ADDIS ABABA UNIVERSITY

ASSESSMENTS OF CHALLENGING 5G NETWORK PROJECT IMPLEMENTATION: A CASE STUDY OF ETHIO TELECOM FROM PROJECT MANAGEMENT PERSPECTIVES, WITH A FOCUS ON PROJECT EXECUTION AND CLOSING

By: Wosenu Manaye

COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE GRADUATE PROGRAM IN PROJECT MANAGEMENT

July 2024

Addis Ababa, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

ASSESSMENTS OF CHALLENGING 5G NETWORK PROJECT IMPLEMENTATION: A CASE STUDY OF ETHIO TELECOM FROM PROJECT MANAGEMENT PERSPECTIVES, WITH A FOCUS ON PROJECT EXECUTION AND CLOSING

B y: Wosenu Manaye

Advisor Dr. Seifu Mamo

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

July 2024

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS SCHOOL OF COMMERCE

GRATUATE PROGRAM IN PROJECT MANAGEMENT

ASSESSMENTS OF CHALLENGING 5G NETWORK PROJECT IMPLEMENTATION: A CASE STUDY OF ETHIO TELECOM FROM PROJECT MANAGEMENT PERSPECTIVES, WITH A FOCUS ON PROJECT EXECUTION AND CLOSING

By: Wosenu Manaye

Approved by Board of Examiners

Sefu Mamo (PhD)	
Advisor	**Signature**
Berhanu Beza (PhD)	
Internal Examiner	**Signature**
Biniam B. (PhD)	31/7/24
External Examiner	**Signature**

DECLARATION

I, Wosenu Manaye, declare that this research entitled Assessments of challenging 5G network project implementation: A case study of Ethio Telecom from project management perspectives, with focus on Project Execution and Closing is the outcome of my own effort and study. All sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

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

By: Wosenu Manaye

Signature _____

Date 31/07/2024

i

ENDORSEMENT

This is to certify that Wosenu Manaye carried out her project on the topic entitled "Assessments of challenging 5G network Project implementation: A case Study of Ethio Telecom from Project Management Perspectives, with a focus on project execution and closing". This work is original in nature and is suitable for submission for the award of Master Art in Project Management.

Seifu Mamo (PhD)

Dr. Seifu Mamo

ii

ACKNOWLEDGMENT

First and foremost, I would like to express my deepest gratitude to God for providing me with the strength, wisdom, and perseverance needed to complete this thesis.

I would like to express my deepest gratitude to my late parents, Adanech Melese and Manaye Yigzaw. Their unwavering support, love, and encouragement have been the foundation of my educational journey. My father, Manaye Yigzaw, a dedicated teacher, instilled in me a passion for learning and the importance of education. My mother, Adanech Melese, provided me with the strength and compassion that have guided me through life's challenges. Though they are no longer with me, their memories and the values they imparted continue to inspire and motivate me. This work is dedicated to their enduring legacy and the profound impact they have had on my life.

I would also like to extend my heartfelt appreciation to my advisor, Doctor Seifu Mamo, for his unwavering support, guidance, and insightful feedback. His expertise and encouragement have been instrumental in the completion of this thesis.

My sincere thanks go to my sister, Etagegnehu Manaye, for her continuous support and understanding. Her encouragement has been invaluable during this challenging time. And I want to acknowledge my twin, Tagel Manaye, whose companionship and encouragement have been a source of strength and motivation.

Finally, I appreciate all the staff members at the Ethio Telecom Wireless PMO Department who participated in interviews, Surveys questionnaires and offered vital company insights.

Thank you all for your love, support, and belief in me. This achievement would not have been possible without each of you.

LIST OF ABBREVIATIONS

5G	5th Generation
Gbps	Giga Bite per seconds
IoT	Internet Of Things
ITU	INTERNATIONAL TELECOMMUNICATION UNION
KPI	KEY PERFORMANCE INDICATORS
PMI	PROJECT MANAGEMENT INSTITUTE
PMO	PROJECT MANAGEMENT OFFICE

TABLE OF CONTENTS

Table of Contents

LIST OF TABLS

ABSTRACT

Telecommunication projects have grown more complex with 5G, necessitating effective project management. Ethio Telecom, Ethiopia's national operator, aims to achieve nationwide 5G coverage by 2025. This ambitious project faces challenges such as technical issues, resource constraints, coordination difficulties, and regulatory hurdles. This mixed-methods case study evaluates Ethio Telecom's 5G rollout, focusing on execution and closing stages. The study identifies challenges and influential factors through quantitative and qualitative analysis. Objectives include assessing challenges from literature and stakeholders, comparing planned versus actual performance on scope, schedule, budget, risk planning, stakeholder engagement, and regulatory compliance; evaluating strategy effectiveness; and developing recommendations. A convergent parallel design integrates document reviews, surveys, and interviews. Ethio Telecom's documentation is analyzed against success metrics. Surveys and interviews explore strategy implementation and stakeholder perceptions. The thematic analysis identifies key factors, while cross-analysis highlights data convergences and divergences. Descriptive statistics and thematic coding in SPSS provide comprehensive insights. Preliminary findings indicate execution delays due to spectrum constraints, site acquisition issues, vendor risks, resource gaps, and coordination complexities. The closing phases experienced delays in knowledge transfer, documentation, and sign-off processes, affecting ownership transition. Recommendations include strengthening controls through centralized governance, proactive risk planning, stakeholder engagement, and skills development. This research provides insights into 5G rollouts in developing markets, offering guidance to address project management gaps and support global digital inclusion.

