

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

The Impact of Project Leadership Competence on Project Success: The Case of Ethio Telecom's 5G Projects in Addis Ababa

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Declaration

I, Merertu Teshome, declare that this paper prepared for the partial fulfillment of the requirements for MSc. Degree in Project Management entitled “The Impact of Project Leadership Competence on Project Success: The Case of Ethio Telecom’s 5G Projects in Addis Ababa” is prepared with my own effort. I have made it independently with the close advice and guidance of my advisor.

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Certification

This is to certify that Merertu Teshome has carried out this research work on the topic entitled "The Impact of Project Leadership Competence on Project Success: The Case of Ethio Telecom's 5G Projects in Addis Ababa" under supervision Dr. Abraraw Chane. This work is original in nature and it is sufficient for submission for the partial fulfillment for the award of MSc. in Project Management.

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The undersigned certify that they have read and hereby recommend to the Addis Ababa University to accept the Finale Thesis submitted by ID No. GSD/ 1195/16, entitled " The Impact of Project Leadership Competence on Project Success: The Case of Ethio Telecom's 5G Projects in Addis Ababa.", in Partial Fulfillment of the Requirements for the award of Master of Science in project management.

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List of Acronyms/Abbreviations

ANOVA Analysis of Variance

ICT Information and Communication Technology

IoT Internet of Things

ITU International Telecommunication Union

GSMA Global System for Mobile Communications Association (GSMA Intelligence)

NPSS New Project Success Standard

PMBOK® Project Management Body of Knowledge

PMI Project Management Institute

SEM Structural Equation Modeling

SPSS Statistical Package for the Social Sciences

5G Fifth Generation Mobile Network

Abstract

This study investigates the influence of project leadership competencies on the success of Ethio Telecom's 5G deployment projects in Addis Ababa. The study utilizes both descriptive and explanatory research design, with a quantitative research approach, involving a census of 162 employees in leadership roles, including Chief Officers, Program Directors, Managers and Supervisors, who were directly involved in the 5G rollout. Data were collected through a structured questionnaire and the analysis utilized descriptive and inferential statistics, including correlation and multiple linear regression, to assess the relationships between leadership competencies and project success. Findings show several significant positive correlation among the dependent and variables. Accordingly, decision-making has a moderate and statistically significant positive relationship with project success ($r = 0.486$, $p < 0.01$), communication also showed a small but significant positive relationship ($r = 0.183$, $p < 0.05$), technical knowledge has a moderate positive correlation with project success ($r = 0.318$, $p < 0.01$), risk management showed a moderate significant relationship ($r = 0.291$, $p < 0.01$), however, conflict resolution had a positive but non-significant relationship ($r = 0.168$, $p = 0.067$). Multiple regression analysis confirmed that all five competencies significantly contribute to project success, with decision-making having the strongest impact ($\beta = 0.541$, $p < 0.001$), followed by technical knowledge ($\beta = 0.404$, $p < 0.001$), communication ($\beta = 0.19$, $p = 0.004$), conflict management ($\beta = 0.274$, $p < 0.001$)and risk management ($\beta = 0.225$, $p < 0.001$) also play important roles in enhancing project outcomes. These findings show the importance of enhancing leadership competencies among project leaders to improve overall project success. Organizations should prioritize the development of decision-making, communication, technical knowledge, conflict resolution and risk management skills among leaders to achieve desired project outcomes.

Keywords: Leadership Competencies, Project Success, Decision-Making, Communication, Technical Knowledge, Conflict Resolution, Risk Management, Ethio Telecom, 5G Deployment, Addis Ababa

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

Projects play a big role in helping organizations bring change and reach their goal in todays fast growing and competitive market. Project success has become key issue for organizations across all sectors because it directly influences organizational competitiveness and sustainability (Yusoff *et al.*, 2025).

In the context of information and communication technology (ICT) and telecommunications projects, success criteria take on additional importance. Mbebe & Jowah (2024) reported that the success of ICT projects relies both on technical proficiency and non-technical factors. In the telecom sector, project work became more complicated because installing new network system needs many activities like planning, negotiation, technical integration and coordinating different team. One important development in recent years was the move toward Fifth-Generation (5G) mobile technology which is known for very high speed, low latency and the ability to support advanced applications such as IoT, AI-based system and cloud services (International Telecommunication Union, 2020). Because of this, many telecom operators started upgrading their networks to meet the rising demand for modern digital services (GSMA Intelligence, 2024).

Project leadership is a cornerstone factor influencing project success across various industries (Susanto *et al.*, 2023). The project manager, as a leader in organizing, directing and managing all types of project activities, plays important role in this regard. Yusoff *et al.* (2025) stated that effective leadership is very important in shaping project manager competencies. It determines how project managers interact with their team and stakeholders, manage possible risks and conflict and facilitate project objectives.

According to Lukasinski & Romanski (2024), decision-making is one of the interpersonal competencies that is as important as technical skills such as risk and budget management in contemporary organizations. Modern organizations face challenges in managing team, especially

with globalization, technological advancements and shifting market needs, all of which require sound decision-making capabilities (Hatefi & Behi, 2024).

Communication skills is another important competency for project management success. Yusoff *et al.* (2025) includes communication skills as one of the vital competencies for navigating project complexities. Another research by Lukasinski & Romanski (2024) found that communication, alongside team motivation and time management, is one of the soft skills that modern organizations should invest on their project managers. Communication effectiveness directly influences team coordination, stakeholder satisfaction and ultimately project outcomes. Given the technical complexity and cross-functional coordination required, communication is very important dimension of the leadership competence in the telecommunications industry (Nahyan *et al.*, 2019).

Technical knowledge is also key leadership competency upon which other project management skills are built. According to Sonelma & Sucita (2022) found that technical project management has big influence on project success. In the context of 5G telecommunications projects specifically, technical knowledge becomes even more key. Mishra *et al.* (2024) investigated the impact of 5G technology on agile project management across multiple industries and found that project managers require deep technical understanding of network capabilities, latency, data throughput and system integration requirement.

Project leaders also need conflict-resolution skills as a key interpersonal competency that influences project success. As Yusoff *et al.* (2025) identifies conflict management is one of the key competencies that project managers must have. Effective leadership determines how project managers manage possible risks and conflict. In complex projects involving multiple stakeholders and technical team, conflict is inevitable and the ability to resolve conflict constructively directly influences project performance (Bhakuni *et al.*, 2024).

Effective leadership is also characterized by Risk management; as Yusoff *et al.* (2025) risk management includes identifying, analyzing and responding to project risks throughout the project lifecycle; it directly influences project success by preventing or mitigating negative outcomes. In the context of large engineering projects, Ouma *et al.* (2022) examined the influence of risk analysis as a risk management practice on project performance in Kenya's commercial banks and found that risk analysis had significant effects on the performance of information technology

projects in the banking sector. This shows that systematic risk analysis directly contributes to project success.

Ethio Telecom introduced 5G service in Addis Ababa in May 2022 as a major step for the country's telecom modernization and aligned with the national "Digital Ethiopia 2025" strategy. This project aims to improve connectivity and expand ICT services (Ministry of Innovation and Technology, 2020). After the first launch, Ethio Telecom continued to expand its commercial 5G sites in Addis Ababa to improve network capacity and prepare for more advanced services (Ethio Telecom, 2022; Ethio Telecom, 2023). Even though 5G brings many opportunities, the deployment process is not simple as it includes complex equipment, vendor management, tight timelines and strict technical requirements. Because of these challenges, project leadership competence became very important.

Leadership competence in project settings shows the skills and behaviors a leader uses to guide the team, make decision, communicate clearly, manage conflict and handle risks (Muller & Turner, 2010; Galvin *et al.*, 2016). Studies found that competencies such as decision-making, communication, technical knowledge, conflict resolution and risk management help project leaders deliver better results (Ochoa Pacheco *et al.*, 2023; Suvvari & Sawalkar, 2024).

Research in Ethiopia also indicated that leadership competence had strong influence on project performance. For example, Tsion (2021) found that leadership competence strongly affected project success at East Africa Bottling SC. Samson (2020) also reported that leadership competencies shaped project results in the Defense Construction Enterprise. In addition, Kant & Areri (2023) conducted research in the Oromia region of Ethiopia, evaluating the effect of project managers' competency on project success in three Ethiopian companies and found that project success increases when the project leader's competency increases. This indicates the direct and quantifiable impact of leadership competence on project outcomes. The complex tasks of 5G projects such as site preparation, equipment installation, integration, testing and vendor communication need strong decision-making, good communication, technical understanding, coordination skills and effective risk handling. However, there was limited academic evidence examining how these specific competencies affected 5G deployment success in Ethiopia. There is a need for industry specific research, especially in Ethio telecom. Therefore, the current study examined how leadership competence affected project success in Ethio Telecom's 5G deployment projects in Addis Ababa focusing on five competencies decision-making, communication,

technical knowledge, conflict-resolution skills and risk management competence and analyzed their effects on time, cost, quality and stakeholder satisfaction. It is aimed that the findings of this study will strengthen leadership development and improve performance in future technology projects.

1.2 Statement of the Problem

The telecommunications industry has experienced high growth in recent years as countries worldwide investing heavily in 5G infrastructure development, however, the successful implementation of these complex, technology-intensive projects faces many challenges. The developed nations have made high progress in 5G deployment, but developing economies including Ethiopia, continue to face obstacles related to project management, technical expertise and leadership capability.

Despite the recognized importance of project leadership competence in determining project success, telecommunication infrastructure projects in Ethiopia continue to experience challenges including project delay, cost overruns, quality issues and incomplete implementation of planned objectives. The gap between the theoretical importance of leadership competencies and their practical implementation in project success is inadequately addressed in the academic literature.

Leadership competencies such as decision-making ability, communication skills, technical knowledge, conflict resolution capability and risk management skills help project managers to guide team, maintain alignment among stakeholders and respond effectively to challenges during project implementation. Many studies have reported that strong leadership competencies contribute positively to project performance through improved coordination and enhanced team collaboration (Muller & Turner, 2010; Zulch, 2014).

Previous researches have consistently reported the importance of project leadership competence to project success across various industries. For instance, Yusoff *et al.* (2025) presented a review of how different leadership styles contribute to project manager competencies and project management success. Kant & Areri (2023) also examined the relationship between project manager competence and project success in Ethiopian companies and found a significant positive relationship, however, this study focused on companies in the Oromia region and did not specifically address the telecommunications sector or the particular competencies relevant to 5G

infrastructure projects. In developing countries extensive researches have been conducted such as Lukasinski & Romanski (2024) investigated project management competencies of project managers in contemporary organizations in Poland. The authors identified interpersonal competencies such as communication, decision-making and team motivation as equally important as technical skills. In addition, Hatefi & Behi (2024) conducted research in Iran Gas Engineering and Development Company, identifying 16 competencies in technical and behavioral categories, with leadership and judgment/decision-making showing the highest weights.

In the telecommunications industry, Misbahuddin & Maarif (2024) examined how different leadership styles affect project managers and project performance in Indonesian telecommunication companies. They found that quality Leadership significantly enhances project performance. They also have developed strategies for enhancing project managers' leadership skills in Indonesia's telecommunications sector. The importance of individual competencies has also been well-established like communication skills have been recognized as essential (Asthana, 2024), decision-making ability as key factor (Raje *et al.*, 2024), technical knowledge as foundational (Sonelma & Sucita, 2022), conflict-resolution skills as important for team cohesion (Malingumu, 2023) and risk management competence as vital for project success (Ulysse, 2023).

However, though these studies establish the importance of project leadership competencies in general and some studies have examined specific competencies and project success, a gap remains in understanding how these specific competencies impact project success in the particular context of telecommunications infrastructure projects in Ethiopia and specifically in the case of 5G projects being developed by Ethio Telecom in Addis Ababa.

Therefore, this research was aimed to address these significant gaps by conducting a detailed empirical investigation of the impact of project leadership competence on project success. It specifically focused on Ethio Telecom's 5G projects in Addis Ababa. This study contributes to the limited body of knowledge regarding project leadership in telecommunications projects in developing economies. The findings will be relevant to other telecommunications companies and infrastructure development organizations in similar contexts.

1.3 Research Questions

i. How does the decision-making ability of project leaders affect project success in Ethio Telecom's 5G projects?
ii. What is the impact of leader's communication skills on the success of 5G projects at Ethio Telecom?
iii. In what ways does technical knowledge of leaders contribute to the success of 5G projects at Ethio Telecom?
iv. How do conflict-resolution skills of the leaders affect the success of project team in Ethio Telecom's 5G projects?
v. What is the impact of leaders risk management competence and the success of 5G projects at Ethio Telecom?

1.4 Research Objectives

1.4.1 General Objective

The main objective of the study is to examine the impact of project leadership competence on project success in Ethio Telecom's 5G deployment projects.

1.4.2 Specific Objectives

This study has the following specific objectives.

i. To assess the effect of decision-making ability on project success.
ii. To evaluate the influence of communication skills on project success.
iii. To determine the impact of technical knowledge on project success.
iv. To analyze the effect of conflict-resolution skills on project success.
v. To investigate the effect of risk management competence on project success

1.5 Significance of the Study

This research is significant for multiple stakeholder groups who are directly or indirectly involved in the telecommunications sector. For Ethio Telecom, this study generated information that can directly enhance organizational performance and competitive advantage through identifying the specific leadership competencies that most strongly influence project success. Accordingly the

company can implement targeted improvement in its project manager selection and recruitment processes to develop competency-based human resource management strategies, ensuring that project managers assigned to 5G infrastructure projects have the required competencies of decision-making, communication, technical knowledge, conflict resolution and risk management.

