood, 2017). As a result, the researcher identified eleven widely recognized procurement-related success factors from various literatures.

A. **Top Management Support**: The most critical aspect for project management success is top management, which controls the resources and has the decision-making authority. Because of their authority and influence, top management support is one of the most crucial criteria for the success of network procurement, particularly IT projects (Athar et al, 2013; Dong, Chuah and Zhai, 2004; Morcilio, 2016). This aspect is critical for guaranteeing a long-term corporate vision, top-level engagement among users, and other connected departments, all of which are necessary for effective implementation (Standish Group, 1995).
B. **Team Capability**: Human resources are used to complete a project. It is hard to expect a project to succeed without them. Having a capable project team is critical to the success of this type of endeavor (Athar et al, 2013; Dong, Chuah and Zhai, 2004). Because IT projects have a global scope, team skill is a vital success component. Multi-dimensional talents are required of IT employees and other involved

departments. The team should include technical personnel as well as employees who are familiar with the company's operations. One of the most significant components in achieving success is the IT team's multifaceted nature.

C. **Technological standards**: (Panda and Sahu 2012) recognized the following sub-factors as critical in selecting new technology: content standards, technical standards, interoperability, process and procedural standards, and conformity with the standards framework. New product advancements that outperform prior ones are being produced. The equipment must be up to date and trending, with suitable technical standards and decent content.

D. **Training:** Managers, personnel, and end-users should all get training to ensure the project's success. It was also discovered that educating users and employees of the company increases their trust in the equipment, which impacts their views about the system. User training early in the project's procurement process can also aid in the development of a better knowledge base. (Athar et al., 2013). Good training will decrease the time spent studying the handbook in order to use the device efficiently. According to (Panda and Sahu 2012), the primary challenges to consider are: training and learning how to use new equipment, Creating in-house training as well as continuous learning and training

E. **Risk:** A project related with this project that is unique in nature is bound to failure. As a result, risk management is seen as a project success component. Risk management that is proactive can assist to reduce and prevent dangers (Morcilio, 2016). And in most equipment carry a risk part. Ability to withstand environmental and other risk factors will also influence the procurement of that equipment.

F. **Project Change /change management**: Any changes made after the requirement determination has an impact on the project scope, goals, and planning. The majority of project specs change as the project develops. Change control and management are crucial to a project's success during implementation. When it comes to IT or network equipment initiatives, the issue of transition is particularly acute. A formal change management system is an important component of a configuration management system. Scope creep occurs unless scope change control is implemented (Dong, Chuah and Zhai, 2004). Users must also be able to switch and adapt to the new piece

of equipment successfully. Users will find it difficult to adapt to the shift in new technology if the equipment is too tough to grasp, and a good feedback mechanism and help desk will assist. As a result, it's critical to identify and move possible barriers, essential players, and manage organizational opposition.

G. **Relationship with supply/ relationship management**: The methodical process to analyzing vendors that supply the needed products and services to the network buying organization, establishing each supplier's contribution to success, and devising measures to enhance their performance is utilized as a metric for project success. (Akineda, 2016; Dong, Chuah and Zhai, 2004).

H. **System Integration**: The capacity of a piece of equipment to connect with current systems in real time is critical. Otherwise, income is lost due to wasted time configuring the system. It takes into consideration sending and receiving information in real time with other systems, information matching, and so on.

I. **Security:** The security and dependability of equipment are critical in assuring the protection of data and hardware. Reliability requires good security controls, technological safety, software and hardware reliability, and countermeasures.

J. **Supply process**: In procurement projects, procurement time is a crucial component. It has a number of related issues that must be resolved, including lead time, appropriate packaging, insurance coverage, customs requirements, project schedule delivery deadlines, and more. The timing of the procurement must match the schedule and plan for the larger project as a whole. Different order processes exist at suppliers, most of which diverge from those at customers. It's critical that the equipment's delivery schedule fits with the overall project schedule. There are many different equipment suppliers around the world, and delivery times vary as well.

K. **Price**: The PMBOK 4th edition states that organizations use various pricing strategies to obtain good value. There will typically be a trade-off between quality, quantity, and price in procurement, but it also depends on the circumstances and situation at hand. The challenge is finding a good trade-off while getting great value for your money.

CHAPTER THREE: RESEARCH DESIGN AND METHDOLOGY

The chapter involves the methodology that has been used in the research study. The study comprises the research approach, research strategies, research design, research techniques, target population, sampling techniques, sampling unit, data collection tools, data analysis data presentation, and ethical consideration along with an appropriate justification.

3.1. Research Approach

The research approach is a plan and procedure that consists of the steps of broad assumptions to detailed methods of data collection, analysis, and interpretation. It is, therefore, based on the nature of the research problem being addressed. In order to discover the important success criteria for a telecommunication network equipment procurement project management i have used different research approach which i think suits my research. Firstly, we have selected the sampling technique called criterion sampling technique. We have gathered the information we have used in the research from both primary and secondary data collection methods. Our Primary data sources include; questionnaires. While the secondary data sources include, books, journals, articles, web pages and literature Reviews. To measure the internal consistency used Cronbach's alpha, Cronbach's alpha is a coefficient (a value between 0 and 1) that is used to determine the homogeneity or correlation of items in a questionnaire. It is more trustworthy if the reliability test result is near to the value one.

Qualitative research is a method of investigating and understanding the meaning of individuals or groups in relation to a social or human problem. In process research, new questions and processes emerge, data is typically acquired in the participatory context, data is analyzed inductively, progressing from specifics to broad themes, and the researcher interprets the findings. Because this technique emphasizes a knowledge and interpretation of meanings as well as intentions comprehending human interaction, it is oriented in accordance with the methodology.

3.2. Research design

The research design is the overall strategy we choose to bring the different study components together logically and coherently, ensuring that we will successfully address the research problem. It acts as a roadmap for gathering, measuring, and analyzing data.