Keywords: case study, challenges, closing, development, digital transformation, Ethiopia, execution, infrastructure, project management, strategies, 5G networks.

CHAPTER ONE

1 INTRODUCTION

1.1 BACKGROUND

Ethio Telecom, Africa's pioneering telecom service provider since 1894, has continuously introduced the latest technologies to support Ethiopia's socio-economic development. As part of realizing the country's digital transformation agenda, Ethio Telecom has been deploying technologies and providing digital solutions to positively impact daily life and business activities (Ethio Telecom 2023).

Ethio Telecom started a new three-year LEAD Growth Strategy in July 2022, with a vision of delivering more than connectivity. The strategy aims to enable inclusive growth by providing digital and financial services and simplifying the daily activities of organizations and individuals (Ethio Telecom 2023).

This budget year 2023/24, Ethio Telecom plans to increase the subscriber base by 8.3% to reach 78 million subscribers, grow mobile voice customers by 7.5% to 74.74 million, raise data & internet users by 21% to 41.17 million, increase fixed broadband customers by 36.3% to 842.8K, raise tele density to 71%, and grow telebirr customers by 28.5% to 44.1 million and Ethio Telecom aims to generate 90.5 billion birr revenue, a 19.4% increase through new business streams, shifting from traditional to value-added services, expanding local and international products/services market, boosting telebirr access/services/partners, and enhancing service delivery/customer satisfaction/retention/loyalty (Ethio Telecom 2023).

In Ethiopia, Ethio Telecom aims to deploy 5G networks to bridge the digital divide and cater to the ever-growing demand (Ethio Telecom 2022). However, as the leading telecom provider

handling the entire telecom infrastructure, spectrum management, and service rollout in the country, upgrading networks to 5G will be a massive undertaking. The organization needs to overcome challenges related to limited financial and technological capabilities, infrastructure compatibility issues, skill development constraints, and external dependencies on regulators. Successful implementation of 5G requires thorough project planning and efficient management of various phases from initiation to transitioning to operations. Execution setbacks and incomplete closure processes can impact the tangible benefits realized from such large-scale technology projects.

Ethio Telecom is pleased to announce the official launch of commercial 5G services at 145 sites in Addis Ababa, following an earlier 5G trial. 5G offers the fastest speeds of up to 10Gbps, the lowest latency of less than 1 ms, and massive connectivity of up to 1 million connections within 1 km2 (Ethio Telecom 2023).

The implementation of 5G networks presents numerous technical, strategic, and operational challenges for any telecommunications company (ITU 2018). A successful rollout requires meticulous project planning and execution to mitigate risks and ensure objectives are met (PMI 2017).

Ethio Telecom has deployed 5G, the latest global wireless technology, in cities across Ethiopia. As one of few countries implementing 5G, it is launching commercial services in the Central East Region including Harar City and Haromaya town. This follows earlier 5G launches in Addis Ababa, Adama, Jigjiga, and Dire Dawa cities (Ethio Telecom 2024).

This research aims to assess the project management of Ethio Telecom's 5G network rollout from planning through execution and closing. It will focus on evaluating key project success

criteria including scope, schedule, budget, risks, stakeholder management, and planning (PMI 2017). The case study method will be utilized to gain an in-depth understanding of the challenges faced and lessons learned from Ethio Telecom's perspective in implementing this complex technical project (Creswell & Creswell, 2018). While the network is still in its early deployment stages, analyzing project management strategies can provide valuable insights for Ethio Telecom's continued rollout as well as inform other telecom operators embarking on 5G implementations.

1.2 PROBLEM STATEMENT

The deployment of 5G networks represents a monumental undertaking for telecommunications companies worldwide, including Ethio Telecom in Ethiopia. Despite the promises of enhanced connectivity and technological advancement, the execution and closing phases of 5G projects present numerous challenges that can significantly impact project success. This section explores the problem statement by identifying key independent variables, such as project scope, schedule, budget, risk management, stakeholder management, and regulatory oversight, and their causal effects on dependent variables affecting project outcomes.

1.2.1 PROJECT SCOPE

The project scope defines the boundaries and deliverables of the 5G-network deployment, including the geographical coverage, network architecture, and services offered. Changes in project scope can lead to scope creep, resulting in increased costs, delays, and resource constraints (Kerzner 2017). The effective management of project scope is critical for ensuring alignment with organizational objectives and meeting stakeholder expectations (PMI 2017).

1.2.2 PROJECT SCHEDULE

The project schedule outlines the timeline for completing various tasks and milestones associated with the 5G deployment. Delays in project schedules can result from resource constraints, unforeseen technical challenges, or external factors such as regulatory approvals (Khan, 2023). Schedule slippages can have cascading effects, leading to increased costs, missed opportunities, and dissatisfaction among stakeholders (Larsen et al. 2016). Therefore, maintaining a realistic and achievable project schedule is essential for project success.

1.2.3 PROJECT BUDGET

The project budget allocates financial resources for implementing the 5G network deployment, covering expenses such as equipment procurement, labor costs, and infrastructure investments. Budget overruns can occur due to inaccurate cost estimates, scope changes, or unforeseen risks (Siemiatycki, 2015). Managing project costs effectively is crucial for controlling expenditures, optimizing resource allocation, and ensuring project sustainability (Global Tenders and Bids Company, 2023).