Policy makers at the federal and regional levels in Ethiopia can benefit from this study. The research provides empirical evidence that can inform national policies on telecommunications infrastructure development. Understanding the key competencies required for successful telecommunication project enables policy makers to develop strategies for appropriate investment in human capital development, capacity building programs and institutional framework that support telecommunication project management.

This study will benefit the scientific community by contributing to the growing body of knowledge on project management in developing country context. The research advances theoretical understanding by empirically examining how leadership competencies influence project success in telecommunication sector. For researchers, this study will pay way for further investigation in the area of project leadership in Africa. The study will give a framework for assessing the relationship between specific leadership competencies and project success which can be adapted for use in other studies.

1.6 Scope of the Study

This study has thematical, geographical and methodological scopes; the thematic scope of this study is focused on examining the impact of project leadership competencies on project success in Ethio Telecom's 5G infrastructure projects. It focuses on five key leadership competencies: decision-making ability, communication skills, technical knowledge, conflict-resolution skills and risk management competence. The research is confined to the telecommunication sector focusing on 5G infrastructure development, infrastructure which is characterized by significant technological complexity, high financial investment, and strategic importance to national digital transformation objectives.

Geographically, the study is limited to Ethio Telecom's operations in Addis Ababa, the capital city of Ethiopia. As for the methodological scope, this study employed both descriptive and explanatory research designs with quantitative research approach. The study employs quantitative

research methods utilizing structured questionnaires with Likert scale measurement to collect numerical data from Chief Officers, Program Directors, Managers and Supervisors involved in 5G infrastructure projects at Ethio Telecom.

1.7 Limitations of the Study

This study has a limitation, especially related to data collection. Some respondents were very busy with their daily project responsibilities. A few respondents were reluctant to spare time to complete the questionnaire. This reduced the response rate and could have affected the representativeness of the sample. Regardless this limitation the researcher has used clear communication was used to avoid misunderstanding. In addition, follow-up reminders were sent to encourage participation.

1.8 Definition of Terms

- **Project Leadership Competence:**
  Is the combination of skills, knowledge and behaviors that enable project leaders to guide team, manage resources and effectively respond to project challenges.
- **Project Success:**
  Is the extent to which a project meets its predefined objectives in terms of time, cost, quality and stakeholder satisfaction.
- **Decision-Making:**
  Refers to the capacity of project leaders to make timely, informed effective decision that will positively influence project outcomes.
- **Communication Skills:**
  The project leaders ability to convey information clearly and facilitate understanding among stakeholders.
- **Technical Knowledge:**
  The understanding of technical processes, tools and system required for planning and managing complex project.
- **Conflict-Resolution Skills:**
  Leaders ability to manage and resolve disagreement among team members or stakeholders to maintain project progress and team unity.
- **Risk management competence**

The ability to identify, assess and mitigate potential risks that could affect project objectives. It also involves ensuring proactive planning and effective response strategies to minimize negative impacts.

1.9 Organization of the Study

The report of this study is structured in five chapters: the first chapter introduces the study, presenting background, statement of the problem, research objectives, research questions, limitations, significance, scope. Chapter Two presents a literature review, discussing relevant research findings, research gaps and conceptual framework of the study. The third chapter describes the research methodology, the procedures used for data collection, sample selection and data analysis. Chapter four present results and discussions and last chapter included the conclusion and the recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter reviews previous studies and theories related to the impact of project leadership competence on project success and it explains what leadership competence means, how it connects to project outcomes and why these ideas matter for technology projects like 5G networks. The chapter contains conceptual, theoretical, and empirical review.

2.2 Definition and Concepts

2.2.1 Project Success

Project success is central concept in project management, measured by the "iron triangle," which focuses on three-criteria time, cost and quality standards (Project Management Institute [PMI], 2024). Eggleton *et al.* (2023) explain that project is successful when it delivers outcomes that benefit the organization beyond its completion. Beshah *et al.*, (2024) reported that success efficiency with effectiveness, and PMI (2024) also states that success is about outputs and about the value delivered. Locatelli *et al.* (2023) report that in complex technology projects success depends on factors like user acceptance, sustainability and trust. project is successful when it meets time, cost and quality targets and satisfies stakeholders. it should also deliver benefits that last beyond the project life cycle (Eggleton *et al.*, 2023).

Time means finishing the project within the planned schedule. it is one of the most visible signs of success because delay often create many other problems. When project runs late, cost can go inflated, resources get stuck (PMI, 2024). Cost is about completing the project within the approved budget. Keeping cost under control matters because overruns can hurt profitability and stop future investment (Pantovic *et al.*, 2024). In big telecom projects, going over budget can cause financial stress and reduce funds for other important plans. Quality is about meeting technical standards and user needs. it is more than just following rules. it is about delivering product or service that works well and satisfies customers. Poor quality can lead to rework, service failures and unhappy users that increase cost and damage reputation (Ochoa Pacheco *et al.*, 2023). For 5G projects,

quality means reliable network, fast speed and wide coverage. These are key for Ethiopia's digital transformation and high quality show that the project meet technical goal and create real value for users.

2.2.2 Project Leadership Competence

Project leadership refers to the combination of knowledge, skills and abilities (KSAs) that enable project leaders to achieve project objectives effectively. Leadership competence includes the ability to influence, motivate and manage people and processes in complex environment (Turner & Muller, 2005).

Knowledge is what a leader knows facts, principles and concepts related to project management and technology and it includes understanding planning techniques, risk analysis methods and technical aspects of projects such as 5G deployment (Dulewicz & Higgs, 2005). Skills are practical capabilities that allow leaders to perform tasks effectively and they include decision-making, communication, problem-solving and conflict resolution, that help leaders turn knowledge into action (Galvin, et al., 2016).

Turner and Muller (2005) define leadership competence as the ability to direct tasks, support team and make decision aligned with project goal. Dulewicz and Higgs (2005) describe it as a mix of intellectual, managerial and emotional competencies that allow leaders to adapt to changing condition and maintain team performance. Galvin *et al.* (2016) emphasize that leadership competence means applying knowledge and skills under pressure. This include solving problems quickly and managing uncertainty.

Muller and Turner (2010) argue that leadership competence is a key success factor because it influences coordination, communication and risk management, however, they report that even competent leaders can face challenges if organizational structure or external factors limit their authority (Too & Weaver, 2014).

2.2.2.1 Decision-Making Ability

Decision-making ability is one of the most important leadership competencies in project management. Projects often face uncertainty, tight deadlines and limited resources. Good decision-

making helps prevent delay, control cost and reduce unnecessary changes (Muller & Turner, 2010). Turner and Muller (2005) describe decision-making in projects as the process of selecting the best course of action among alternatives to achieve project goal and Dulewicz and Higgs (2005), on the other hand define it as a managerial skill that combines analytical thinking with emotional intelligence to ensure balanced and rational choices. Galvin *et al.* (2016) emphasize that effective decision-making require applying knowledge and judgment under pressure.

Recent studies show its importance in technology driven projects. Ochoa *et al.*, (2023) found that strong decision-making skill significantly improve project outcomes in ICT projects. Similarly, Suvvari and Sawalkar (2024) argue that timely decision reduce risk and enhance performance in high-tech environment. However, decision-making ability can be influenced by organizational structure. Too and Weaver (2014) report that in highly centralized organizations, project leaders may lack the authority to implement decision fully which limits their effectiveness.

2.2.2.2 Communication Skills

Communication skills in project management mean the ability of a leader to share information clearly, make sure everyone understand and keep information flowing among all stakeholders; PMI (2021) explain communication as the process of exchanging information in a way that ensure clarity and understanding. Muller and Turner (2010) describe it as a leadership competence that build trust and maintain coordination in complex projects and Zulch (2014) also calls communication the foundation of project management because it reduces misunderstandings and improves teamwork.

According to PMI (2021) effective communication aligns goal and expectations and influences how well team work together. Muller and Turner (2010) argue that communication competence is one of the most key leadership skills as it affects decision-making, stakeholder engagement and overall success. Zulch (2014) states that communication is about sending messages and listening, clarifying and creating feedback loops to avoid mistake; Pirozzi *et al.* (2023) point out that communication includes verbal, written and non-verbal forms and leaders must choose the right channel for each situation to keep efficiency.

In Ethio Telecom's 5G deployment projects, communication skills are key because the work involves many stakeholders technical team, vendors, managers and regulators. Poor communication can lead to delay, cost overruns and technical errors. PMI (2021) focus that effective communication ensures clarity and alignment among project participants. It reduces misunderstandings and improving coordination. Muller and Turner (2010) also report that communication competence is one of the most important leadership skills. it influences decision-making and stakeholder engagement. Zulch (2014) states that communication is the foundation of project management, as it helps maintain trust and teamwork. For example, if project goal are not explained clearly, team may work in different directions which affects time and quality. Good communication keeps everyone on the same page, ensures timely updates and reduces stakeholder misunderstandings.

2.2.2.3 Technical Knowledge

Technical knowledge in project management means understanding the system, processes and technologies that are part of the project and it is about knowing the theory and also being able to apply it in planning, monitoring and solving problems during execution. Muller and Lecoeuvre (2014) define technical knowledge as the ability of project leaders to understand technical requirements and integrate them into project decision. According to Mbebe and Jowah (2024) technical competence helps leaders make better choices and guide team effectively in complex ICT projects. Galvin *et al.* (2016) report that technical knowledge supports problem-solving and risk management because leaders can identify issues early and respond with solution.

Technical knowledge is essential In Ethio Telecom's 5G deployment projects, and is because the work involves advanced technologies such as network architecture, spectrum management and equipment integration. Muller and Lecoeuvre (2014) define technical knowledge as the ability to integrate technical requirements in decision that helps avoid mistakes and improve efficiency. Galvin *et al.* (2016) also report that technical knowledge supports problem-solving and risk management. This is because leaders can identify issues early and respond effectively.

2.2.2.4 Conflict-Resolution Skills

Conflict-resolution skills in project management is ability of leader to handle disagreement among team members/stakeholders in way that keeps the project moving forward. De Wit *et al.* (2016) define conflict resolution as managing disputes constructively. As Ibnouf Adham (2023) explains that effective conflict management improve collaboration and Galvin *et al.* (2016) also report that leaders who resolve conflict quickly maintain team morale and prevent disruption. This can affect success. De Wit *et al.* (2016) describe conflict resolution as process that turns disagreement into opportunities for better understanding and cooperation.

Conflict-resolution skills have direct impact on project success; De Wit *et al.* (2016) found that unresolved relationship and process conflict harm group outcomes. It reduces team effectiveness and delaying task completion. In Ethio Telecom's 5G deployment projects, conflict may occur among technical team, contractors and managers due to tight schedules and complex tasks. Ibnouf Adham's (2023) study shows eight key domains like emotional awareness, trust-building and constructive feedback that help leaders resolve conflict in ICT environment and keep team focused. Understanding how these skills affect project outcomes will show that effective leadership in conflict management contributes to timely delivery and high-quality results in Ethio Telecom's 5G project.

2.2.2.5 Risk Management Competence

Risk management is the ability to identify, assess and respond to potential risks that could affect project objectives. Hillson (2021) defines risk management as structured process for spotting uncertainties and planning actions to minimize their impact. Flyvbjerg (2017) states that proactive risk management is essential in large and complex projects because unexpected events can cause major delay and cost overruns. Similarly, Cerezo *et al.* (2022) explain that integrating risk management into project planning improves predictability and reduces failures. Risk management is not just about reacting to problem ,but about anticipating them early. Hillson (2021) focus that effective leaders create mitigation plans before risk become issues.

Leaders who identify risks early, prepare mitigation strategies and monitor them throughout the project can reduce delay and cost overruns as Hillson (2021) focus that proactive risk management

improves predictability and minimizes negative impacts. But, Flyvbjerg (2017) reports that large-scale projects often fail due to poor risk planning. Cerezo-Narváez, *et al.* (2022) also argue that integrating risk management into project governance strengthen decision-making and project resilience, for example, anticipating supply chain issues or equipment failures allow leaders to act before these problems affect the schedule.

2.3 Theoretical Review

2.3.1 Competency Theory

Competency theory provides basic framework for understanding how individual capabilities and skill sets translate into superior performance outcomes in organization (Yusoff *et al.*, 2025). Accordingly project management success is heavily influenced by the competencies of the project manager, encompassing leadership skills, communication abilities, risk management expertise and strategic decision-making capabilities. The core assumption of this theory is that note innate traits alone distinguish high-performing professionals from average performers observable, but also measurable behaviors and skills.

Previous researches sees leadership competencies function as predictors of project and organizational performance (Susanto *et al.* (2023). The application of competency theory to project leadership in telecom infrastructure important due to the complexity inherent in 5G project. Gul, (2021) found that intellectual strength, managerial procedures and emotional balance is essential competency dimensions for successful infrastructure project realization. These competency dimensions are relevant for Ethio Telecom's 5G projects.