The methodology employed to identify the critical success factors that are prevalent in Ethiotelecom procurement projects. So the researcher choses a Descriptive research, Descriptive research design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation, or population. More specifically, it helps answer the what, when, where, and how questions regarding the research problem, rather than the why.

3.3. Research Method

Because they provide a quick, effective, and affordable way to gather a lot of data from any sample sizes, questionnaires are a common research approach. These instruments work particularly well for gauging the attitudes, preferences, intentions, and behavior of the subjects.

The data needed for this research was collected using both primary and secondary sources of data. the interview schedules contained mostly open ended questions to get elaborated information about the organizations role and researcher used qualitative case study method which enables a complex phenomenon to be explored through the identification of different factors.

3.4. Sampling Technique and Sample size

In this research 5 departments was chosen according to the criteria we set. And from these 5 departments we have selected all 21 of them that fulfill the criteria we have set to help get reliable information in order to reach our objective. This research used a criterion sampling technique which is a type of non-probability sampling technique .Criterion sampling involves the selection of sample based on some pre-established criteria This criteria is of importance to the research in most significant way. This kind of sampling helps researcher study a very specific or narrow criteria and understand the implications of it. These criteria's are

A. Within the last three years, has been involved in procurement project management
B. The respondent is involved in the network equipment procurement process at least once.
C. The sample's current state and previous experience and must be Currently employed by Ethiotelecom..
D. The following departments provided representatives:
    1. Project management
    2. Procurement

3. Transmission
4. Network Roll-Out
5. Contract management

3.5. Data Collection Method

There are two basic techniques of gathering information on a scenario, person, problem, or phenomenon, according to (Kumar, 2019). In most cases, we need to acquire the essential information when conducting a research study; however, we have used both primary and secondary data collection

3.5.1. Questioners Design

The questionnaire is designed to be clear and straightforward so that respondents can understand what is expected of them. There are three sections to the questionnaire:

a. Personal Data: This section contains general information about the respondent's background.
b. Critical Success factors for projects: This section looks into the essential success elements identified by the responder.
c. Ranking of critical success elements: Respondents use a 10-point Likert scales to rate the factors they've identified since 10-point Likert scale increases accuracy. For both survey administrators and respondents, the 10-point Likert scale is straightforward to comprehend and use. Higher-point scales need more time and effort to finish. Since this survey is completed on an electronic device, it is more compatible with most digital device screens than higher-point scales. Respondents have a variety of options without feeling overwhelmed.

3.5.2. Survey Procedure

Because of the reasons outlined in the methodology, as well as the business nature of respondents' schedules, the questionnaire is sent through an email digital platform. According to (Bryman and Bell 2015), there is increasing evidence that the response rate of online surveys is increasing and that getting responses from respondents takes less time. Despite the fact that internet availability in Ethiopia is still limited, the majority of respondents have time at work to complete questionnaires and internet access at home to do so in their spare time. Respondents are more willing to open a webpage than to talk on the phone to complete a survey, so using electronic mail to complete questionnaires is cost-effective and produces quick results.

The survey procedure is as followed

1. Determine who will participate in the survey.
2. Decide the type of survey (mail, online, or in-person)
3. Design the survey questions and layout.
4. Distribute the survey.
5. Analyze the responses.

3.5.3. Data Collected

Table 2 No of Respondent from Ethio Telecom

No.	Department	No. Respondent
1.	Project management	5
2.	Procurement	8
3.	Transmission	3
4.	Core network	3
5.	Contract management	2
	Total	21

3.6. Data Source and Types

When deciding on the kind and source of the data to be utilized for the analysis, it is clear that two types of data, primary and secondary, are considered (Zikmund, 2003). Primary data are those that are collected for the first time and/or are new and thus unique. Secondary data, on the other hand, are those that have already been collected by someone else and have gone through a statistical process (Kothari, 2016). Many factors must be considered when choosing a technique, including resource availability, creditability, Review and reporting, and the evaluator's ability to choose a method (Zikmund, 2003). In order to substantiate the study with relevant information and evidence, both primary and secondary data source is used in this analysis through questionnaires and case studies.

3.7. Data Analysis Method

A Descriptive analysis method is implied it seeks to respond to the query, "What happened? This is accomplished by organizing, modifying, and interpreting unprocessed data from diverse sources to produce insightful data that is beneficial to the research. Descriptive analysis is crucial because it enables us to communicate our findings in an impactful manner. Although it is important to note that this analysis by itself cannot provide answers to

questions like why something happened or make predictions for the future, it will organize your data and make it ready for further research.

Frequency analysis was used to examine the data and frequency histograms were used to illustrate it. Because of the nature of the data and to make it easy to analyze and understand, this method was chosen.

3.8. Data Reliability

"It is the constancy of measurement," is a popular definition of dependability (Babbie, 2003; McMillan & Schumacher, 2001). The data for this study was gathered from the above organization and differs from person to person depending on personal experience and work kind. The Cronbach alpha value was obtained using SPSS to assess the data's reliability.

Cronbach's alpha is a coefficient (a value between 0 and 1) that is used to determine the homogeneity or correlation of items in a questionnaire. It is more trustworthy if the reliability test result is near to the value one. The items are most likely measuring the same construct, and this is the best outcome. Cronbach's alpha is an internal consistency estimate of test item reliability that increases as the inter correlations between the test items grow. If the correlation between test items is near to zero, the test items are most likely measuring separate attributes (Tavakol & Dennick, 2011).

Reliability Statistics

Cronbach's Alpha	N of Items
,785	11

Table 3. Cronback's reliability statistics

3.9. Ethical Consideration

As a result, in order to ensure the research's unanimity, the study's details and goals were revealed. And the researcher told the participants that they had to actively participate in the study. Furthermore, the researcher assured the respondents that their names, positions, and personal information would not be disclosed.