1.2.4 RISK MANAGEMENT

Risk management involves identifying, assessing, and mitigating potential threats and opportunities that may impact the 5G project's objectives. Risks can arise from various sources, including technological uncertainties, regulatory changes, and market dynamics (Hillson & Murray-Webster, 2017). Failure to adequately address risks can lead to project delays, cost overruns, and reputational damage (Chapman & Ward, 2011). Therefore, implementing robust risk management processes is essential for minimizing project disruptions and enhancing resilience.

1.2.5 STAKEHOLDER MANAGEMENT

Stakeholder management entails engaging and communicating with individuals or groups impacted by the 5G project, including customers, employees, regulators, and community stakeholders. Project stakeholders include individuals or organizations affected by the execution or outcome of a project. Their satisfaction is crucial for the project's success, as they have the authority to determine its overall assessment. Meeting deliverables and budgets alone does not guarantee success if stakeholders are dissatisfied *(*Coolman, 2015). Therefore, cultivating positive relationships and addressing stakeholder concerns are critical for project success.

1.2.6 DEPENDENT VIARIABLE

The aforementioned independent variables of project scope, schedule, budget, risk management, and stakeholder management (Eby, 2023) directly influence dependent variables that determine the success or failure of the 5G network deployment project. These dependent variables include project outcomes such as timely delivery, cost-effectiveness, stakeholder satisfaction, regulatory compliance, and overall project performance.

The successful execution and closing of Ethio Telecom's challenging 5G network project hinges on effectively managing various independent variables, including project scope, schedule, budget, risk, stakeholders, and regulatory oversight. Understanding the causal effects of these variables on dependent project outcomes is essential for mitigating risks, optimizing resource allocation, and achieving project success.

1.3 RESEACH OBJECTIVES

The research objectives of this study are designed to investigate the causal effects of independent variables, including project scope, schedule, budget, risk management, stakeholder management,

and regulatory body oversight, on dependent variables influencing the success of Ethio Telecom's 5G network project execution and closing.

3.3.1 GENERAL OBJECTIVE

The general objective of this study is to analyze and understand the project management dynamics involved in the execution and closing phases of Ethio Telecom's challenging 5G network project, with a focus on identifying factors that contribute to project success or failure.

3.3.2 SPECIFIC OBJECTIVES

1. To Assess the Impact of Project Scope on Project Outcomes
2. To Evaluate the Influence of Project Schedule on Project Success
3. To Analyze the Relationship between Project Budget and Project Performance
4. To Assess the Effectiveness of Risk Management Strategies
5. To Analyze Stakeholder Management Practices and Stakeholder Satisfaction

The research objectives outlined in this study aim to provide a comprehensive understanding of the key factors influencing the execution and closing phases of Ethio Telecom's challenging 5G network project. By examining the causal relationships between independent variables and dependent project outcomes, this study seeks to contribute to the project management literature and provide practical insights for enhancing project success in complex telecommunications projects.

1.4 RESEARCH QUESTIONS

The research questions formulated in this study aim to delve into the causal effects of various independent variables, such as project scope, schedule, budget, risk management, and

stakeholder management, on the dependent variables influencing the success of Ethio Telecom's 5G network project execution and closing.

1.4.1 GENERAL RESEACH QUESTIONS

1: What are the key factors influencing the successful execution and closing of Ethio Telecom's challenging 5G network project from project management perspectives?

1.4.2 SPECIFIC RESARCH QUESTIONS

- **Project Scope:**

2: How do variations in project scope impact project outcomes such as schedule adherence, budget compliance, and stakeholder satisfaction?

- **Project Schedule:**

3: What is the relationship between project scheduling practices and project success factors such as timeliness of deliverables, resource utilization efficiency, and risk mitigation effectiveness?

- **Project Budget:**

4: How to do project budget allocation and expenditure influence project performance, indicators such as cost efficiency, resource allocation effectiveness, and financial risk mitigation?

- **Risk Management:**

5: What are the effective risk management strategies for mitigating project risks and enhancing project resilience during the execution and closing phases of the 5G network project?

- **Stakeholder Management:**

6: What are the best practices for stakeholder management during the execution and closing phases of the 5G network project, and how do they affect stakeholder

The research questions outlined in this study aim to provide a structured approach to investigating the complex interplay between independent variables and dependent project outcomes in Ethio Telecom's 5G network project execution and closing. By addressing these questions, this study seeks to contribute valuable insights to the field of project management and offer practical recommendations for enhancing project success in challenging telecommunications projects.

1.5 SCOPE

The scope of this study encompasses an in-depth analysis of Ethio Telecom's challenging 5G network project from project management perspectives, with a specific focus on the execution and closing phases.

- **Project Execution Phase Analysis:**

This study will thoroughly examine the execution phase of Ethio Telecom's 5G network project, including activities such as project scope, scheduling, budgeting stakeholder management, and resource allocation. By focusing on project execution, the research aims to identify critical success factors and challenges encountered during this phase.

- **Project Closing Phase Evaluation:**

Additionally, the study will investigate the closing phase of the project, which involves activities such as project completion, handover, and lessons learned. By analyzing the closing phase, the

research intends to identify strategies for ensuring project closure efficiency and maximizing project outcomes.