2.3.2 Contingency Leadership Theory

Contingency leadership theory addresses fundamental question in leadership research (Blom *et al.*, 2023). No single leadership style achieves universal effectiveness across all project types. This theory proves especially relevant for understanding how project leader must adjust their approach based on project lifecycle stage, organizational context and environmental volatility.

Telecommunications infrastructure projects, especially 5G deployments (Damayanti *et al.*, 2021) shows through configuration analysis that combinations of technical, emotional-social and

adaptive competencies interact with structural, social and emergent complexities to determine megaproject success. Project leaders managing Ethio Telecom's 5G initiative must have contingency-diagnostic capabilities enabling them to assess complex technical and organizational choice.

2.3.3 Resource-Based View (RBV) Theory

The Resource-Based View theory deals with how organizational resources create durable competitive advantage (Jayasekera *et al.*, 2024). Project leadership competence exemplifies such resources in project-intensive organizations developing such competence requires time investment, organization-specific learning and knowledge that prove difficult to transfer between organization.

Under the RBV framework, human capital is the most key organizational resource for knowledge-intensive activities like complex project management. Sun *et al.* (2024) proposes an integrated framework that applies Resource-Based View and Dynamic Capabilities perspectives. Ali (2012) stated that leadership competencies and good behavior developed through learning mechanism is key elements enabling organizations to achieve goals effectively. Leadership capability functions as source of project-specific competitive advantage through enabling organizations to execute complex initiatives more effectively. The application of RBV theory to 5G infrastructure deployment imply that competitiveness in telecommunications markets increasingly have capabilities for executing complex infrastructure transformation. Organizations like Ethio Telecom that systematically develop project leadership competence create organizational capabilities, and it enables superior execution of strategic infrastructure initiatives compared to competitors lacking equivalent leadership resource development.

2.4 Empirical Review

2.4.1 Project Success

Empirical studies show that project success is more than finishing on time, budget and meeting quality standards. Ochoa Pacheco et al. (2023), through a systematic literature review, found that project managers' competencies significantly shape project outcomes across multiple dimensions including schedule performance, cost control, quality delivery, and stakeholder satisfaction. Pantovic et al. (2024) further confirm that in data-driven IT projects, success depends on integrating decision-making with performance monitoring across all three iron triangle dimensions simultaneously. In the telecommunications sector specifically, Mbebe and Jowah (2024) found that success in ICT projects relies on both technical proficiency and non-technical leadership factors, with stakeholder satisfaction serving as a critical success indicator alongside schedule and budget performance.

Studies confirm that project success in large-scale organizational projects is strongly linked to leadership competence. Tsion (2021) found that leadership competence explained nearly 50% of the variance in project success at East Africa Bottling SC, with decision-making and communication identified as the most influential competency dimensions. Samson (2020) reported similar findings in the Defense Construction Enterprise, where leadership skills and traits had the strongest positive effect on project success, followed by leadership style and control, with regression results showing competency explaining between 36% and 50% of project success variance. These findings establish a direct, quantifiable link between leadership behaviors and project outcomes in the Ethiopian organizational environment a context that shares institutional characteristics with Ethio Telecom.

However, not all studies present an unqualified positive relationship between leadership competence and project success. Mbebe and Jowah (2024) demonstrated a strong predictive link in South Africa but also noted that organizational structure and resource constraints can limit how effectively a competent leader translates skills into measurable outcomes. This is more forcefully argued by Flyvbjerg (2017), who contends that even well-led large-scale infrastructure projects frequently encounter cost overruns and delays not because leaders lack competence, but because optimism bias and political pressures systematically distort planning assumptions from the outset.

This perspective directly challenges the assumption in Ethiopian studies (Samson, 2020; Tsion, 2021) that leadership competence operates as a direct, unmediated driver of success, and suggests that contextual and institutional factors must also be accounted for when interpreting the relationship between leadership and project outcomes.

In the specific context of 5G telecommunications deployment, project success acquires additional technical dimensions. Mishra et al. (2024), examining the impact of 5G technology on agile project management across multiple industries, found that success in 5G projects depends on leaders' deep understanding of network capabilities, latency, data throughput, and system integration requirements going beyond the conventional iron triangle criteria. Kant and Areri (2023), studying three Ethiopian companies in the Oromia region, confirmed that project success increases measurably as project manager competency increases. While consistent with the broader Ethiopian evidence, their study was conducted in manufacturing and construction sectors and did not examine competencies specific to 5G infrastructure deployment.

Despite this evidence, a demonstrable empirical gap exists. To show this concretely Ethiopian studies on the leadership-project success relationship (Kant & Areri, 2023; Samson, 2020; Tsion, 2021) were all conducted in manufacturing, bottling, or construction sectors not examined a telecommunications infrastructure project. In the telecom sector, Misbahuddin and Maarif (2024) studied leadership and project performance in Indonesian telecom companies but focused on leadership style rather than specific competency dimensions, and their context differs substantially from Ethiopia's emerging 5G deployment environment. Dwianti et al. (2023) investigated project management competencies specifically in Indonesian telecommunications and identified technical and specialist competencies as critical, but did not test the individual effects of decision-making, communication, technical knowledge, conflict resolution, and risk management through regression analysis. The available empirical evidence does not yet account for the combined influence of decision-making, communication, technical knowledge, conflict resolution, and risk management competencies on project success in the specific context of 5G deployment in Sub-Saharan Africa.

2.4.2 Project Leadership Competence

Project leadership competence has been widely recognized as one of the most important factors that influence project success. Leaders who can make good decisions, communicate clearly,

understand technical issues, manage conflict and handle risks are more likely to guide their teams effectively and deliver successful project outcomes. This is especially true in large and complex projects like ICT and telecom infrastructure projects, where many things can go wrong and strong leadership is needed to keep everything on track (Muller & Turner, 2010; Too & Weaver, 2014).

Recent studies continue to confirm this relationship. Yusoff et al. (2025) conducted a review of how leadership styles shape project manager competencies and found that effective leadership is a key driver of project management success. Similarly, Susanto et al. (2023) reviewed project management leadership across different contexts and proposed that leadership assessment frameworks should be built around core competency dimensions which directly supports the approach taken in this study. Lukasinski and Romanski (2024), studying project managers in Poland, found that interpersonal competencies like communication and decision-making are just as important as technical skills, and that modern organizations must invest in developing these competencies in their project managers.

However, the relationship between leadership competence and project success is not always straightforward. Mbebe and Jowah (2024) confirmed that leadership competence predicts ICT project success in South Africa, but they also pointed out that organizational structure and resource limitations can reduce the actual impact of leadership on project outcomes. This is an important point because it means that even a very competent leader may struggle to deliver results if the organizational environment does not support them. Flyvbjerg (2017) goes even further and argues that large infrastructure projects often fail not because of poor leadership alone, but because of deeper systemic problems like unrealistic planning assumptions and political pressures that even strong leaders cannot easily overcome. This shows that while leadership competence matters, it does not work in isolation.

In the Ethiopian context, the evidence also supports the importance of leadership competence. Samson (2020) found that leadership skills had the strongest positive effect on project success in the Defense Construction Enterprise, and Tsion (2021) reported similar findings at East Africa Bottling SC, where leadership competence alone explained nearly half of the variation in project success. Kant and Areri (2023) also found a significant positive relationship between project manager competency and project success in three Ethiopian companies in the Oromia region.

These studies are valuable because they show the relationship exists in Ethiopia specifically. But they all focused on construction, manufacturing or bottling sectors. Other studies in different sector not looked at what happens in a telecommunications project, and not tested the specific competencies that are most relevant to 5G deployment.

This is where this study tries to fill the gap. The five competency dimensions chosen for this study decision-making ability, communication skills, technical knowledge, conflict-resolution skills, and risk management competence were not selected randomly. They were chosen because the literature consistently identifies them as the most important leadership competencies in complex technology projects (Muller & Turner, 2010; Ochoa Pacheco et al., 2023; Yusoff et al., 2025). Lukasinski and Romanski (2024) and Hatefi and Behi (2024) both confirmed that decision-making and communication are among the top competencies in contemporary organizations. Mishra et al. (2024) showed that technical knowledge is especially critical in 5G projects because of the complexity of the technology. Bhakuni et al. (2024) highlighted conflict resolution as essential in multi-stakeholder technical environments, and Hillson (2021) showed that risk management competence directly reduces project disruptions in large infrastructure projects. Together, these five competencies cover the most critical leadership behaviors needed for a project like Ethio Telecom's 5G deployment.

While Ethiopian and international studies confirm that leadership competence influences project success, the available empirical evidence does not yet account for the combined influence of these five specific competency dimensions on project success in the context of 5G deployment in Sub-Saharan Africa. Studies done in Ethiopia focused on other sectors, and international telecom studies like Misbahuddin and Maarif (2024) looked at leadership style rather than individual competency dimensions. The specific combination of decision-making, communication, technical knowledge, conflict resolution, and risk management has not been tested together in an African 5G deployment setting. This study tries to fill that gap by providing empirical evidence from Ethio Telecom's 5G projects in Addis Ababa.

2.4.2.1 Decision-Making Ability

Decision-making ability is one of the most critical competencies for project leaders, especially in complex and fast-moving projects. When leaders make timely and well-informed decisions, it helps the team stay on track, use resources efficiently and avoid unnecessary delays or cost overruns (Pantovic et al., 2024; Ochoa Pacheco et al., 2023). Decision-making also connects to other leadership activities like risk management and communication, because a leader who decides slowly or poorly will also struggle to manage risks and keep stakeholders informed (Bhatti & Khan, 2024).

Several recent studies have confirmed the importance of this competency in different project contexts. Ochoa Pacheco et al. (2023) conducted a systematic review of project manager competencies and found that decision-making consistently appeared as one of the strongest predictors of project success in ICT projects. Pantovic et al. (2024), studying data-driven IT project management, found that leaders who combined analytical thinking with timely decision-making achieved significantly better project performance outcomes. Lukasinski and Romanski (2024) also confirmed in their study of Polish organizations that decision-making is one of the top interpersonal competencies that modern project managers must develop, ranking it alongside communication and team motivation as equally important as technical skills.

However, not all researchers agree on how decision-making works in practice. Raje et al. (2024), studying construction projects in Jordan, found that while decision-making dimensions positively influence project performance, their effect depends heavily on the level of information available to the leader at the time of decision. This is an important qualification because it means that decision-making competence alone is not enough the leader also needs access to accurate and timely information to make good decisions. Samarah et al. (2024) take a slightly different view and argue that intelligent and strategic decision-making, supported by data systems, produces better project outcomes than individual judgment alone. This creates some tension with the more traditional view that personal leadership competence drives decisions, and it suggests that organizational systems and tools also play a role in shaping decision quality.

In the Ethiopian context, studies show that decision-making is among the most valued leadership competencies. Tsion (2021) found that decision-making was one of the two most influential

competency dimensions explaining project success variance at East Africa Bottling SC, and Samson (2020) reported similar findings in the Defense Construction Enterprise. Kant and Areri (2023) also confirmed that project manager competency, including decision-making, had a significant positive relationship with project success in Ethiopian firms. These findings are useful because they show the competency matters in Ethiopia specifically. But again, all these studies were done in construction, bottling or manufacturing settings Samson (2020) studied a construction enterprise, Tsion (2021) studied a bottling company, and Kant and Areri (2023) worked with manufacturing and agriculture firms. None of them examined how decision-making competence influences project success in a telecommunications project, and none tested it in a 5G deployment environment where technical decisions involve network architecture, spectrum configuration and vendor coordination.

In Ethio Telecom's 5G projects, decision-making becomes even more important because the technology is complex and the consequences of poor decisions are significant. For example, a wrong decision about equipment compatibility or site readiness can delay the entire rollout and affect service delivery to thousands of users. Mishra et al. (2024) specifically studied 5G project management and found that leaders in 5G deployment need to make rapid and technically informed decisions because the technology moves fast and problems escalate quickly if not addressed. This makes decision-making a particularly critical competency in this specific context.

Even though decision-making has been studied across many project types and confirmed as an important predictor of success, the empirical evidence on how decision-making competence specifically influences project success in 5G telecommunications deployment in Africa remains very limited. Ethiopian studies that examined decision-making (Samson, 2020; Tsion, 2021; Kant & Areri, 2023) all focused on non-telecom sectors and did not test decision-making as an independent predictor through regression analysis in a telecommunications setting. International telecom studies like Misbahuddin and Maarif (2024) focused on leadership style rather than individual competency dimensions like decision-making. The available empirical evidence does not yet account for the specific effect of decision-making competence on project success in the context of 5G deployment in Sub-Saharan Africa. This study addresses that gap by empirically testing the effect of decision-making ability on project success in Ethio Telecom's 5G projects in Addis Ababa.

2.4.2.2 Communication Skills

Communication skills are widely considered one of the most important competencies for project leaders. When leaders communicate well, they help the team understand what is expected, keep information flowing between different groups and reduce the kind of misunderstandings that can cause serious problems in complex projects. Research consistently shows that leaders with strong communication skills improve team collaboration, maintain stakeholder satisfaction and contribute positively to project outcomes (Pirozzi et al., 2023; Aga et al., 2016). Zulch (2014) also describes communication as the foundation of project management because without it, even technically strong teams can fail to coordinate and deliver results.