As a result, to secure the consensus of the research, the study communicated the details and the aims of the study. And the researcher stated to the participants that they have to participate in the research willingly. Moreover, the researcher will ensure to the respondents were not to disclose their names, position and personal information.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

Analysis of the characteristics of the population involved in network procurement projects is done using the demographic data. The following tables provide a summary of the project implementers' profiles who are involved in Ethio Telecom network procurement projects.

Profile of Network equipment procurement Project Implementers

Table 4 Gender of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	13	61.9	61.9	61.9
	Female	8	38.1	38.1	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

Table 5 Age of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 25 Years	1	4.8	4.8	4.8
	26 - 35 Years	5	23.8	23.8	28.6
	36 - 45 Years	12	57.1	57.1	85.7
	More than 46 Years	3	14.3	14.3	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

Table 6 Educational Qualification of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor’s degree	17	81.0	81.0	81.0
	Post Graduate Degree	4	19.0	19.0	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

According to the above table 81 percent of respondents have a bachelor's degree, and the remaining respondents have postgraduate degrees. The outcome demonstrates that the respondents are able to comprehend project management principles and can apply them to a project with the project manager's help.

Table 7 Experience in projects of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 2 Years	3	14.3	14.3	14.3
	3 - 4 Years	9	42.9	42.9	57.1
	More than 5 Years	9	42.9	42.9	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

In terms of exposure to project work, 85.8% of project implementers have more than 5 years of project-related work experience. Even though projects are dynamic in nature and the participants' working environment changes frequently, the training and experience they have gained enable them to adapt to shifting project circumstances.

Table 8 Position in the Organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Staff	5	23.8	23.8	23.8
	Project Management	3	14.3	14.3	38.1
	Management	13	61.9	61.9	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

Table 9 Service Year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 3 Years	1	4.8	4.8	4.8
	4 - 7 Years	14	66.7	66.7	71.4
	8 -10 Years	6	28.6	28.6	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

It can be inferred from the above table that 95,3% of survey respondents had more than three years of work experience in ethio telecom. They had the chance to learn about the operation of the systems and the connections that exist between them thanks to this.

Table 10 Project management training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	66.7	66.7	66.7
	No	7	33.3	33.3	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

In terms of project management training for employees, Table 10 above reveals that 7 (33.3 percent) of the total respondents have not participated in any project management training, while 14 (66.7 percent) of the total respondents have. According to the results, the respondents appear to have received adequate project management training.

Table 11 Department Involved

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project management	5	23.8	23.8	23.8
	Procurement	8	38.1	38.1	61.9
	Transmission	6	28.6	28.6	90.5
	Contract management	2	9.5	9.5	100.0
	Total	21	100.0	100.0	

Source: Survey Data 2022

The results showed that of the departments involved in the respondents, 5 (23.8%) were from project management, 8 (38.1%) were from the procurement department, 6 (28.6%) were from transmission, and 2 (9.5%) were from contract management.

4.1. Research Findings

4.1.1. **Ethio Telecom Current Procurement Process showing Departments involved.**

In a company like Ethio Telecom, a network equipment purchase project necessitates the collaboration of various divisions. This varies each project and depends on which department needs the equipment. However, the basic procedure stays the same. The flowchart below depicts the current Ethio Telecom Base Station equipment procurement procedure as well as the departments involved.

The departments involve includes:

1. Finance
2. Top management
3. Procurement
4. Network Roll-Out
5. Project Support Office
6. Logistic(Optional)

A. **Finance:** Gather transaction data from procurement and process the supplier's invoice (s). Working on budget concerns with management.
B. **Top management:** Review the procurement request, including the organization's budget, if the project is in accordance with existing strategy, and any other needs, before approving or rejecting it.
C. **Network Roll-Out:** Define the equipment specifications, quality, and kind, as well as where it will be needed, in accordance with the current network structure.
D. Procurement:
    1. Gather and examine the network roll-out team's specs.
    2. Make contact with vendors and send out a Request for Quote (RFQ),
    3. Carry out the supplier selection procedure.
    4. Conduct a thorough review of the RFQ and inform the user department.
    5. Make a purchase from the provider for the real equipment.

E. **Project Support Office:** Acts as a project office, coordinating all projects, providing project plans for each project, and working with management to ensure that each project follows current management strategy.
F. **Logistic:** Supplies are received, their status is verified with procurement, and inventory is managed.