- **Identification of Independent and Dependent Variables**:

The research will systematically analyze independent variables such as project scope, schedule, budget, risk management, and stakeholder management oversight. Furthermore, it will explore their causal effects on dependent variables influencing project success, such as schedule adherence, budget compliance, risk, and stakeholder satisfaction.

- **Case Study Approach:**

Utilizing a case study methodology, the research will focus on Ethio Telecom as a prominent telecommunications operator in Ethiopia. By conducting an in-depth analysis of Ethio Telecom's 5G-network project, the study aims to provide practical insights and recommendations applicable to similar projects in the telecommunications industry.

1.6 LIMITATIONS

It is essential to acknowledge certain limitations that may affect the extent and applicability of the research findings.

- **Single Case Study Focus:**

The primary limitation of this study is its reliance on a single case study of Ethio Telecom's 5G network project. While the case study approach allows for detailed analysis and insights, the findings may lack generalizability to other telecommunications projects or contexts.

- **Availability of Data:**

The availability and accessibility of project-related data, including project plans, budgets, and performance metrics, may pose challenges during the research process. Limited access to comprehensive data sets could restrict the depth of analysis and interpretation of research findings.

- **Dynamic Industry Environment:**

The telecommunications industry is characterized by rapid technological advancements, regulatory changes, and market dynamics. As such, the findings of this study may be subject to the evolving nature of the industry, and certain conclusions may become outdated over time.

- **Ethiopian Context Specificity:**

While the findings of this study may offer valuable insights into project management practices in the telecommunications sector, the specific socio-cultural, economic, and regulatory context of Ethiopia may limit the generalizability of the research findings to other geographic regions or countries.

While this study aims to provide a comprehensive analysis of Ethio Telecom's challenging 5G network project from a project management perspective, it is important to acknowledge the scope and limitations inherent in the research approach. By carefully considering these factors, the study seeks to generate meaningful insights and recommendations for enhancing project execution and closing in the telecommunications industry.

1.7 SIGNIFICANT OF THE STUDY

The significance of this study lies in its contribution to advancing understanding and improving practices in project management, particularly in the context of complex telecommunications projects such as Ethio Telecom's 5G network deployment. By focusing on the execution and closing phases of the project, this research aims to address several key areas of significance:

- **Enhancing Project Success Rates:**

Understanding the causal effects of independent variables such as project scope, schedule, budget, risk management, and stakeholder management oversight on project outcomes is crucial for enhancing project success rates. By identifying factors that influence project execution and closing, this study seeks to provide insights that can help project managers mitigate risks, optimize resources, and improve project outcomes (Venczel, Berényi and Hriczó, 2021).

- **Informing Decision-Making Processes:**

Project managers and stakeholders can benefit from the insights generated by this research to make informed decisions throughout the project lifecycle. By analyzing the relationships between independent and dependent variables, this study aims to provide evidence-based recommendations for decision-making, resource allocation, and risk mitigation strategies (Ardebili, 2018).

- **Guiding Industry Best Practices:**

The findings of this study have the potential to influence industry best practices in project management, particularly in the telecommunications sector. By examining the project execution and closing processes of Ethio Telecom's 5G network project, this research can inform the

development of guidelines, standards, and methodologies for managing similar projects effectively (DROB , 2016).

- **Contributing to Academic Research:**

This study contributes to the academic literature on project management by providing empirical evidence and insights into the factors influencing project success in challenging environments. By conducting a detailed analysis of Ethio Telecom's case study, this research adds to the body of knowledge on project execution and closing strategies, thereby enriching the field of project management scholarship (PMI, 2017).

- **Addressing Regulatory Compliance Requirements:**

With the involvement of regulatory bodies in the deployment of 5G networks, understanding the regulatory landscape and compliance requirements is essential for project success. This study aims to shed light on the role of regulatory bodies and their impact on project execution and closing, thereby assisting organizations in navigating regulatory challenges effectively (ITU, 2020).

The significance of this study extends beyond its immediate application to Ethio Telecom's 5G network project, offering valuable insights and implications for project management practices in the telecommunications industry and beyond. By addressing the causal effects of independent variables on project outcomes, this research aims to contribute to improved project success rates, informed decision-making processes, industry best practices, academic research, and regulatory compliance efforts.

1.8 ORGANIZATION OF THE PAPER

This research paper encompasses a total of five chapters. ***Chapter One*** deals with the introductory parts of the paper. ***Chapter Two*** reviews the kinds of literature related to time management practices. ***Chapter Three*** focuses on data collection and analysis methods, and ***Chapter Four*** deals with data analysis and interpretation. Finally, ***Chapter Five*** provides a summary, conclusion, and recommendation based on the results of the analysis

CHAPTER TWO

2 LITERATURE REVIEW

This chapter reviews and synthesizes both the theoretical frameworks on the topic to develop an integrated conceptual framework for situating the current study.

2.1 OVERVIEW OF 5G NETWORK TECHNOLOGY

The development and deployment of 5G network technology represent a significant milestone in the telecommunications industry, promising unprecedented speed, capacity, and connectivity. This section provides an overview of 5G technology, including its key features, benefits, and implications for project execution and closing.

2.1.1 EVOLUTION OF WIRELESS TECHNOLOGIES

Wireless communication technologies have evolved rapidly over the years, from the first-generation (1G) analog systems to the current fifth-generation (5G) networks. Each generation has introduced innovations and improvements in terms of speed, capacity, and functionality, paving the way for new applications and services (Nuamah, 2023).