Recent studies continue to confirm how important this competency is. Yusoff et al. (2025) identified communication skills as one of the most vital competencies for navigating project complexities, especially in environments where many stakeholders with different interests are involved. Lukasinski and Romanski (2024) found that communication, alongside decision-making and team motivation, is one of the key soft skills that organizations must develop in their project managers to stay competitive. Ding et al. (2023) studied communication skills specifically in construction project teams in Malaysia and found that project communication effectiveness had a significant positive impact on team performance and project delivery. These findings show that communication is not just a general leadership quality but a measurable competency that directly affects project results.

However, some researchers raise important qualifications about how communication works in practice. Pirozzi et al. (2023) found that the effectiveness of communication depends not just on the frequency of communication but on choosing the right channel and format for each situation verbal, written or non-verbal because using the wrong channel can cause confusion rather than clarity. Nahyan et al. (2019), studying construction management projects, found that communication effectiveness was strongly linked to coordination and decision-making quality, which means communication does not work in isolation but interacts with other competencies. This is an important point because it suggests that measuring communication alone may underestimate its full contribution to project success, since its effect is partly expressed through other leadership behaviors. Aga et al. (2016) also noted that transformational leadership, which

depends heavily on communication, improves project success mainly through its effect on team building again showing that communication works through other mechanisms, not just directly.

In the Ethiopian context, communication has been recognized as an important factor in project outcomes. Tsion (2021) identified communication as one of the two most influential competency dimensions in her study at East Africa Bottling SC, and Samson (2020) reported that leadership skills including communication had the strongest positive effect on project success in the Defense Construction Enterprise. These findings are relevant because they show the competency matters in Ethiopian organizations specifically. However, Tsion (2021) studied a bottling company, Samson (2020) focused on a construction enterprise, and Kant and Areri (2023) worked with manufacturing and agriculture firms in Oromia. None of these studies examined communication competence in a telecommunications project, and none tested its specific effect on project success in a 5G deployment environment where communication involves coordinating technical teams, equipment vendors, regulatory bodies and senior management simultaneously.

In the context of Ethio Telecom's 5G projects, communication skills become especially critical. The deployment involves many different parties including internal technical teams, international vendors like Ericsson and Huawei, government regulators and senior management all of whom need to receive the right information at the right time. Mishra et al. (2024) found that in 5G project environments, communication complexity increases significantly because of the number of technical interfaces and the speed at which decisions must be made. Poor communication in this kind of environment can cause equipment installation errors, timeline misalignment and stakeholder dissatisfaction. This makes communication a particularly important competency to examine in Ethio Telecom's specific project context.

Although communication skills have been widely studied as a leadership competency and confirmed as important in various project contexts, the empirical evidence on how communication competence specifically influences project success in 5G telecommunications deployment in Africa is still very limited. Ethiopian studies that touched on communication (Samson, 2020; Tsion, 2021; Kant & Areri, 2023) focused on non-telecom sectors and did not isolate communication as an independent predictor through regression analysis in a telecommunications setting. In the telecom sector, Misbahuddin and Maarif (2024) studied leadership in Indonesian

telecom companies but focused on leadership style rather than specific competency dimensions like communication. Dwianti et al. (2023) examined competencies in Indonesian telecom but did not test communication separately using inferential statistics. The available empirical evidence does not yet account for the specific effect of communication skills on project success in the context of 5G deployment in Sub-Saharan Africa. This study addresses that gap by empirically testing how communication skills influence project success in Ethio Telecom's 5G projects in Addis Ababa.

2.4.2.3 Technical Knowledge

Technical knowledge is one of the key competencies that project leaders need, especially in projects that involve complex technologies and systems. When leaders understand the technical side of their projects, they can make better decisions, guide their teams more accurately and catch problems before they become serious. Research shows that leaders with strong technical knowledge reduce errors, minimize rework and improve planning and monitoring processes (Mbebe & Jowah, 2024). Muller and Lecoeuvre (2014) also found that leaders who combine technical expertise with decision-making and communication are more effective in guiding their teams through complex project challenges.

Recent studies have given more attention to technical knowledge as a standalone competency that directly influences project outcomes. Sonelma and Sucita (2022) found that technical project management competence had a significant positive influence on construction project success, showing that technical knowledge is not just a background requirement but an active driver of performance. Mishra et al. (2024) went further and examined technical knowledge specifically in the context of 5G projects, finding that project managers in 5G deployment need deep understanding of network architecture, spectrum management, latency requirements and system integration all of which are highly technical areas that require strong foundational knowledge. Bhatti and Khan (2024) also confirmed that technical competence, combined with risk management awareness, significantly improves project success in IT projects, especially when projects involve high uncertainty and complex technical requirements.

However, some researchers have raised important questions about the limits of technical knowledge as a leadership competency. Galvin et al. (2016) argue that technical knowledge alone

is not enough leaders must also be able to apply that knowledge under pressure and in situations where conditions are changing quickly. This is an important distinction because it means that knowing the technology is different from being able to use that knowledge effectively when things go wrong. Muller and Lecoeuvre (2014) also pointed out that in large projects, technical knowledge needs to be integrated into governance and decision-making structures, otherwise individual technical competence may not translate into better project outcomes at the organizational level. These qualifications suggest that technical knowledge works best when it is combined with other competencies and supported by good organizational systems.

In the Ethiopian context, studies have confirmed that technical competence contributes to project success. Samson (2020) reported that leadership skills including technical understanding had a strong positive effect on project outcomes in the Defense Construction Enterprise. Tsion (2021) similarly found that leaders who demonstrated stronger overall competence, including technical dimensions, achieved better project results at East Africa Bottling SC. Kant and Areri (2023) also confirmed a positive relationship between project manager competency and project success in Ethiopian firms. However, Samson (2020) studied a construction enterprise, Tsion (2021) worked in a bottling company, and Kant and Areri (2023) focused on manufacturing and agriculture firms in Oromia. None of these studies examined technical knowledge as a specific independent variable in a telecommunications project, and none tested its effect in an environment involving 5G network technology, which is technically far more complex than what was studied in those earlier Ethiopian works.

This is exactly why technical knowledge was selected as one of the five independent variables in this study. In Ethio Telecom's 5G deployment projects, the technology involved is among the most advanced in the telecommunications industry. Project leaders need to understand things like antenna configuration, core network architecture, radio access network planning and vendor-specific equipment requirements. If a leader does not have this technical background, they cannot effectively evaluate whether the work is being done correctly or identify the root cause of technical problems when they arise. Mishra et al. (2024) specifically confirmed that technical knowledge is one of the most critical competencies for 5G project leaders because the technology requires constant technical judgment at every stage of deployment. Without sufficient technical knowledge, even experienced project managers may struggle to lead 5G projects successfully.

Even though technical knowledge has been recognized as an important leadership competency in different project types, the empirical evidence on how technical knowledge specifically affects project success in 5G telecommunications deployment in Africa remains very limited. Ethiopian studies that touched on technical competence (Samson, 2020; Tsion, 2021; Kant & Areri, 2023) all focused on non-telecom sectors like construction, bottling and manufacturing, and none of them isolated technical knowledge as a separate predictor variable and tested it through regression analysis in a telecommunications environment. In the international telecom literature, Misbahuddin and Maarif (2024) studied leadership in Indonesian telecom companies but focused on leadership style rather than technical knowledge as a specific competency. Dwianti et al. (2023) examined competencies in Indonesian telecom project management offices but did not test technical knowledge separately using inferential statistics. The available empirical evidence does not yet account for the specific effect of technical knowledge on project success in the context of 5G deployment in Sub-Saharan Africa. This study addresses that gap by empirically testing how technical knowledge of project leaders influences project success in Ethio Telecom's 5G projects in Addis Ababa.

2.4.2.4 Conflict-Resolution Skills

Conflict-resolution skills are one of the important competencies that project leaders must have, especially in large and complex projects where many people with different backgrounds, roles and interests work together. When conflicts are not managed well, they can slow down the project, damage team relationships and affect the quality of work. Research shows that leaders who handle disagreements constructively help maintain team cohesion, improve collaboration and protect project performance (Ibnouf Adham, 2023; De Wit et al., 2016). In large ICT and telecom projects specifically, conflict is almost inevitable because of the number of stakeholders involved and the technical complexity of the work, so having strong conflict-resolution skills is not optional — it is necessary.

Recent studies have looked more closely at how conflict resolution works in project environments. Kwofie et al. (2023) studied conflict management strategies in cross-organizational project teams and found that certain conflict resolution approaches create stronger performance outcomes than others, particularly those that focus on collaboration and open dialogue rather than avoidance or

forcing. Orchard et al. (2023) reviewed conflict resolution in interprofessional team settings and found that constructive conflict resolution improves team trust, communication and overall performance all of which are directly connected to project success. Bhakuni et al. (2024) also specifically examined conflict resolution in multi-stakeholder technical environments and found that leaders who use structured and fair conflict resolution approaches maintain better team focus and reduce the risk of work disruptions. These findings are important because they show that conflict-resolution skills are not just about keeping peace they actively contribute to better project outcomes.

However, some researchers have pointed out that conflict resolution is more complicated than it looks. De Wit et al. (2016) conducted a meta-analysis and found that not all types of conflict harm project performance equally task conflict, when managed well, can actually lead to better decision-making and innovation, while relationship conflict is almost always harmful. This is an important distinction because it means leaders need to understand what kind of conflict they are dealing with before deciding how to respond. Malingumu (2023) also found that servant leadership approaches to conflict resolution, which emphasize listening and empathy over authority, produce better outcomes in terms of team performance and turnover intention, but only when the organizational culture supports that style. This suggests that the effectiveness of conflict-resolution skills also depends on the broader organizational context, which is something that earlier studies on Ethiopian projects did not really examine.

In the Ethiopian context, conflict management has been mentioned as part of overall leadership competence in project studies. Samson (2020) reported that leadership skills including interpersonal competencies like conflict management had a positive effect on project success in the Defense Construction Enterprise, and Tsion (2021) found similar results at East Africa Bottling SC. Kant and Areri (2023) also confirmed that overall project manager competency, which includes conflict-resolution dimensions, positively influenced project success in Ethiopian firms. However, as mentioned earlier, Samson (2020) studied a construction enterprise, Tsion (2021) worked in a bottling company and Kant and Areri (2023) focused on manufacturing and agriculture firms in Oromia. None of them examined conflict-resolution skills as a separate independent variable in a telecommunications project, and none tested how this competency specifically affects

5G deployment outcomes where conflicts often arise between internal technical teams, equipment vendors and management over schedules, budgets and technical specifications.

This is an important reason why conflict resolution was included as one of the five independent variables in this study. In Ethio Telecom's 5G deployment projects, conflict situations are very common. For example, disagreements can happen between internal engineers and external vendors about equipment installation timelines, or between project managers and senior management about budget allocation and scope changes. If these conflicts are not resolved quickly and fairly, they can cause serious delays and affect the overall quality of the network being deployed. Bhakuni et al. (2024) specifically highlighted that in multi-vendor technical projects, conflict-resolution competence is one of the leadership skills that most directly protects project timelines and team productivity. This makes it especially relevant for Ethio Telecom's context where multiple vendors like Ericsson, Huawei and Nokia are involved simultaneously.

Even though conflict-resolution skills have been studied in different project and organizational settings, the empirical evidence on how this specific competency affects project success in 5G telecommunications deployment in Africa is still very limited. Ethiopian studies that mentioned conflict management as part of leadership competence (Samson, 2020; Tsion, 2021; Kant & Areri, 2023) all focused on non-telecom sectors and did not test conflict-resolution skills as a separate predictor variable through regression analysis in a telecommunications environment. In the international literature, Misbahuddin and Maarif (2024) studied leadership in Indonesian telecom companies but focused on leadership style and did not isolate conflict resolution as a specific competency dimension. Dwianti et al. (2023) examined project management office competencies in Indonesian telecom but again did not test conflict resolution separately using inferential statistics. The available empirical evidence does not yet account for the specific effect of conflict-resolution skills on project success in the context of 5G deployment in Sub-Saharan Africa. This study addresses that gap by empirically testing how conflict-resolution skills of project leaders influence project success in Ethio Telecom's 5G projects in Addis Ababa.

2.4.2.5 Risk Management Competence

Risk management competence is the ability of project leaders to identify, assess and respond to potential problems before they become serious and affect project outcomes. Leaders who manage risks proactively can minimize schedule disruptions, control costs and improve the overall predictability of project delivery (Hillson, 2021). In complex projects like 5G deployment, risks can come from many different sources including technical failures, supply chain delays, financial constraints and regulatory changes, so anticipating these challenges early is very important for keeping the project on track (Cerezo-Narvaez et al., 2022).

Recent studies have confirmed the important role of risk management competence in project success across different contexts. Ouma et al. (2022) examined risk analysis as a risk management practice in Kenya's commercial banking IT projects and found that systematic risk analysis had a significant positive effect on project performance, showing that proactive risk identification directly contributes to better outcomes. Cerezo-Narvaez et al. (2022) studied complex construction projects and found that integrating risk management knowledge into project planning significantly improves predictability and reduces project failures. Obondi (2022) also found that the utilization of risk monitoring and control practices had a strong positive relationship with project success in construction projects, particularly in terms of schedule and cost performance. Bhatti and Khan (2024) confirmed in IT projects that risk management competence moderates the relationship between leadership competency and project success, meaning that leaders who combine strong overall competence with good risk management skills achieve significantly better results than those who do not.