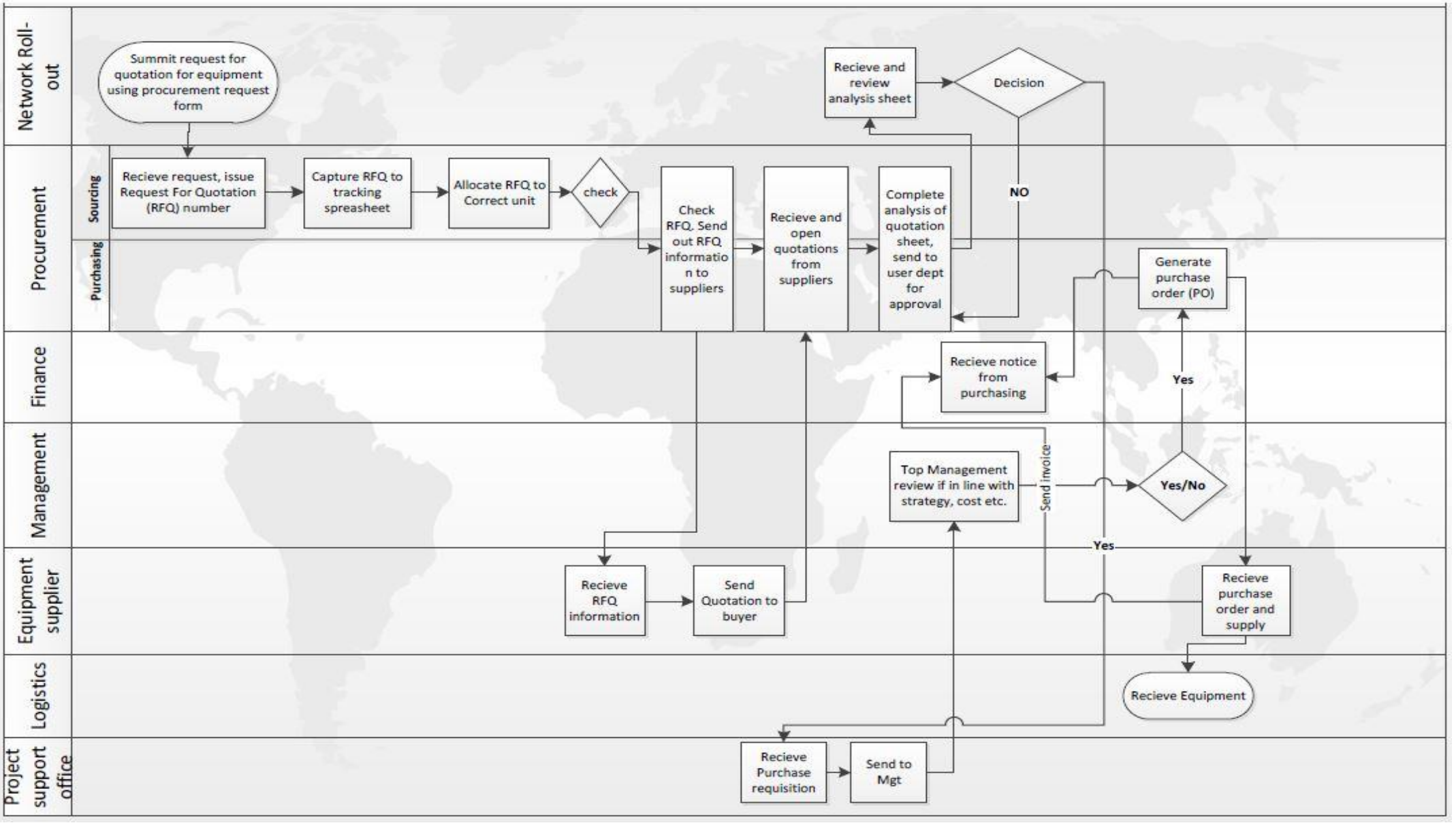

Figure 1 Base Station Equipment Procurement Process for Ethio Telecom, (showing the Departments Involved)

4.1.2. **Ethio Telecom procurement projects Critical success factors**

The important success elements for a project are the essential ingredients for its success. Many writers have written in the literature review about the necessity of identifying project crucial success elements; if the factors are managed correctly, the project's chances of success are quite high.

Many essential success elements for network equipment procurement initiatives have been found by Ethio Telecom, and they are mentioned below:

1. Supplier Process and Time
2. Price
3. Technological standard
4. Relationship with Supplier
5. Top Management support
6. System training and documentation
7. System integration
8. Security
9. Change management
10. Performance measurement
11. Risk

The survey respondents were asked to rate the criteria, with 1 being the most important (Highest) aspect to consider in equipment acquisition initiatives. The end result is as follows:

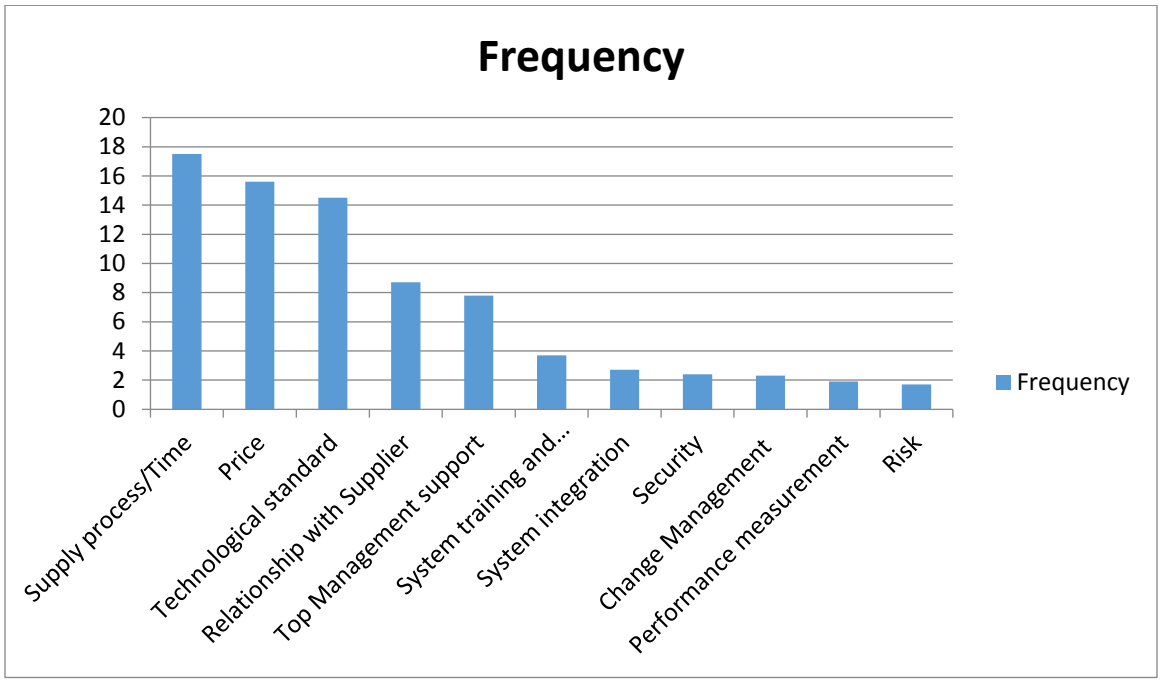

Figure 2 Ethio Telecom critical success factors ranking.