2.1.2 KEY FEATURES OF 5G TECHNOLOGY

- **Enhanced Speed and Capacity:**

5G networks offer significantly higher data transfer speeds and increased network capacity compared to previous generations. With speeds potentially reaching up to 10 Gbps, 5G enables ultra-fast downloads, seamless streaming, and real-time communication (Odida, 2024).

- **Low Latency:**

One of the defining features of 5G technology is its ultra-low latency, allowing for near-instantaneous communication between devices. This low latency is essential for applications requiring real-time responsiveness, such as autonomous vehicles, remote surgery, and augmented reality (Locke, 2024).

- **High Reliability:**

5G networks are designed to be highly reliable and resilient, ensuring consistent connectivity even in dense urban environments or during periods of high network traffic. This reliability is crucial for mission-critical applications, including emergency services and industrial automation (Pons et al., 2023).

- **Massive IoT Connectivity:**

Another key aspect of 5G technology is its ability to support a massive number of connected devices simultaneously. This capability is essential for the Internet of Things (IoT) ecosystem, enabling seamless connectivity and communication between various IoT devices and sensors (Khuntia, 2021).

2.1.3 IMPLICATIONS FOR PROJECT EXECUTION AND CLOSING

- **Infrastructure Deployment:**

The rollout of 5G networks requires significant infrastructure investment, including the installation of new base stations, antennas, and fiber-optic cables. Project managers must carefully plan and execute the deployment process to ensure efficient use of resources and minimize disruptions to existing networks (LuxCarta, 2024).

- **Technology Integration:**

Integrating 5G technology with existing telecommunications infrastructure poses technical challenges that must be addressed during project execution. Compatibility issues, interoperability concerns, and network optimization tasks require careful coordination and testing to ensure seamless integration (AInaas et al., 2023).

- **Regulatory Compliance:**

Regulatory bodies play a crucial role in overseeing the deployment of 5G networks, including spectrum allocation, licensing, and compliance with health and safety regulations. Project managers must navigate the regulatory landscape effectively to ensure compliance and avoid potential delays or legal issues. As per ITU, Regulatory bodies play a crucial role in overseeing the deployment of 5G networks, including spectrum allocation, licensing, and compliance with health and safety regulations. Project managers must navigate the regulatory landscape effectively to ensure compliance and avoid potential delays or legal issues.

The 5G network technology represents a significant advancement in wireless communications, offering enhanced speed, capacity, and connectivity. Understanding the key features and

implications of 5G technology is essential for project managers involved in the execution and closing of 5G network projects. By leveraging the capabilities of 5G technology and addressing associated challenges, project managers can effectively deliver successful 5G network deployments.

2.2 PROJECT MANAGEMENT IN THE TELECOMUNICATION INDUSTRY

Project management in the telecommunications industry is characterized by unique challenges and complexities, requiring tailored approaches to ensure successful project execution and closing. This section provides an overview of key insights and practices in project management within the telecommunications sector.

2.2.1 EVOLUTION OF TELECOMMUNICATIONS PROJECT MANAGEMENT

- **Traditional Project Management Approaches:**

Historically, telecommunications projects have been managed using traditional project management methodologies such as the Waterfall model. However, the rigid nature of these approaches often hinders flexibility and adaptability, especially in dynamic and rapidly evolving environments (Daraojimba et al., 2024).

- **Agile Project Management Practices:**

In response to the limitations of traditional methodologies, agile project management practices have gained popularity in the telecommunications industry. Agile methodologies, such as Scrum and Kanban, emphasize iterative development, frequent communication, and rapid response to change, aligning well with the fast-paced nature of telecommunications projects (Daraojimba et al., 2024).

2.2.2 KEY CONSIDERATIONS IN TELECOMMUNICATIONS PROJECT MANAGEMENT

- **Complex Stakeholder Landscape:**

Telecommunications projects often involve a diverse range of stakeholders, including government agencies, regulatory bodies, vendors, subcontractors, and end-users. Effective stakeholder management is essential for navigating complex stakeholder relationships, aligning interests, and ensuring project success (Ullah et al., 2023).

- **Regulatory Compliance and Licensing:**

Compliance with regulatory requirements and licensing agreements is a critical aspect of telecommunications project management. Regulatory bodies oversee spectrum allocation, frequency licensing, environmental regulations, and other legal aspects, necessitating careful planning and coordination to ensure compliance (ITU, 2020).

- **Risk Management and Mitigation:**

Telecommunications projects are inherently risky due to factors such as technological complexity, market competition, and regulatory uncertainties. Effective risk management practices, including risk identification, assessment, mitigation, and monitoring, are vital for minimizing project delays, cost overruns, and quality issues (Abbas & Khan, 2023).

2.2.3 IMPLICATIONS FOR 5G NETWORK PROJECTS

- **Agile Adoption for 5G Deployments:**

The deployment of 5G networks requires agile project management approaches to accommodate evolving technical requirements, market dynamics, and stakeholder expectations. Agile

methodologies enable iterative development, rapid prototyping, and continuous feedback, facilitating faster time-to-market for 5G services and applications (Seikola, 2022).

- **Collaborative Stakeholder Engagement:**

Given the multi-stakeholder nature of 5G network projects, collaborative stakeholder engagement is crucial for addressing diverse interests, resolving conflicts, and fostering alignment toward project objectives. Effective communication channels, stakeholder forums, and governance structures can enhance collaboration and decision-making (FasterCapital, 2024).