However, not all researchers see risk management in the same way. Flyvbjerg (2017) argues that in large infrastructure projects, risk management plans often exist on paper but fail to prevent cost overruns and delays in practice because the real problem is not lack of risk planning but optimism bias the tendency of project teams to underestimate risks and overestimate their ability to handle them. This is a very important challenge to the standard view of risk management because it suggests that having risk management competence is not enough if the organizational culture does not support honest risk reporting and escalation. Cerezo-Narvaez et al. (2022) also noted that risk management effectiveness depends heavily on how well it is integrated into overall project

governance, not just on individual leader competence. These qualifications are relevant for Ethio Telecom's context because large state-linked organizations sometimes face pressure to report optimistic project progress even when serious risks exist, which can undermine even the best risk management efforts.

In the Ethiopian context, risk management has been mentioned as part of broader leadership competence in project studies. Samson (2020) found that leadership skills including risk-related competencies had a strong positive effect on project success in the Defense Construction Enterprise, and Tsion (2021) reported similar results at East Africa Bottling SC where leaders who demonstrated stronger overall competence including risk awareness achieved better project outcomes. Kant and Areri (2023) also confirmed that project manager competency positively influenced project success in Ethiopian firms in Oromia. But again, Samson (2020) studied a construction enterprise, Tsion (2021) worked in a bottling company and Kant and Areri (2023) focused on manufacturing and agriculture firms. None of these studies examined risk management competence as a specific independent variable in a telecommunications project, and none tested how this competency affects 5G deployment outcomes where risks include things like spectrum interference, equipment compatibility failures, vendor delivery delays and evolving technical standards.

This is a key reason why risk management competence was included as one of the five independent variables in this study. In Ethio Telecom's 5G deployment projects, the risk environment is particularly challenging. The technology itself is still relatively new in Ethiopia, the supply chain depends heavily on international vendors and the regulatory environment around spectrum allocation is still developing. A project leader who cannot identify and manage these risks early will likely face serious problems with schedule and quality. Mishra et al. (2024) specifically found that 5G projects require leaders with strong risk awareness because the technology introduces new types of risks that did not exist in 3G or 4G deployments, including risks related to network slicing, edge computing integration and cybersecurity of the new infrastructure. Oni (2023) also studied security risk propagation in large-scale 5G network projects in developing nations and found that risk management becomes even more critical in developing country contexts where institutional support systems are weaker. These findings together make a strong case for why risk management competence deserves specific attention in the context of Ethio Telecom's 5G projects.

Even though risk management competence has been studied across many project types and confirmed as an important predictor of success, the empirical evidence on how this specific competency affects project success in 5G telecommunications deployment in Africa is still very limited. Ethiopian studies that mentioned risk management as part of leadership competence (Samson, 2020; Tsion, 2021; Kant & Areri, 2023) all focused on non-telecom sectors like construction, bottling and manufacturing and did not isolate risk management as a separate predictor through regression analysis in a telecommunications setting. In the international literature, Misbahuddin and Maarif (2024) studied leadership in Indonesian telecom companies but focused on leadership style and not on risk management competence as a specific dimension. Dwianti et al. (2023) examined project management competencies in Indonesian telecom but did not test risk management separately using inferential statistics. The available empirical evidence does not yet account for the specific effect of risk management competence on project success in the context of 5G deployment in Sub-Saharan Africa. This study addresses that gap by empirically testing how risk management competence of project leaders influences project success in Ethio Telecom's 5G projects in Addis Ababa.

2.5 Conceptual Framework

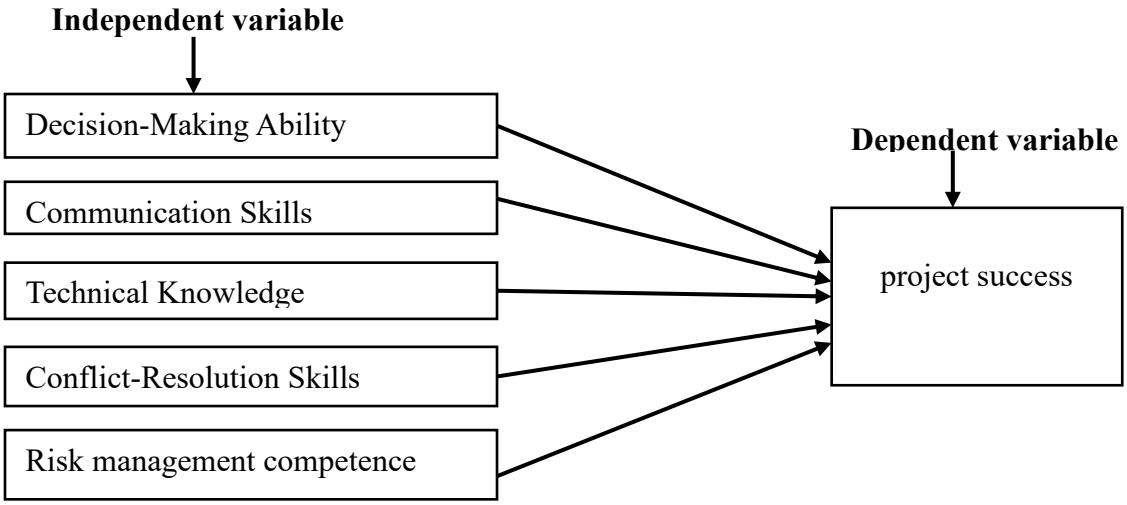


Figure 1: Figure Conceptual Framework

2.6 Research Hypotheses

Based on the conceptual framework presented in Figure 2.1, this study will propose the following hypotheses to examine the impact of project leadership competence on project success:

i. H1: Decision-making ability influences project success positively by enhancing planning and control.
ii. H2: Communication skills positively influence project success through coordination, reducing misunderstandings and strengthening stakeholder engagement.
iii. H3: Technical knowledge positively influences project success by supporting informed decision-making, problem-solving and effective risk management.
iv. H4: Conflict-resolution skills positively influence project success by maintaining team cohesion and preventing delay or cost overrun.
v. H5: Risk management competence has positive impact on project success through enabling proactive identification and mitigation of risks.

CHAPTER THREE

3.RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methods used to study the impact of project leadership competence on project success in Ethio Telecom's 5G projects in Addis Ababa, including the research design, research approach, target population, sampling method, measurements, data sources, data collection procedures, data analysis techniques and the ethical considerations.

3.2 Research Design

Research design is the plan that guided how the study was organized and how the research questions were answered and it links the study objectives with the methods for data collection and data analysis (Creswell & Creswell, 2018). There are different research design types including descriptive, explanatory, exploratory, correlational, experimental and case study designs (Saunders *et al.*, 2019).

For this study, the researcher used a descriptive and explanatory research design. It was descriptive because the study described the current level of project leadership competence such as decision-making, communication, technical knowledge, conflict-resolution and risk management (Muller & Turner, 2010; Galvin *et al.*, 2016). The explanatory design was used to examine how these competences influence project success which is measured by schedule, cost, quality and stakeholder satisfaction (PMI, 2021; PMI, 2024).

3.3 Research Approach

Research approach explains how the study moves from the research questions to collecting and analyzing data. It shows the logic behind the methods and why they fit the objectives of the study (Creswell & Creswell, 2018). There are three main types of research approach: quantitative, qualitative and mixed methods (Saunders *et al.*, 2019); Quantitative focuses on numbers and statistical analysis, qualitative deals with words and meanings and mixed methods combine both.

For this study, the researcher used quantitative research approach to examine how project leadership competence influences project success in Ethio Telecom's 5G projects and this

relationship is best measured using numerical data. Quantitative research is suitable when the researcher needs to test hypotheses, measure relationships and make conclusions based on statistical evidence (Creswell & Creswell, 2018).

3.4 Population and Sample

Population refers to the full group of people who share the characteristics that the study is interested in and it is basically the entire set from which the researcher wants to collect information and draw conclusions (Creswell & Creswell, 2018). For this study, the population included Ethio Telecom employees who had direct leadership responsibilities during the 5G deployment projects in Addis Ababa selected because they made decision, coordinated activities and supervised implementation tasks.

The population consisted of Chief Officers, Program Directors, Managers and Supervisors, who were part of the 5G rollout work; a total of 162 employees who occupied these leadership positions during the deployment period. This group formed the total population for the study.

According to Cochran (1977) and Creswell and Creswell (2018), when the population size is manageable, a census approach is recommended because it removes sampling error and provides full representation of the population. Based on this guidance, the researcher applied a census method for this study since the total population size of 162 is manageable. The entire group was included in the study. This method improves the accuracy of the findings as every leader with decision-making and supervisory responsibility is considered and no leadership group is left out.

3.5 Data Sources and Types

In research, data types describe the kind of information collected and data sources. This study uses primary collected directly from the field using a structured questionnaire distributed to Ethio Telecom employees who were directly involved in the 5G deployment projects in Addis Ababa such as Chief Officers, Program Directors, Managers and Supervisors, because they have leadership roles in decision-making, communication, technical guidance, conflict management and risk handling during the 5G rollout.

3.6 Data Collection Procedures

The questionnaire was developed using validated items from earlier studies and project management standards. Then pilot test was carried out to check the clarity and reliability of the questions. After making small adjustments based on the pilot feedback, the researcher obtained permission from Addis Ababa University and Ethio Telecom to begin the main data collection. The final structured questionnaire was then distributed to the selected respondents shared both in printed form and electronically, depending on what was convenient for each respondent and clear instruction were added to guide them on how to complete the items and enough time was given for honest responses. To improve the response rate, the researcher made polite follow-ups through email and phone reminders. After the questionnaires were returned, they were checked for completeness, coded and then entered into SPSS for analysis.

3.7 Data Analysis Techniques

Quantitative data analysis techniques including descriptive and inferential analysis to examine how project leadership competence affects project success in Ethio Telecom's 5G projects. The responses were coded and entered into the statistical software SPSS. The descriptive statistics such as mean, standard deviation and frequency were used to obtain information on the respondents' profiles and also showed the general level of each leadership competence dimension and the project success indicators. Descriptive analysis made it easier to understand how respondents rated decision-making, communication, technical knowledge, conflict-resolution, risk management and the overall success of the 5G deployment.

Inferential statistics including correlation and regression were also used to examine the relationships between the independent and dependent variables. Correlation was used to measure the relationship, while the multiple linear regression analysis was used to test the cause-effect analysis of the study variables. The study included five leadership competence dimensions were the independent variables and project success as the dependent variable. Before running the regression model, the researcher also checked important assumptions such as linearity, normality of residuals, multicollinearity and homoscedasticity to make sure the model results were valid

Multiple Linear Regression Model is appropriate because it allows testing how several independent variables together and individually influence one dependent variable (Creswell & Creswell, 2018). The model is specified as:

$$PS_i = \beta_0 + \beta_1 DM_i + \beta_2 COM_i + \beta_3 TK_i + \beta_4 CR_i + \beta_5 RM_i + \varepsilon_i$$

Where:

- PS_i= Project success score for respondent i
- DM, COM, TK, CR, RM= Scores for decision-making, communication, technical knowledge, conflict resolution and risk management
- $\beta_1$to β_5= Coefficients showing how much each competency contributes to project success
- ε_i= Error term

3.8 Reliability and Validity

Making sure the data is reliable and valid is very important because it shows that the results of the study can be trusted and reliability means the questionnaire produces similar results when it is used under the same condition. To check this, the researcher already conducted a pilot test before the main data collection.

Reliability analysis was carried out to check how well the items under each variable measure the same idea; it is important to confirm internal consistency before moving to deeper statistical tests. Reliability test is important because unreliable items can weaken later findings. Cronbach's alpha is the common measure for this purpose. According to Creswell and Creswell (2018), a Cronbach's alpha value of 0.70 or above is usually considered acceptable. For this study after the pilot test, Cronbach's Alpha was calculated for each group of items. A value of 0.70 or higher was taken as acceptable to show that the questionnaire has good internal consistency (Creswell & Creswell, 2018). In this study, reliability was tested for the six main variables: decision making, communication, technical knowledge, conflict resolution, risk management and project success. Each variable included five questionnaire items and the results are presented in Table 4.6.1.

Table 1: Reliability Test Results (Cronbach's Alpha)

Variable	Cronbach's Alpha	N of Items
Decision-Making	0.870	5
Communication	0.719	5
Technical Knowledge	0.786	5
Conflict Resolution	0.791	5
Risk Management	0.812	5
Project Success	0.779	5

Source: Researcher's computation from survey data (2026).

Content validity was ensured by preparing the questions based on recent research and recognized project management standards. This includes studies such as Muller and Turner (2010), Galvin *et al.* (2016), Ochoa Pacheco *et al.* (2023), Pantovic *et al.* (2024)and the PMBOK® Guide (PMI, 2021); each item was carefully designed to match the five leadership competence dimensions decision-making, communication, technical knowledge, conflict-resolution and risk management and the four project success indicators. In addition, face validity was checked through expert review; professionals from Addis Ababa University and one professional from Ethio Telecom reviewed the questionnaire to make sure the questions were clear, relevant and aligned with the objectives of the research.