4.1.3. **PMBOK procurement Model**

The PMBOK 4th edition was chosen as a benchmark for the procurement process employed by Ethio Telecom in the study methodology. The model for procurement process management advocated by PMBOK is shown in Figure 3 below.

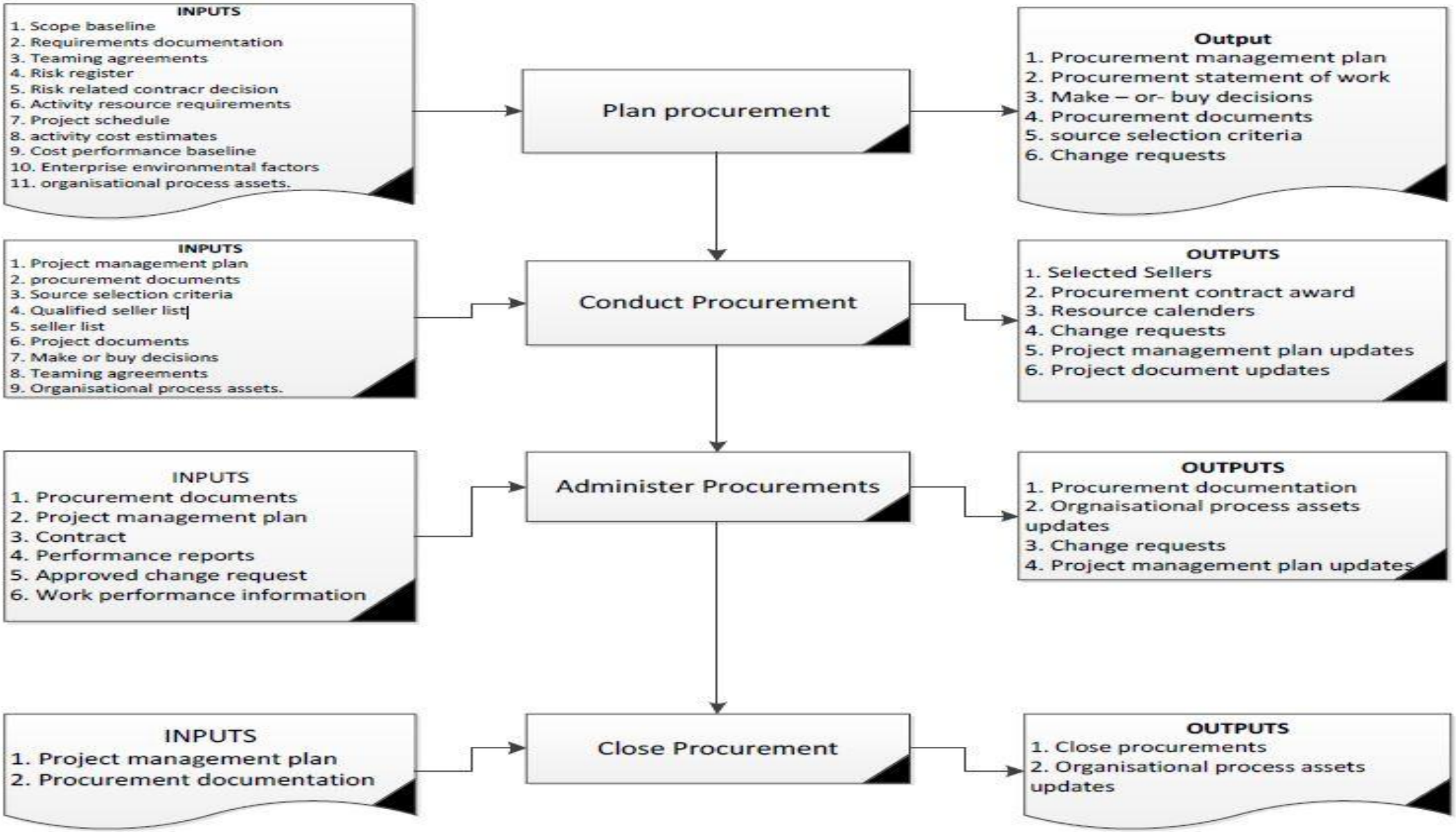

Figure 3 Project procurement management method Source, PMBOk 4th Edition

4.2. Analysis of Research Findings

In many ways, Ethiopia's business climate is unusual and challenging. Divergent commercial and environmental forces put strain on many organizations. One of them is Ethio Telecom. Their procurement process, as seen above, is meticulously designed to fulfill the PMBOK's principles while taking into account the local business climate. Due to lack of other telecoms companies we cannot identify important success elements in their point of view. The goal of the study is to determine, from Ethio Telecom's perspective, the essential success elements that a project manager should keep an eye on when executing an equipment procurement project, and to rank them in order of significance.

Critical Success Factors (CSFs) from Ethio Telecom View	Their Ranking (1 = Top Most)
Supplier Process/Time	1
Price	2
Technology Standard	3
Top management support	4
Contract / Relationship with supplier	5
System training/documentation	6
Security	7
Change management	8
System Integration	9
Performance management	10
Risk	11

Table 12 Ethio Telecom ranking of Critical Success Factors

A. Supplier Process/Time: "Delivery time is defined as the time it takes from the originating supplier in the supply network receiving an order to the ultimate customer in the supply network receiving the goods ordered." The exterior (distribution and transportation) timings obtained at various levels of the supply network are added to the internal (manufacturing and processing) times at each stage."

In procurement initiatives, procurement time is a significant component. It entails addressing a number of sub-factors, such as lead time, correct packaging, insurance coverage, customs requirements; project schedule needed delivery dates, and so on. Because procurement initiatives are typically sub-projects of larger projects, the supplier procedure and delivery time are the most important factors for Ethio Telecom. As a result, the procurement schedule and plan must match the overall project timeline and plan. Suppliers have their own order procedures, which are usually distinct from those of customers. The bought equipment's delivery timing must coincide with the overall project schedule. Equipment providers are spread around the globe, and delivery times vary.