The Project management in the telecommunications industry requires a nuanced understanding of industry-specific challenges and best practices. By leveraging agile methodologies, addressing complex stakeholder dynamics, ensuring regulatory compliance, and implementing robust risk management strategies, telecommunications organizations can enhance the success of 5G network projects.

2.3 KEY CHALLENGS IN IMPLEMENTING 5G NETWORK PROJECTS

Implementing 5G network projects presents several challenges that project managers must navigate to ensure successful execution and closing. This section explores these challenges and their implications for project management in the telecommunications sector.

2.3.1 TECHNOLOGY COMPLEXITY AND INTEGRATION

- **Interoperability Issues:**

The integration of diverse technologies and equipment from multiple vendors poses challenges related to interoperability and compatibility. Ensuring seamless integration between hardware,

software, and infrastructure components is essential for the smooth operation of 5G networks (Alnaas et al., 2023).

- **Legacy Infrastructure:**

Legacy telecommunications infrastructure, such as 4G LTE networks, may need to coexist with emerging 5G technologies during the transition period. Managing the migration from legacy systems to 5G networks while minimizing disruptions and maintaining service continuity requires careful planning and coordination (TCS, 2021).

2.3.2 SPECTRUM ALLOCATION AND REGULATORY COMPLIANCE

- **Spectrum Availability:**

Securing adequate spectrum resources for 5G deployments is crucial for achieving optimal network performance and capacity. However, spectrum scarcity and competition among operators for spectrum licenses can hinder timely deployments and increase costs (ITU, 2020).

- **Regulatory Hurdles:**

Compliance with regulatory requirements and licensing procedures imposed by government agencies and telecommunications authorities is a significant challenge. Delays in obtaining regulatory approvals, spectrum licenses, and environmental clearances can disrupt project timelines and increase project risks (Schwierking and Anantatmula, 2015).

2.3.3 INFRASTRUCTURE DEPLOYEMENT AND COST MANAGEENT

- **Deployment Challenges:**

The rollout of 5G infrastructure, including base stations, small cells, and fiber-optic networks, requires extensive planning, coordination, and investment. Challenges such as site acquisition,

zoning regulations, and infrastructure-sharing agreements can prolong deployment timelines and escalate costs (Alnaas et al., 2023).

- **Cost Overruns and Budget Constraints:**

Managing project budgets and controlling costs are critical aspects of 5G network projects. Unforeseen expenses, scope changes, and resource constraints can lead to cost overruns, jeopardizing project profitability and viability (Alnaas et al., 2023).

2.3.4 STAKEHOLDER MANAGEMENT AND COMMUNITY ENGAGMENT

- **Community Resistance and Public Perception:**

Public concerns regarding health risks, privacy issues, and aesthetic impacts associated with 5G infrastructure deployment can trigger community resistance and opposition. Engaging with local communities, addressing public concerns, and fostering transparency is essential for gaining social acceptance and minimizing conflicts (Chiaraviglio et al. 2020).

- **Vendor and Supplier Relationships:**

Collaborating with vendors, suppliers, and subcontractors is critical for procuring equipment, materials, and services necessary for 5G network projects. Establishing strong vendor relationships, managing contracts, and ensuring supply chain resilience are vital for project success (Buehler, 2023).

Implementing 5G network projects involves addressing challenges related to technological complexity, regulatory compliance, infrastructure deployment, cost management, and stakeholder engagement. By proactively identifying and mitigating these challenges, project managers can enhance the likelihood of successful project execution and closing.

2.4 PROJECT EXECUTION IN 5G NETWORK PROJECTS

Efficient project execution is critical for the successful implementation of 5G network projects. This section explores the key factors influencing project execution and provides insights into best practices for project management in the telecommunications sector.

2.4.1 RESOURCE MANAGEMENT AND ALLOCATION

- **Human Resources Planning:**

Adequate staffing and skillsets are essential for executing 5G network projects effectively. Project managers must plan for the recruitment, training, and allocation of personnel with the requisite technical expertise in areas such as network design, deployment, and optimization (Shanthi et al., 2023).

- **Optimizing Equipment and Materials:**

Efficient procurement and inventory management of equipment, materials, and resources are crucial for minimizing project delays and cost overruns. Leveraging economies of scale, negotiating favorable contracts, and maintaining supply chain visibility are key strategies for optimizing resource utilization (Jusoh &Kasim, 2017).

2.4.2 PROJECT PLANNING AND SCHEDULING

- **Comprehensive Project Planning:**

As Williams (2023), thorough project planning, including defining project objectives, establishing milestones, and developing detailed work breakdown structures (WBS), lays the foundation for successful project execution. Project managers must anticipate potential risks and contingencies and develop mitigation strategies accordingly.

- **Dynamic Scheduling and Adaptation:**

Flexibility and agility in project scheduling are vital for accommodating changes in project scope, resource availability, and stakeholder priorities. Adopting iterative scheduling methodologies such as Agile and Lean can enhance project responsiveness and adaptability to evolving requirements (Balaban and Đurašković, (2021).

2.4.3 QUALITY ASSURANCE AND RISK MANAGEMENT

- **Ensuring Quality of Service:**

Maintaining high-quality standards in network performance, reliability, and security is paramount for ensuring customer satisfaction and regulatory compliance. Implementing rigorous quality assurance processes and conducting regular performance testing is essential for delivering a robust 5G network infrastructure (METAVSHN, 2024).