3.9 Ethical Consideration

Participants of the study were informed about the objectives of the study emphasizing that the data is used only for academic purposes. The data was collected using questionnaire techniques and doing it with the full consent of the participants. A statement that clearly indicates their participation is only on a voluntary basis and they were advised not to include their names and address on the questionnaire. Also, focus group discussion with respondents was conducted upon their willingness and full collaboration. Careful attention was given to respect the rights, needs and values of the participants and maintain confidentiality of the data and acknowledging sources of information acknowledged.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the main findings of the study based on the data collected from employees who worked in the 5G deployment projects of Ethio Telecom in Addis Ababa. The purpose of the analysis is to understand how the five leadership competence dimensions decision-making, communication, technical knowledge, conflict-resolution and risk-management shape the success of these high-technology projects.

4.2 Response Rate

A total of 162 questionnaires were distributed to employees who were involved in the 5G deployment project of Ethio Telecom. Out of these, 125 questionnaires were returned and after checking the completeness of each response, 120 questionnaires were found valid and included in the final analysis resulting in 74% valid response rate. This is generally considered acceptable in organizational and project-based research because many respondents work under tight schedules and may not always complete surveys on time. According to Creswell and Creswell (2018), response rates between 50% and 70% are typically adequate for survey-based studies. The valid responses also came from different leadership levels and this helped the study obtain more balanced and trustworthy findings.

Table 2: Response Rate of the Study

Description	Number	Percentage
Distributed	162	100%
Returned	125	77%
Valid for Analysis	120	74%

Source: Researcher's own calculations using survey data 2026.

4.3 Profile of Respondents

The respondents who took part in this study came from different leadership positions including both operational and managerial levels. As shown in Table 4.2, most respondents were supervisors, who are directly involved in day-to-day project activities. Managers formed the second-largest

group and program directors represented a smaller proportion of the respondents. Only two chief officers participated.

Table 3: Respondents by Job Position

Job Position	Frequency	Percent
Chief Officer	2	1.70%
Program Director	8	6.70%
Manager	30	25.00%
Supervisor	80	66.70%
Total	**120**	**100%**

Source: Researcher's own calculations using survey data 2026.

4.4 Demographic Characteristics of Respondents

From the total 120 valid responses, 20.8% were female (25 respondents) and 79.2% were male (95 respondents). The age distribution shows that most respondents are in their mid-career stage, the largest group was in the 36–45 age range (55%), followed by those aged 46–55 (25.8%). Remaining 15%, were 26–35and 4.2% were older than 56. The educational background of the respondents also shows that more than half held Bachelor's degree (55%) and 40% had Master's degree, 5% had completed Technical School programs. This indicates that the workforce engaged in the 5G project have strong academic preparation and field experience.

Work experience shows this mid-career profile; the largest group had 6–10 years of experience (46.7%), followed by those with 2–5 years (20%) and 11–15 years (20%). Smaller proportion reported more than 16 years (8.3%) or less than two years (5%) of experience. Experience in the 5G project also appears strong as more than half of the respondents had worked on the project for 1–5 years (55%) and 35% had less than one year of involvement and 10% had more than five years of experience.

Table 4: Demographic Characteristics of Respondents

Demographic Characteristics of Respondents		
Gender		
Category	**Frequency**	**Percent**
Female	25	20.80%
Male	95	79.20%
Total	120	100%
Age		
18-25	0	0%
26–35	18	15%
36–45	66	55%
46–55	31	25.8%
>56	5	4.2%
Total	120	100%
Education Level		
Technical School	6	5%
Bachelor's degree	66	55%
Master's degree	48	40%
Total	120	100%
Work Experience (Years)		
<2 years	6	5%
2–5 years	24	20%
6–10 years	56	46.70%
11–15 years	24	20%
>16 years	10	8.3%
Total	120	100%
Years in Project		
<1 year	42	35%
1–5 years	66	55%
>5 years	12	10%
Total	120	100%

Source: Researcher's own calculations using survey data 2026.

4.5 Descriptive Analysis

This section include results of the descriptive statistics measuring the five leadership competence dimensions and the level of project success using five-point Likert scale (1 = strongly disagree to 5 = strongly agree). In this study, the interpretation basis on the common practice used in

Likert-scale research, where scores above the midpoint (3.0) are taken as positive responses and values closer to 4.0 show relatively strong agreement. The interpretation of standard deviation also follows the typical ranges found in organizational survey research accordingly, SD values below 0.40 are considered low variability, values around 0.50 indicate moderate variability and values above 0.80 show high diversity in responses (Creswell & Creswell, 2018).

4.5.1 Decision-making

The decision-making competence mean score was 3.702 (SD = 0.5307), this indicates that many respondents agreed that project leaders were able to make timely and appropriate decision during the 5G rollout. Some respondents, especially those from busy or technically complicated sites, reported lower satisfaction with decision-making. The result shows that few respondents disagreed or were unsure about the strength of decision-making in their area.

Despite these differences, the average score still shows that decision-making was generally viewed as consistent leadership strength during the 5G deployment and many respondents noticed that their leaders tried to act quickly when issues appeared, adapt decision when project condition shifted and involve relevant team members appropriately.

Table 5: The summary of descriptive Likert statistics decision-making

Statement	Mean	Std. Deviation
Project leaders make decision promptly when issues arise.	3.667	0.599
Decision are based on accurate and sufficient information.	3.642	0.683
Team members are involved appropriately in decision-making.	3.758	0.698
Timely decision prevent delay and cost overruns.	3.708	0.691
Leaders adapt decision quickly when condition change.	3.733	0.59

Source: Researcher's own calculations using survey data 2026.

4.5.2 Communication

Communication recorded mean score of 3.722, showing the higher values in the leadership competence set. This shows that respondents generally agreed communication in the project was effective and helpful during the 5G rollout. In large rollouts, many tasks run at the same time and different team (planning, installation, integration, vendors and management) must coordinate and

in that kind of environment, structured and timely communication reduces confusion and helps team keep the same picture of priorities and next steps (SD = 0.396) indicating that answers were close to each other.

The statement under communication "Goal and expectations are communicated clearly" (M=3.792) shows that many respondents felt the objectives were understandable, not vague. "Leaders provide timely updates" (M = 3.742) and "Leaders use appropriate channels for urgent communication" (M = 3.733) indicates habit of regular progress messaging and channel discipline. "Information flows smoothly among team members" (M = 3.675) and "Clear communication reduces stakeholder misunderstandings" (M = 3.667) are relatively lower (SD = 0.3969).

Table 6: The summary of descriptive Likert statistics communication

Statement	Mean	Std. Deviation
Project goal and expectations are communicated clearly.	3.792	0.517
Information flows smoothly among team members.	3.675	0.582
Leaders provide timely updates on progress and changes.	3.742	0.587
Clear communication reduces stakeholder misunderstandings.	3.667	0.64
Leaders use appropriate channels for urgent communication.	3.733	0.561

Source: Researcher's own calculations using survey data 2026.

4.5.3 Technical knowledge

The results for the technical knowledge (M=3.665), shows moderate to high perception of leaders' technical understanding of 5G system and deployment processes (SD = 0.4492). there is moderate variation in responses. This variation may show differences in professional backgrounds among project leaders. Despite this variation, respondents generally believed that leaders have sufficient technical knowledge to guide installation, configuration and troubleshooting activities during the project.

Across the item-level means, the pattern stays consistently positive. Respondents agreed that leaders understand technical aspects of 5G (M = 3.617) and that technical knowledge helps to solve issues effectively (M = 3.683). they also agreed that leaders provide accurate technical guidance (M = 3.625), improve planning and monitoring with their expertise (M = 3.725) and assess technical risks accurately (M = 3.675). These results describe leadership group that can read

site realities, translate vendor documents to field actions. Some team likely faced tough sites where guidance or risk judgments felt slower.

Table 7: The summary of descriptive Likert statistics technical knowledge

Statement	Mean	Std. Deviation
Project leaders understand technical aspects of 5G deployment.	3.617	0.582
Technical knowledge helps to solve project issues effectively.	3.683	0.594
Leaders provide accurate technical guidance to the team.	3.625	0.662
Leaders' technical expertise improves planning and monitoring.	3.725	0.579
Leaders can assess technical risks accurately.	3.675	0.637

Source: Researcher's own calculations using survey data 2026.

4.5.4 Conflict resolution

The survey results on conflict resolution show that respondents generally agreed that project leaders managed disagreement and coordination challenges effectively (M =3.687, SD = 0.449). Respondents agreed that leaders address conflict promptly (M = 3.700); and use fair methods (M = 3.725). They also confirmed that conflict practices help maintain team cooperation (M = 3.650) and protect schedules (M = 3.667); Open discussion appears part of the culture (M = 3.692). The moderate SD reminds that not all sites have the same level of conflict control workload spikes.

Table 8: The summary of descriptive Likert statistics Conflict resolution

Statement	Mean	Std. Deviation
Leaders address conflict among team members promptly.	3.7	0.574
Leaders use fair methods to resolve disputes.	3.725	0.579
Conflict resolution maintains team cooperation.	3.65	0.63
Leaders prevent conflict from affecting schedules.	3.667	0.64
Leaders encourage open discussion to resolve disagreement.	3.692	0.619

Source: Researcher's own calculations using survey data 2026.

4.5.5 Risk management

The standard deviation for risk management (SD = 0.4742) shows low to moderate variation across respondents and most of the respondents shared almost the same view about the level of risk

practices they experienced; The finding indicates that risk-related activities - such as early identification, written mitigation steps and regular monitoring - were present.

Early identification of risks (M = 3.758) indicates that leaders were alert before problems turned into bigger issues; mitigation planning (M = 3.683) indicates that leaders moved beyond simply pointing out risks and prepared actions in case the risks happened. Implementation on schedule (M = 3.658) shows that risk actions were not just planned on paper, but they were put into practice on time, even though some sites may have faced pressure that caused small delay. The results on Monitoring throughout the lifecycle (M = 3.775) show ongoing follow-up instead of one-time checking. Clear communication of risk actions (M = 3.783) means stakeholders were informed well, and these findings describe risk-management culture that is visible and practical and one that many team experienced in similar way.

Table 9: The summary of descriptive Likert statistics Risk management

Statement	Mean	Std. Deviation
Leaders identify potential risks early in the project.	3.758	0.622
Leaders develop effective risk mitigation plans.	3.683	0.661
Risk management is implemented on schedule.	3.658	0.587
Leaders monitor risks throughout the project lifecycle.	3.775	0.628
Leaders communicate risk actions clearly to stakeholders.	3.783	0.638

Source: Researcher's own calculations using survey data 2026.

4.5.6 Project success

Respondents have in average positive view about the 5G projects success (M = 3.787). This shows that most respondents felt the 5G rollout performed well in the key areas such as meeting schedules, staying within budget and reaching the expected quality standards. mean score that is close to four show strong positive perception, meaning many respondents believed the project achieved most of the planned objectives during the implementation period. Even though not every site performed the same way, but the general perception remained clearly positive (SD = 0.4344).

The statement "The project was completed according to the planned schedule" has got the mean score of 3.767. Staying within the approved budget also scored positively (M = 3.783) and is important because telecom infrastructure work usually faces cost pressures linked to materials,

logistics and contractors. The item on quality (M = 3.858) show that respondents strongly perceive the installations and integrations met the expected technical standards. For the statement "Stakeholders were satisfied with the project outcomes" (M = 3.792). this also shows high level of approval from internal and external factors involved. The last item, "The project achieved its intended objectives effectively," scored M = 3.733, again confirming the overall positive impressions from respondents.

Table 10: The summary of descriptive Likert statistics Project success

Statement	Mean	Std. Deviation
The project was completed according to the planned schedule.	3.767	0.645
The project stayed within the approved budget.	3.783	0.582
The project met all quality standards.	3.858	0.584
Stakeholders were satisfied with the project outcomes.	3.792	0.607
The project achieved its intended objectives effectively.	3.733	0.561

Source: Researcher's own calculations using survey data 2026.

4.6 Inferential Analysis

4.6.1 Correlation

Correlation analysis was conducted to examine the relationship between the five leadership competence dimensions and project success. Pearson's correlation coefficient (r) was used to measure the strength and direction of the linear relationship between variables and the statistical significance was tested at the 0.05 and 0.01 levels (two-tailed).

Pearson correlation values range from –1 to +1. Values closer to +1 indicate strong positive relationship, values near 0 indicate weak or no linear relationship and values closer to –1 indicate strong negative relationship. positive coefficient means that when one variable increases, the other variable also tends to increase; it also shows which leadership dimensions have stronger relationships with project outcomes.

Decision making shows moderate and statistically significant positive relationship with project success ($r = 0.486$, $p < 0.01$), showing that leaders who make timely, informed and clear decision

tend to contribute positively to project performance. Therefore, decision making appears to play an important role in improving project success.

Communication has small but statistically significant positive relationship with project success ($r = 0.183$, $p < 0.05$). Although the correlation value is relatively low compared to other competencies, it is still significant and it indicates that clear instruction, smooth information flow and timely updates support coordination among project team.

statistically significant positive relationship between technical knowledge and project success ($r = 0.318$, $p < 0.01$); leaders who understand the technical aspects of 5G system, configuration procedures and troubleshooting processes are more likely to support successful project implementation. Strong technical knowledge helps leaders guide team properly, solve technical problems quickly and reduce mistakes during installation and integration.