B. Price: "In fact, when constructing an IT network, around 20% of the budget goes to hardware acquisition and 80% goes to running expenditures." However, saving 20% up front might be more than compensated by increases in the remaining 80% if there are greater integration expenses, more downtime, or major security breaches, for example. The network that you thought was "good enough" for your present company needs might not be "good enough" for your future ones.

Organizations utilize many pricing approaches to produce good value, according to the PMBOK 4th edition. However, depending on the circumstances and condition, there will almost always be a trade-off in procurement between quality, quantity, and price. The challenge is balancing the trade-off while getting excellent value for money. This rivalry in communications corporations is exemplified by the above statement. Naturally, businesses desire a high-quality product at a lower cost. Organizations who can provide items at a lower cost while maintaining high quality will earn a significant market share. To get a better price for their equipment, Ethio Telecom employs request for quotation (RFQ) and other means. This is the second most important consideration.

C. Technology Standard: "Technology may help mobile network projects succeed, and ignoring these variables can lead to issues including lack of flexibility, synchronization, and local decision-making power ... The success or failure of mobile network initiatives can be explained by effective technology choices. Strategic and functional viewpoints are considered while making technological decisions. From a strategic standpoint, decisions are made based on the degree of process transformation and change of existing firm practices. However, from a functional standpoint, decisions are made based on technological criteria.

The architecture (data-based or voice-based), software and its packaging, wireless network, and mobile devices are all technical choices."

Content standards, technical standards, interoperability, process and procedural standards, and compliance with the standards framework are all important variables to consider when choosing new technology, according to (Panda and Sahu 2012). New product innovations are being produced that perform better than prior models. The equipment must meet current standards and trends, as well as be of acceptable technical quality and have good content. Have a user-friendly and long-lasting interface design. Ethio Telecom focuses on new technical breakthroughs in network equipment to fulfill consumer demand and outperform the competition. These innovations will suit current organizational and customer expectations.

D. Top Management support: Ethio Telecom has a vertical management structure. Because the budget for procuring equipment is always huge, decisions must often be signed – off by high management. Top management is in charge of formulating the organization's goals and objectives, as well as leading those goals toward achievement. Any equipment purchase requires managerial support; else, the project will fail. As a result, the success of any equipment purchase effort is heavily reliant on senior management's backing. (Panda and Sahu 2012) suggested more sub-factors to evaluate.

1. Approval from top management
2. Allocation of appropriate resources
3. Identification of the project as top priority
4. Understanding of the capabilities and limitations of the equipment
5. Alignment with business strategy
6. Establishment of appropriate work culture

E. Contract/relationship with supplier: A good procurement process includes developing strong relationships with suppliers. Ethio Telecom has developed strong relationships with certain original equipment manufacturers over the last year, particularly Ericsson of Sweden and Huawei of China. They have existing contracts with some suppliers for a specific period of time. This connection allows Ethio Telecom to have faith in the supplier based on prior performance, technical competency, equipment quality, and other factors, and existing contracts tie suppliers to particular criteria as agreed, even if the business climate changes.

F. System training and documentation: Supplier documentation and user training are critical for optimal equipment operation and maintenance in the long run. The degree of training imposed on end users has a significant influence on the adoption of new technology. Good training will cut down on the time spent studying the handbook in order to get the most out of the equipment. According to (Panda and Sahu 2012), the most important aspects to consider are:

1. A supportive environment
2. Creating in-house training
3. Investing in intellectual capital
4. Learning new equipment and receiving training
5. Ongoing education and training

G. Security: Equipment's security and alpha are critical in ensuring that data and hardware are secured. For dependability, good security controls, technological safety, software and hardware reliability, and countermeasures are required.

H. Change Management: Change management is critical for users to successfully convert to and adapt to new equipment. Users will find it difficult to adapt to the shift in new technology if the equipment is too tough to grasp, and a good feedback mechanism and help desk will assist. As a result, it's critical to identify and move possible barriers, essential players, and manage organizational opposition.

I. System Integration: Ethio Telecom places a premium on equipment's ability to integrate with current systems in real time. Otherwise, income is lost due to wasted time spent configuring the system. Information matching, sending and receiving information in real time with other systems, and so on are all considered.

J. Performance management: For capability measurement, objectives and targets, baseline measurement, key performance indicators (KPI), and progress monitoring, measuring the performance of equipment is required. Ethio Telecom values the simplicity with which a system's performance may be assessed.

K. Risk: Most equipment has a risk component. The equipment's ability to endure environmental and other risk variables will also impact its purchase.

Ethio Telecoms Project Success Model

Pinto and Slevin (1987) developed a project management success model that may be used to a variety of situations based on the variable of interest. They expressed the model mathematically as:

$$S = f (X_1, X2, X3, X4 \ldots X_N)$$

Where S = Success Factor

X_i = Critical success factor i.

When the aforementioned model is applied to the example of Ethio Telecoms, the following model emerges:

$$PS = (X_{ts}, X_{sp/t}, X_{pr}, X_{cs/r}, X_{st/d}, X_{tm}, X_{si}, X_{sc}, X_{cm}, X_{pm}, X_{rk})$$

Where PS = Project Success.

TS=Technological standards

SP/T=Supply Process/Time

PR=Price

CS/R=Contract with supplier/relationship

ST/D=System Training/Documentation

RK=Risk

TM=Top management

SC=Security

SI=System Integration

PM=Performance measurement

CM=Change management

To determine individual factor contributions to project performance, the above model may be evaluated and measured using good software. This is a topic that needs more investigation and is outside the scope of this Project Work.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

The goal of this project from the start was to determine the criteria that a project manager in Ethio Telecom needs to know while conducting a network equipment procurement project. This goal was accomplished. Ethio Telecom sees procurement management as a key part of project management. It's worth noting that procurement management in Ethio Telecom is managed with extreme secrecy and is utilized as a competitive advantage tool. As a result, the majority of the data gathered is kept strictly secret. The most challenging aspect of this project was getting responders to fill out surveys.