- **Proactive Risk Identification and Mitigation:**

According to (Reaiche et al, 2022), proactively identifying and mitigating project risks is critical for minimizing disruptions and maximizing project success. Risk management strategies such as risk assessment, risk prioritization, and risk response planning help project teams anticipate and address potential threats effectively.

2.4.4 STAKEHOLDER ENGAGEMENT AND COMMUNICATION

- **Effective Stakeholder Collaboration:**

Engaging stakeholders, including internal teams, external partners, regulatory bodies, and local communities, fosters collaboration and alignment towards project objectives. Transparent communication, stakeholder involvement in decision-making, and conflict-resolution mechanisms are essential for building trust and consensus (Sedmak, 2021).

- **Communication Management:**

Establishing clear communication channels and protocols facilitates the flow of information among project stakeholders and ensures timely decision-making and problem resolution. Leveraging communication technologies and tools enhance project visibility and coordination across distributed teams (MoldStud, 2024).

The effectiveness of project execution in 5G network projects requires meticulous planning, resource optimization, risk management, and stakeholder engagement. By adopting best practices in project management and leveraging emerging technologies, organizations can overcome challenges and achieve successful project outcomes in the dynamic telecommunications landscape.

2.5 PROJECT CLOSING IN 5G NETWORK PROJECTS

Efficient project closing is vital for ensuring the successful completion and transition of 5G network projects into operational phases. This section delves into the key considerations and best practices associated with project closure in the telecommunications industry.

2.5.1 EVALUATION OF PROJECT OBJECTIVES AND DELIVERABLES

- **Alignment with Stakeholder Expectations:**

Evaluating project objectives and deliverables involves assessing the extent to which the project outcomes align with stakeholder expectations and business requirements. Close collaboration with stakeholders throughout the project lifecycle facilitates consensus on deliverable acceptance criteria and ensures that project closure reflects the achievement of intended goals (MATHUR, 2023).

- **Verification and Validation:**

Rigorous verification and validation processes are essential for confirming the completeness and correctness of project deliverables. Conducting comprehensive testing, user acceptance reviews and final inspections, helps identify any discrepancies or deviations from project requirements before formal project closure (mosaicprojects, 2017).

2.5.2 KNOWLEDGE TRANSFER AND DOCUMENTATION

- **Knowledge Retention and Transfer:**

Knowledge retention and knowledge transfer in organizational contexts. It defines knowledge retention as capturing knowledge within an organization so it can be used later, and knowledge transfer as sharing knowledge among employees. Successful retention and transfer require focus, capabilities, and a sharing culture. Strategies are proposed, like documentation, training, and audits. Retention aims to prevent losing knowledge when people leave, while transfer involves communicating and transforming knowledge for new employees. The concepts of tacit and explicit knowledge are also referenced in relation to effective transfer between individuals and groups. Overall, the passage outlines some of the main considerations and approaches involved in knowledge retention and transfer as important knowledge management activities (Agarwal and Islam, 2015).

- **Documentation Management:**

Project documentation encompasses various documents created by managers over the course of a project's development according to specified procedures, specifications, and guidelines for documents like plans, schedules, and budgets. This documentation must establish the foundation for quality, traceability, and history for single and aggregate records, ensuring records are well

organized, clear to understand, and sufficient by laying out an adequate amount of relevant information (Verma, 2024).

2.5.3 CONTRACT CLOSURE AND FINANCIAL SETTLEMENT

- **Contractual Obligations:**

The closing phase of the project management lifecycle focuses on finalizing all activities to complete the project by confirming deliverables meet sponsor satisfaction, and communicating the final status to participants and stakeholders, thereby concluding the project life cycle through processes that close out the project by reporting success levels to owners, handing remaining deliverables to customers while transferring documentation to the business, and releasing staff, equipment, canceling supplier contracts, informing stakeholders so the project can be closed out efficiently (Sima, 2023).

- **Financial Reporting and Auditing:**

Accurate financial reporting and auditing are essential for ensuring transparency and accountability in project expenditures and financial outcomes. Conducting financial audits, reconciling project budgets, and preparing financial statements in compliance with regulatory requirements provide stakeholders with confidence in project financial management practices (PWC, 2017).

2.5.4 LESSONS LEARNED AND CONTINUOUS IMPROVEMENT

- **Lessons Learned Documentation:**

The purpose of documenting and applying lessons learned is to enhance best practices for future projects, aiming to create a team that learns from mistakes while repeating and improving successes. A lessons-learned document compiles the results of surveys and team member input

throughout a project's lifecycle. Establishing a process to gather input at key points, recording initial observations, and using this data to create detailed reports is crucial for future reference and continuous improvement (Eby, 2021).

- **Process Optimization and Standardization:**

Leveraging insights from project closure activities, organizations can optimize project management processes and standardize best practices to enhance project delivery efficiency and effectiveness. According to (Luis et al. 2020), implementing continuous improvement initiatives, such as process reengineering and maturity assessments, fosters a culture of excellence and innovation in project management.

Project closure in 5G network projects requires meticulous attention to detail, effective stakeholder engagement, and systematic knowledge management practices. By adhering to best practices in project closure and embracing a culture of learning and improvement, organizations can maximize the value delivered by 5G network initiatives and pave the way for future success in the telecommunications industry.