Conflict resolution shows positive but non-significant relationship with project success ($r = 0.168$, $p = 0.067$). This may indicate that conflict situation were not very frequent or not strong enough to directly affect overall project success.

Risk management shows moderate and statistically significant positive relationship with project success ($r = 0.291$, $p < 0.01$). This indicates that leaders who identify risks early, prepare mitigation strategies and continuously monitor potential problems tend to achieve better project outcomes. In 5G deployment, risk management is important to reduce disruption related to logistics, technical integration, site access and coordination issues.

The correlation results indicate that four leadership competence dimensions - decision-making, communication, technical knowledge and risk management - have significant positive relationships with project success. Among these, decision-making shows the strongest relationship with project success.

Table 11: Pearson Correlation Matrix (N = 120)

Variables	DM_mean	COM_mean	TK_mean	CR_mean	RM_mean	PS_mean
Decision-Making (DM)	1					
Communication (COM)	0.088	1				
Technical Knowledge (TK)	–0.122	–0.118	1			
Conflict-Resolution (CR)	–0.174	–0.063	0.008	1		
Risk-Management (RM)	0.113	0.05	–0.001	–0.015	1	
Project Success (PS)	.486**	.183*	.318**	0.168	.291**	1

Reports:

- ** $p < 0.01$ (2-tailed)
- *$p < 0.05$ (2-tailed)
- Values taken directly from SPSS correlation matrix.

Source: SPSS output from survey data (2026).

4.7 Multiple Regression Analysis

4.7.1 Model Assumption Test

4.7.1.1 Normality of the Error Term Distribution

For linear regression analysis to be considered reliable data should be normally distributed. For this study data normality was tested using histogram. Accordingly, the histogram presented below shows that the data is equally distributed without significant skew in both sides.

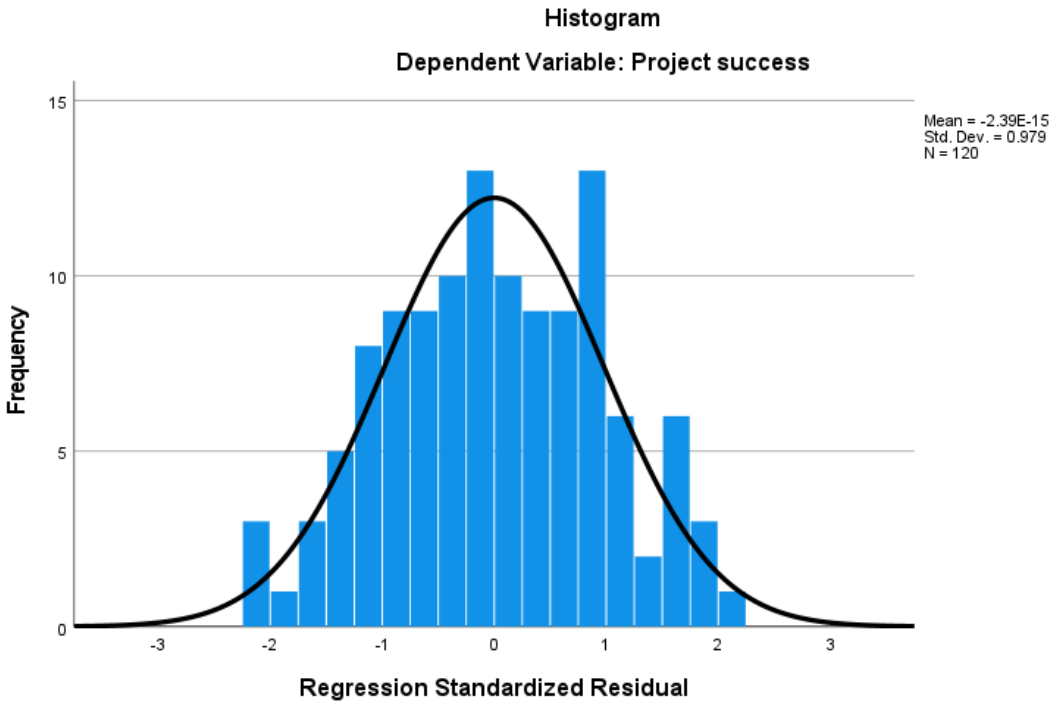


Figure 2: Histogram for Normality Test

4.7.1.2 Multicollinearity

For multiple linear regression to be reliable, independent variables shouldn't be multicollinear. For this study multicollinearity among independent variables was tested using variance inflation factor (VIF) in SPSS 27. To be considered not multicollinear the VIF value should be less than 5 and the tolerance value should be less 1. Accordingly, no multicollinearity problem was detected in the current data. Tolerance values were less than 1 and VIF values were around 1.00 and less than 1.1, indicating no multicollinearity.

Table 12: Multicollinearity test results

	Collinearity Statistics	
Model	**Tolerance**	**VIF**
Decision-making	.940	1.064
Communication	.976	1.024
Technical knowledge	.973	1.028
Conflict resolution	.967	1.034
Risk management	.985	1.015

Source: SPSS output from survey data (2026).

4.7.1.3 Heteroscedasticity

For multiple linear regression, the variance of the error terms (residuals) should be constant (homoscedastic) across all levels of the independent variables. In other words, it shouldn't be heteroscedastic which indicates non constant distribution of the residuals. The Heteroscedastic assumption can easily be checked using scatterplots or residual plots. For this study, the scatter plots of standardized residuals versus the fitted values for the regression models were visually inspected in figure 3. This shows that the data has no heteroscedasticity problem and the assumption is met.

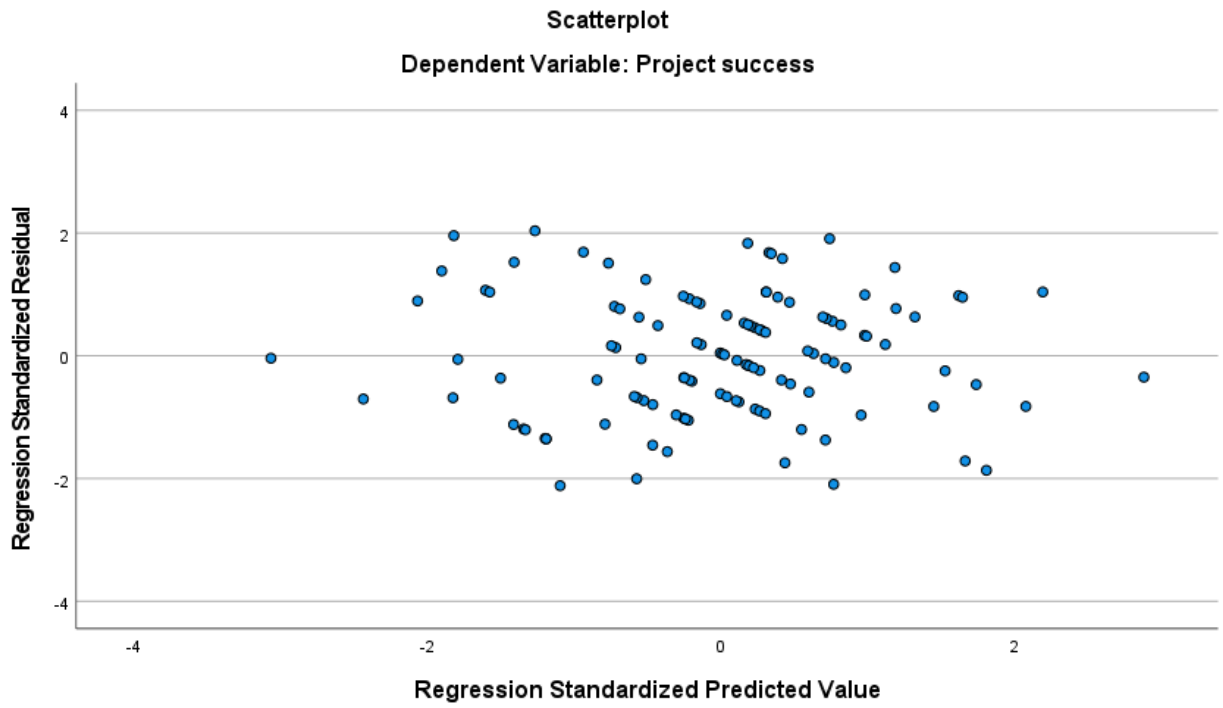


Figure 3: Scatter plot test for Heteroscedastic

4.7.1.4 Auto-correlation

The Durbin-Watson test detects auto-correlation in regression analysis which occurs when the dependent variable at time t is related to its value at the previous period. value of 2 indicates no autocorrelation, while values 0-2 indicate positive autocorrelation and values 2-4 indicate negative autocorrelation. The acceptable range for no autocorrelation is 1.5<DW<2.5. the Durbin-Watson value in this study is 2.071 which falls in the acceptable range. This shows that there is no significant autocorrelation.

4.7.2 Model Fit and Explanatory Power

The model summary shows high relationship between the dependent and predictor variables. The R value of 0.733 indicate high correlation between the predictors and project success. The R^2 value of 0.537 show approximately 53.7% of the variance in the dependent variable (project success) can be explained by the independent variables. The ANOVA results also indicate that the model is statistically significant ($F = 26.44$, $p < 0.001$). This means that the independent variables collectively have significant impact on the dependent variable.

Table 13: Regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.733[a]	.537	.517	.30202	2.071

Source: SPSS output from survey data (2026).

Table 14: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.060	5	2.412	26.444	.000[b]
	Residual	10.398	114	.091		
	Total	22.459	119			

Source: SPSS output from survey data (2026).

All five competencies are statistically significant and positively related to project success. Among them, decision-making has the strongest impact (β=0.541, p= < 0.001) followed by technical knowledge (β=0.404, p= < 0.001). Communication has the smallest beta value (0.19) but is still statistically significant (p=0.004), meaning it still plays an important role when the overlap with other variables is controlled. In the 5G rollout context, strong and fast decision-making together with solid technical knowledge create the largest improvement in project success. Conflict management (β=0.274, p= < 0.001) and risk management (β=0.225, p= < 0.001) also contribute meaningfully.

Table 15: Multiple Regression Coefficients

Predictor	B	Std. Error	β	t	Sig.	Tolerance	VIF
Constant	-1.799	0.536	-	-3.354	0.001	-	-
Decision-Making	0.443	0.054	0.541	8.222	< 0.001	0.94	1.064
Communication	0.208	0.071	0.19	2.94	0.004	0.976	1.024
Technical Knowledge	0.391	0.062	0.404	6.26	< 0.001	0.973	1.028
Conflict-Resolution	0.264	0.063	0.274	4.221	< 0.001	0.967	1.034
Risk-Management	0.206	0.059	0.225	3.498	0.001	0.985	1.015

Source: SPSS output from survey data (2026).

4.7.3 Hypotheses Testing

All five hypotheses are supported. Each leadership competence dimension has positive and statistically significant effect on project success. Leadership competence dimensions jointly and individually contribute to improving project success in the 5G deployment project.

Table 16: Hypothesis testing

Hypothesis	Finding	Decision
H1(Decision-Making Project Success)	($\beta = 0.541$, $p < 0.001$)	Supported
H2 (Communication Project Success)	($\beta = 0.190$, $p = 0.003$)	Supported
H3 (Technical Knowledge Project Success)	($\beta = 0.404$, $p < 0.001$)	Supported
H4 (Conflict-Resolution Project Success)	($\beta = 0.274$, $p < 0.001$)	Supported
H5 (Risk-Management Project Success)	($\beta = 0.225$, $p = 0.001$)	Supported

4.8 Discussion

The Ethio Telecom 5G project in Addis Ababa provides empirical findings across five key leadership competency dimensions: decision-making ability, communication skills, technical knowledge, conflict resolution, and risk management competence. The study reports that respondents generally perceived project leaders as effective across all dimensions, comparing these findings with existing empirical research reveals both consistent patterns and important differences. For example, Kant & Areri, 2023) conducted research in the Oromia region of Ethiopia, examining how project managers' competency affects project success in three Ethiopian companies. The study found positive relationship between project managers' competency and project success, with competency increases producing measurable improvements in project outcomes and this finding is consistent with the Ethio Telecom experience where positive leadership competencies were associated with positive project success.

Regarding decision making ability, the current finding indicate that project leaders are generally perceived as effective in making timely and appropriate decision during the 5G rollout. However, moderate variability in responses shows that decision-making effectiveness varies across different

sites. This pattern aligns with research findings from other infrastructure (Samarah *et al.*, 2024) examining engineering project management and finds inconsistency in decision-making approaches across project teams creates performance variations. Khamitov (2024) investigates decision-making in agile project management frameworks and identifies that individual and group biases significantly affect decision quality at different project levels. Research on large-scale infrastructure projects in developing countries reveals that decision-making consistency is *especially* challenging. (Lawoyin *et al.*, 2023) studies autonomous coordination in mega infrastructure projects. They found inconsistent decision-making across project sites creates bottlenecks and coordination failures.