Nonetheless, the Ethio Telecom Procurement Process follows to the PMBOK recommendation of planning, conducting, administering, and closing procurement. The majority of those contacted have a Project Management Professional (PMP) certification, making it simple for them to learn project management from the ground up. The procurement procedure, as seen in Figure 1, may be too lengthy.

The successful identification of some of the most essential crucial success elements, as indicated above, will serve as a guide to Ethiopian project managers working on telecommunication network equipment procurement projects and will serve as a foundation for future research.

5.2. Recommendation

It's tough to provide a proposal on a topic as complicated as critical success criteria for a project, particularly telecommunication network equipment. The main reason for this is that every project, every company, and every business operational environment are all unique. Other elements such as geography, society, and legislation come into play. What matters is that the project manager evaluates the project attentively and identifies the critical criteria that will influence the project's execution.

Because the telecommunications business is rapidly expanding, today's critical variables may become obsolete tomorrow. My advice is to use Rummler and Blanch's process improvement methodologies to enhance the procurement process. The method depicted in Figure 1 will result in inefficiencies, as well as opportunities for duplication and mistake. My suggestion for a process map for Ethio Telecom's network equipment procurement process is shown in Figure 4.

5.3. Further Research Area

Though this research has its own value it's not without limitation. This research is limited to identifying Critical success factors in the network equipment procurement projects and the participants are drawn from departments who are involved in the network equipment procurement projects as well. Future studies can enlarge the scope and detail studies can be made in regard to the causes to the challenges in leading projects and the implication to the success of a project.

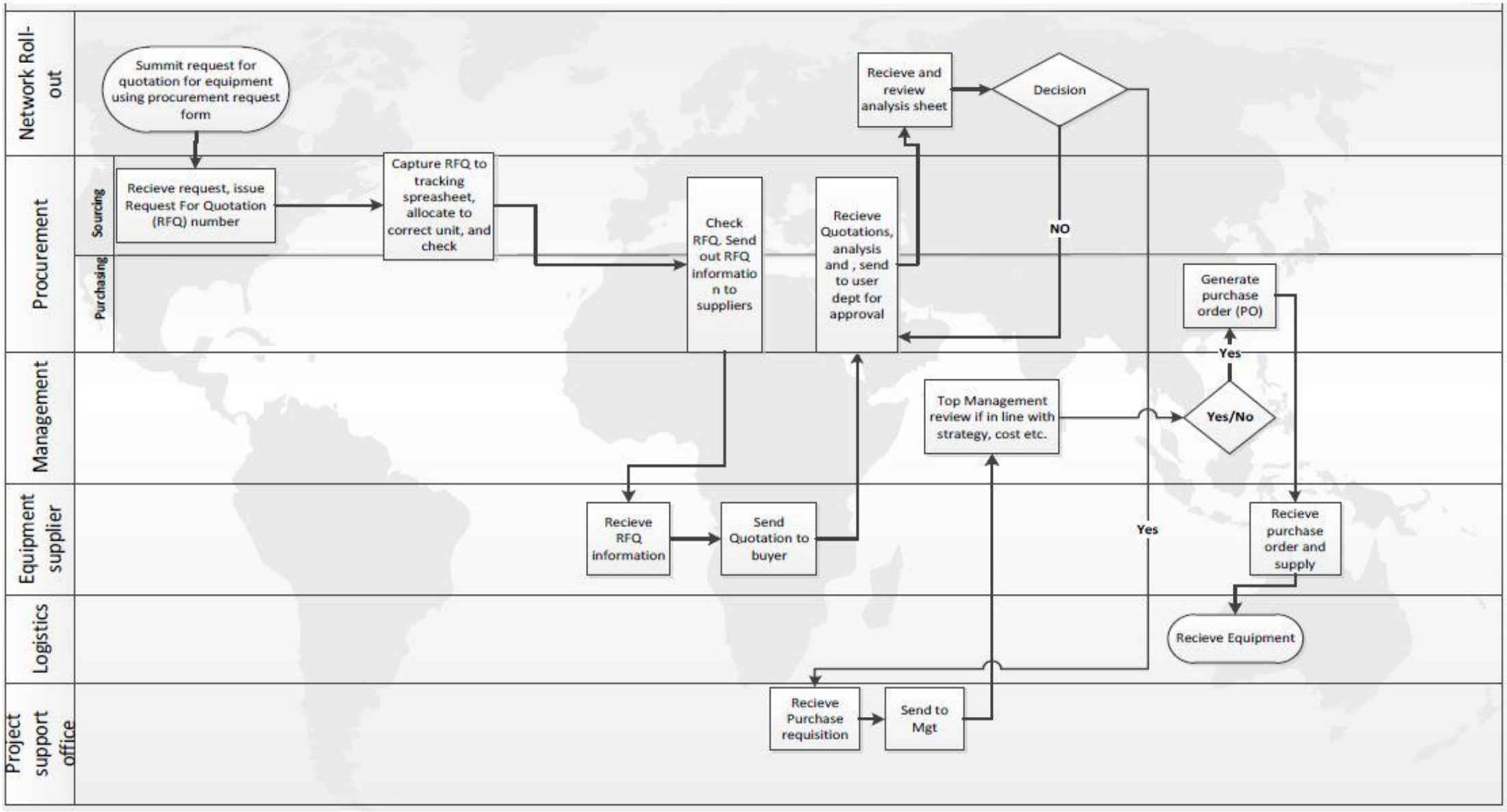

Figure 4 Ethio Telecom's Base Station Equipment Procurement Process (showing the Departments Involved). Versions to consider

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APENDICES 1

ETHIO TELECOM QUESTIONNAIRE DATA COLLECTED

CSFs	TS	SP/T	Pr	CS/R	ST/T	RK	TM	SC	SI	PM	CM
Respondent											
1	2	1	3	4	6		5		9	8	10
2	2	1	3	4			5				6
3	3	1	2	6	8		4	7			5
4	2	1	3	5	6		4				
5	4	1	2	7		5	3			8	
6	1	2	3	5			7				6
7	2	1	3	5					6		7
8	2	1	3	8	7		4	5		6	
9	2	1	3	6			4			7	
10	2	1	3	4			5				
11	2	1	3	4			5	10	7		8
12	2	1	3	4	6		5				
13	2	1	3	4			5			7	8
14	4	1	2	3			5				7
15	3	2	1	5	9		6		8		4
16	3	2	1	5	4		7	6		4	
17	2	1	3	4			6		7		9
18	2	1	3	4	7		5				6
19	2	1	3	5	6		4	7			
20	2	1	3	6	8		4		9	5	
21	2	1	3	6	9	10	5	9	7		8

ABBREVIATIONS.

TS - Technological standards

SP/T - Supply Process/Time

Pr - Price

CS/R - Contract with supplier/relationship

ST/D - System Training/Documentation

RK - Risk

TM - Top management

PP - Past performance

SC - Security

SI - System Integration

PM - Performance measurement

CM - Change management

ETHIO TELECOMS FREQUENCY TABLE

CSFs	TS	SP/T	Pr	CS/R	ST/T	RK	TM	SC	SI	PM	CM
FREQUENCY											
1	1	18	2								
2	15	3	3								
3	3		16	1			1				
4	2			8	1		6			1	1
5				6		1	9	1		1	1
6				4	4		2	1	1	1	3
7				1	2		2	3	3	2	2
8				1	2				1	2	3
9					2			1	2		1
10						1		1			1
TOTAL	21	21	21	21	11	2	20	7	7	7	12

ETHIO TELECOM DATA		
RANKING	FREQUENCY	RANK
Supply Process/Time	18	1
Price	16	2
Technology Standards	15	3
Contract With Supplier/Relation	8	4
Top Management Support	9	5
System Training/Doc	4	6
System Integration	3	7
Security	3	8
Change Management	3	9
Performance Measurement	2	10
Risk	2	11

APENDICES 2

Cronbach Alpha using SPSS

```
RELIABILITY
/VARIABLES=VAR00001 VAR00003 VAR00004 VAR00005 VAR00006 VAR00007 VAR00008
VAR00009 VAR00010 VAR00011
/SCALE ('ALL VARIABLES') ALL
/MODEL=ALPHA
/STATISTICS=SCALE
/SUMMARY=TOTAL.
```

Reliability

Scale: ALL

Case Processing Summary

		N	%
Case	Valid	21	100,0
	Excluded[a]	0	,0
	Total	21	100,0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	N of Items
,785	11

Reliability Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	33,0000	160,800	,280	,741
VAR00003	42,8571	243,829	-,059	,789
VAR00004	41,3333	243,033	-,008	,789
VAR00005	39,0476	237,948	,105	,781
VAR00006	40,3810	211,348	,170	,767
VAR00007	43,1905	219,062	,233	,754
VAR00008	43,2857	213,514	,345	,733

VAR00009	39,3333	238,033	,070	,784
VAR00010	41,0476	220,748	,147	,772
VAR00011	43,2857	230,314	,110	,779

QUESTIONNAIRES

Addis Ababa University

College Of Business and Economics

School of Commerce

MA in Project Management

Questionnaire for Research Thesis

Greetings, Sir/Madame I humbly request that you complete this questionnaire. Your input is critical to the study's findings, which are titled "Critical success factors in telecom network equipment procurement projects." The information you provide will only be used for academic purposes and will be kept private. I'd like to express my gratitude in advance for taking the time to complete the survey.

Instructions

- You are not required to write your name.
- Please use a tick mark (√) in the appropriate box by writing your answer in the space provided.
- Please read the questions carefully and provide an appropriate response.

Part 1. General Information

---

* Required

1. Gender

   ☐Male

   ☐Female

2. Age

   ☐18 - 25 Years

   ☐26 - 35 Years

   ☐36 - 45 Years

   ☐More than 46 Years

3. Education Level? *

   ☐Bachelor’s degree

☐Post Graduate Degree

☐Certificate/ Diploma

Other: _____

4. Department you are in*?

☐Project management

☐Procurement

☐Transmission

☐Core Network (equipment installation and testing)

☐Contract management

5. Have you received any project management related training? *

☐Yes

☐No

6. Your service year: *

☐Less than 3 Years

☐4 - 7 Years

☐8 -10 Years

☐Greater than 12 Years

7. The position you hold in the organization *

☐Staff

☐Project Management

☐Management

8. Your experience working in projects *

☐0 - 2 Years

☐3 - 4 Years

☐More than 5 Years

9. Can you mention the budget spent approximately in the last three years on Network Equipment?

10. How do you Conduct procurement of Network Equipment's E.g. Bidders Conference, Proposal Evaluation Etc.?

11. What in your opinion are the critical factors you consider when conducting network equipment procurement. E.g. supplier process, technology?

12. In your opinion, what is the process for Network Equipment procurement?

13. In your opinion which departments are involved in Network Equipment procurement process?

Part 2. Questions related to Project Management/Critical Success

By considering Ethiotelecom Network procurement ongoing projects, to what extent do the factors listed in the statements in the table below affect the success of telecom network equipment procurement projects?

On the scale of 1 to 10. 1 being extremely important and 10 being not important at all. Please rate the above critical success factors of network equipment procurement (Please only tick on 1 Box per row)

Factors	(1) Extremely Important	2	3	4	5	6	7	8	9	(10) not Important at all
Technological standards										
Supply Process/Time										
Price										
Contract with supplier/relationship										
System Training/Documentation										
Risk										
Top management										
Past performance										
Security										
System Integration										
Performance measurement										
Change management										