The current findings reveal strong agreement among respondents that communication practices were effective throughout the 5G rollout, show consistent perception of communication effectiveness across all measured aspects. Ding *et al.* (2023) also investigated project communication skills in construction project teams in Sarawak, Malaysia, identifying that communication-related skills including persuasion, effective questioning and clear explanation rank among the top competencies for team effectiveness. The study found that free flow communication, team flexibility and seamless operation characterize effective project teams. Other research on communication in large-scale infrastructure projects documents greater variability than observed in Ethio Telecom (Rehman & Islam, 2023). They conducted meta-analytical review of IoT-enabled construction project monitoring systems, examining 67 studies on large-scale infrastructure projects and found that communication effectiveness was one of the most variable competency dimensions.

Current findings regarding technological knowledge indicate that project leaders are generally viewed as having solid understanding of technical aspects of 5G deployment. This indicates that leaders have capability to guide their teams through deployment challenges. This perception is significant given the complexity of 5G technology and the challenging environment of developing country infrastructure implementation. This result agrees with, the findings of Dwianti *et al.* (2023) who investigated project management competencies in the Indonesian telecommunications sector, finding that technical and professional specialist competencies were among the most critical competencies for telecommunications projects. Bello *et al.* (2023) also examined determinants of knowledge transfer for IT project managers and found that technical knowledge residing only with

individual leaders creates bottlenecks and undermines project resilience when leaders are unavailable. Manda, (2018) examined infrastructure management for 5G networks specifically, finding that successful 5G deployment requires not only leaders with technical knowledge but also systematic approaches to disseminating technical expertise across implementation teams.

The findings of this study indicate that project leaders are generally effective in managing disagreements and coordination challenges. This perception shows presence of open discussion culture and maintenance of team cooperation even when conflicts emerge. The moderate variability in responses, however, indicates that not all teams experienced equal effectiveness in conflict management. Research on conflict management in construction and infrastructure projects reveals similar patterns (Kwofie *et al.*, 2023) investigated relationship clusters and performance of conflict management strategies in cross-organizational project teams in Ghana's construction industry, identifying eight distinct relationship clusters among project teams and organizations. Studies on conflict management training in infrastructure projects document that systematic training programs can improve conflict resolution effectiveness (Putz *et al.*, 2021). Orchard *et al.* (2023) reviewed interprofessional team conflict resolution and found that when team building includes training in constructive controversy approaches, teams show greater capacity to enhance quality of collaborative problem-solving during conflict.

This study found that project leaders are perceived as proactive in identifying and addressing potential risks throughout the 5G deployment lifecycle. The consistent views among respondents regarding risk management effectiveness indicate shared understanding of risk management importance. This positive perception of proactive risk management aligns with findings from other infrastructure projects. For example, Obondi (2022) examined the relationship between project risk monitoring and control practices and project success in US construction projects. The study found that all project risk monitoring and control practices including risk reassessment, risk audits, contingency reserves analysis and risk status meetings were significantly and positively related to project success. Oni (2023) investigated security risk propagation in 5G network projects in developing countries and found that security vulnerabilities propagate through network dependencies.

The Ethio Telecom overall findings report positive perception of project success among respondents. This success shows contributions from the five measured leadership competency dimensions.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study was conducted to examine the relationship between five leadership competence dimensions decision-making, communication, technical knowledge, conflict-resolution and risk-management and project success in Ethio Telecom's 5G deployment projects in Addis Ababa. The analysis was based on 120 valid responses collected from project participants.

The decision-making competence received mean score of 3.702 (SD = 0.5307), indicating that respondents generally agreed on the effectiveness of leaders in making timely and appropriate decision during the 5G rollout. Despite some variability, the overall perception remained positive. Correlation analysis revealed moderate and statistically significant positive relationship between decision-making and project success ($r = 0.486$, $p < 0.01$)and the multiple regression results further emphasized this, showing decision-making had the strongest impact on project success ($\beta = 0.541$, $p < 0.001$).

Communication achieved mean score of 3.722 (SD = 0.396). This shows strong agreement among respondents regarding its effectiveness during the project. The correlation analysis indicated small but statistically significant positive relationship with project success ($r = 0.183$, $p < 0.05$). This shows that effective communication aids in coordination and reduces misunderstandings. In the regression analysis, communication still played significant role ($\beta = 0.19$ ($p = 0.004$). This confirms its importance despite being the smallest among the competencies.

Technical knowledge scored mean of 3.665 (SD = 0.4492), indicating moderate to high perception of leaders' technical understanding. The correlation results showed moderate and statistically significant positive relationship with project success ($r = 0.318$, $p < 0.01$)and the regression analysis show technical knowledge had key impact on project success ($\beta = 0.404$, $p < 0.001$).

The results of conflict resolution indicate general agreement on the effectiveness of leaders in managing conflicts (M= 3.687, SD = 0.449) with the correlation analysis showing positive but

non-significant relationship with project success ($r = 0.168$, $p = 0.067$)and the regression results indicated meaningful contribution to project success ($\beta = 0.274$, $p < 0.001$).

Risk management scored mean of 3.758 (SD = 0.4742). The correlation analysis revealed moderate and statistically significant positive relationship with project success ($r = 0.291$, $p < 0.01$), this shows that proactive risk management contributes to better project outcomes. In the regression analysis, risk management also showed significant impact ($\beta = 0.225$, $p < 0.001$); showing its role in minimizing disruptions and ensuring smooth project execution.

5.2 Conclusion

The findings showed the importance of effective decision-making in project leadership, especially in fast-paced environments like the 5G. Leaders who can make timely and informed decision significantly enhance project success. The strong correlation and regression results confirmed this finding. key lesson learned is that improving decision-making culture that encourages quick responses and adaptability can lead to improved project outcomes.

The results show that structured and timely communication is important for successful project execution as the strong consensus among respondents regarding the effectiveness of communication practices. It indicates that clear goals, regular updates and appropriate channels for information dissemination are essential. This implies that investing in communication strategies can avoid misunderstandings and align team efforts. This will in turn leads to smoother project operations.

The findings reveal that technical knowledge is key driver of project success, as leaders who have strong understanding of the technical aspects of their projects are better equipped to guide their teams and address challenges. This indicates that organizations must invest in developing the technical competencies of their leaders, and they should ensure that leaders can translate complex technical information into practical guidance. Continuous training and knowledge-sharing initiatives can empower leaders to navigate technical complexities effectively.

The results show that effective conflict resolution practices are key in maintaining team cohesion and minimizing disruption in project timelines, creating culture of open dialogue and fair conflict management can help teams navigate disagreements constructively.

The findings showed the importance of proactive risk management in achieving project success. Leaders who can identify risks early, develop mitigation strategies and monitor potential issues contribute to positive project outcomes. Therefore, establishing strong risk management culture is essential for minimizing disruptions and ensuring project continuity.

5.3 Recommendations

1. Since decision-making showed the strongest impact on project success ($\beta = 0.541$, $p < 0.001$), project leaders should improve their ability to make timely, data-driven and coordinated decision. Ethio Telecom and project management offices should provide continuous leadership training focused on analytical decision-making.

2. The findings show that technical knowledge significantly influences project success ($\beta = 0.404$, $p < 0.001$) and leaders involved in 5G deployment projects should receive regular technical training on network system, integration processes, testing procedures and troubleshooting methods through structured professional development programs and knowledge-sharing sessions to strengthen technical competence across project team.

3. Project team should maintain updated risk registers, clearly assign responsibility for risk monitoring and conduct regular risk review meetings. Early identification of potential project risks related to site access, equipment delivery, vendor coordination and technical integration will improve project performance.

4. Effective communication supports coordination among multiple stakeholders in large infrastructure projects. Therefore project communication should be standardized through formal reporting system, regular progress meetings and digital communication platforms to avoid misunderstandings and improve alignment between management, supervisors, contractors and technical team.

5. For policy makers at federal and regional level, this study provides empirical evidence that leadership competence is a critical factor in the success of telecommunications infrastructure projects. It is therefore recommended that national policies on telecommunications development give attention to human capital investment and capacity building programs that develop project leadership competencies. Institutional frameworks that support competency-based project

management should be established to improve the overall performance of infrastructure projects in Ethiopia.

6. For the scientific community, this study contributes empirical evidence from a developing country context and opens areas for further investigation. For researchers are encouraged to examine the same leadership competencies in other sectors and regions of Ethiopia, and to explore mediating and moderating variables such as organizational culture and institutional support that may affect the relationship between leadership competence and project success.

5.4 Recommendation for Future Research

This study depended on the quantitative research to achieve its objectives. Future researches can employe add qualitative approach to collect detailed data through interviews and focus group discussions. Also future researches can expand on this research by mediation or moderation effect of other variables such as stakeholder engagement, organizational culture and others. Researcher can also include other sectors that Ethiotelecom to compare the project success and associate factor, leadership competence.

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Appendix

Addis Ababa University

School of Commerce

Graduate Program (Msc) In Project Management

"The Impact of Project Leadership Competence on Project Success: The Case of Ethio Telecom's 5G Projects in Addis Ababa."

Introduction to the Respondent

I am postgraduate student at Addis Ababa University, School of Commerce, conducting research entitled:

This study aims to examine how specific leadership competencies decision-making ability, communication skills, technical knowledge, conflict-resolution skills and risk management competence affect the success of 5G deployment projects.

Your participation is very important for the accuracy and reliability of this research. The information you provide will be used only for academic purposes and will remain strictly confidential. You are not required to write your name or any personal identifiers on the questionnaire.

Please answer all questions honestly based on your experience. There are no right or wrong answers; your genuine opinion matters most. Completing the questionnaire will take few minutes.

If you have any questions or need clarification, feel free to contact me:

Researcher: Merertu Teshome
Mobile: [0911146555]
Email: [merertutame2@gmail.com]

APPENDIX : QUESTIONNAIRE

Part I: Basic Profile (Please Tick [✓] where appropriate)

1. Gender: Male ☐ Female ☐
2. Age (year): 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ >56 ☐
3. Education Qualification:

   High School ☐ Technical School ☐ Diploma ☐
   Degree ☐ Masters ☐ Doctoral ☐

4. Work level:

   Chief Officer ☐ Program Directors ☐
   Managers ☐ supervisors ☐

5. Work Experience (years):

   < 2 ☐ 2-5 ☐ 6-10 ☐ 11-15 ☐ >16 ☐

6. For how many years did you work in the project? (years)

   < 1 ☐ 1-5 ☐ >5 ☐

Part II: Close-Ended Questions

Please **tick (✓)** on the five-point scale for all questions under each category that best describes your perception of how project leadership competencies and project success practices are applied in Ethio Telecom's 5G project implementation. Answer as honestly as possible based on your experience.

Where:

Scale: SD=Strongly Disagree (1), D=Disagree (2), N=Neutral (3), A=Agree (4), SA=Strongly Agree (5).

No.	Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)
Decision-making						
1	Project leaders make decision promptly when issues arise.	☐	☐	☐	☐	☐
2	Decision are based on accurate and sufficient information.	☐	☐	☐	☐	☐
3	Team members are involved appropriately in decision-making.	☐	☐	☐	☐	☐
4	Timely decision prevent delay and cost overruns .	☐	☐	☐	☐	☐
5	Leaders adapt decision quickly when condition change.	☐	☐	☐	☐	☐
Communication						
6	Project goal and expectations are communicated clearly.	☐	☐	☐	☐	☐
7	Information flows smoothly among team members.	☐	☐	☐	☐	☐
8	Leaders provide timely updates on progress and changes.	☐	☐	☐	☐	☐
9	Clear communication reduces stakeholder misunderstandings.	☐	☐	☐	☐	☐
10	Leaders use appropriate channels for urgent communication.	☐	☐	☐	☐	☐
Technical knowledge						
11	Project leaders understand technical aspects of 5G deployment.	☐	☐	☐	☐	☐
12	Technical knowledge helps to solve project issues effectively.	☐	☐	☐	☐	☐
13	Leaders provide accurate technical guidance to the team.	☐	☐	☐	☐	☐
14	Leaders' technical expertise improves planning and monitoring.	☐	☐	☐	☐	☐
15	Leaders can assess technical risks accurately.	☐	☐	☐	☐	☐
Conflict resolution						

16	Leaders address conflict among team members promptly.	☐	☐	☐	☐	☐
17	Leaders use fair methods to resolve disputes.	☐	☐	☐	☐	☐
18	Conflict resolution maintains team cooperation.	☐	☐	☐	☐	☐
19	Leaders prevent conflict from affecting schedules.	☐	☐	☐	☐	☐
20	Leaders encourage open discussion to resolve disagreement.	☐	☐	☐	☐	☐
Risk management						
21	Leaders identify potential risks early in the project.	☐	☐	☐	☐	☐
22	Leaders develop effective risk mitigation plans.	☐	☐	☐	☐	☐
23	Risk management is implemented on schedule.	☐	☐	☐	☐	☐
24	Leaders monitor risks throughout the project lifecycle.	☐	☐	☐	☐	☐
25	Leaders communicate risk actions clearly to stakeholders.	☐	☐	☐	☐	☐
Project success						
26	The project was completed according to the planned schedule.	☐	☐	☐	☐	☐
27	The project stayed within the approved budget.	☐	☐	☐	☐	☐
28	The project met all quality standards.	☐	☐	☐	☐	☐
29	Stakeholders were satisfied with the project outcomes.	☐	☐	☐	☐	☐
30	The project achieved its intended objectives effectively.	☐	☐	☐	☐	☐