2.6 THEORETICAL FRAMEWORK

The theoretical framework for assessing the challenging 5G network project execution and closing involves integrating various project management theories and models to understand the causal relationships between independent and dependent variables influencing project outcomes. This section synthesizes relevant theoretical perspectives and conceptual frameworks applicable to project execution and closing in the telecommunications industry.

2.6.1 PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK) FRAMEWORK

The PMBOK framework, developed by the Project Management Institute (PMI), provides a comprehensive guide to project management practices across various domains. It outlines key knowledge areas, processes, and best practices essential for effective project execution and closure. By applying the PMBOK framework, project managers can systematically manage project scope, schedule, budget, risk, stakeholder engagement, and regulatory compliance throughout the project lifecycle (PMI, 2017).

2.6.2 EAARNED VALUE MANAGEMENT (EVM) THEORY

Earned Value Management (EVM) is a project performance management methodology that integrates cost, schedule, technical scope, and risk to assess progress against a baseline. Using an Earned Value Management System (EVMS), practitioners identify problems forecast cost, and schedule at completion. EVM relies on a time-phased budget baseline, known as Planned Value (PV) or Budgeted Cost for Work Scheduled (BCWS), and requires quantifying progress using the same units as the budget. By comparing planned versus actual performance metrics, such as Planned Value (PV), Earned Value (EV), and Actual Cost (AC), project managers can identify variances and take corrective actions to ensure project objectives are met within budget and schedule constraints (Breuker, 2021).

2.6.3 STAKEHOLDER THEORY

Stakeholder theory advocates for a practical, efficient, effective, and ethical approach to managing organizations within highly complex and turbulent environments. It emphasizes the importance of managing stakeholders well, as it leads to positive outcomes such as improved information sharing, increased customer loyalty, support from communities, favorable financial terms, and dedicated employees. Stakeholder theory offers a comprehensive perspective on

organizational management, aiming to create a harmonious balance between stakeholder interests and the achievement of organizational goals in dynamic business landscapes (Harrison et al. 2015).

2.6.4 RISK MANAGEMENT THEORY

Risk management theory serves as a valuable technique employed by businesses to identify, assess, and effectively manage risks. It enables companies to proactively identify potential risks and develop comprehensive strategies to either avoid or mitigate them. By implementing risk management theory, businesses can safeguard themselves against financial losses, legal ramifications, and potential harm to their reputation. Although no risk management approach is foolproof, the application of risk management theory proves invaluable for organizations seeking to minimize their exposure to risks and enhance their overall resilience (Payne, 2022).

2.6.5 RESOURCE DEPENDENCY THEORY

Resource Dependency Theory posits that organizations depend on external resources, such as regulatory bodies and industry partners, to achieve their strategic objectives. By establishing collaborative relationships with regulatory bodies, industry associations, and technology vendors, project managers can navigate regulatory complexities, access critical resources, and mitigate external dependencies that may affect project execution and closure (Delke, 2015).

The theoretical framework outlined above provides a holistic understanding of the multidimensional factors influencing project execution and closing in the context of challenging 5G network projects. By integrating these theoretical perspectives into project management practices, organizations can enhance their capability to execute and close 5G network projects successfully, thereby delivering value to stakeholders and contributing to organizational growth and competitiveness.

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

The primary objective of this research is to identify the challenges of 5G Network Project Implementation in Ethio Telecom. The methodologies used include a comprehensive review of existing literature to understand current themes and contributions from other scholars. Surveys and interviews were conducted to identify the challenges faced by Ethio Telecom, determine the challenging success factors within the project team, and assess the challenging of 5G-project implementation throughout the project execution to closing. Based on the literature review, survey, and interviews, conclusions and recommendations were provided. The literature sources primarily consisted of academic books, journals, and web pages.

3.2 RESEARCH DESIGN

This research employs both qualitative and quantitative methodologies concurrently to gather comprehensive information relevant to the research topic and to enhance the understanding of the survey results. The quantitative objective is to analyze the numerical properties and relationships that arise from the data of each question using statistical models. Meanwhile, the qualitative approach elaborates on conclusions derived from critical thought, circumstances, behavior, and emotions. A mixed methodology is applied, primarily using a quantitative approach as the main source of analysis, validated by a qualitative methodology, which serves as an auxiliary role in analyzing the research questions. These methodologies enable a fuller understanding of the research problem and help clarify the collected data. Conclusions and recommendations are then provided based on the findings.

A structured questionnaire survey is adopted as the primary data-collection method. For a more detailed understanding of the situation, semi-structured interviews with open-ended questions are used. These interviews are conducted with selected two-project manager, one expert, and two supervisor of Ethio Telecom's 5G network projects. The responses are then summarized and analyzed to gain a deeper understanding of the situation.

3.4 POPULATION AND DATA

The target population for this research comprises participants involved in the 5G network across six locations (Around 4Killo, Megenagna, Kassanchize, Piazza, Africa Union and Bole) encompassing 21 sites within Addis Ababa. The Wireless Department at Ethio Telecom recently completed their 5G network project's first phase. To assess these projects and identify areas for improvement, surveys were conducted and interviews were held with those involved. The 75 employees in the department who directly or indirectly worked on the 5G network projects completed surveys sharing their experiences. Key project managers, Supervisors, and experts also participated in interviews to gain deeper insights.

The Wireless Department, responsible for deploying and managing new 5G networks, faces distinct challenges due to its intermediary role among various stakeholders, including equipment suppliers, scope changes, and resource reallocation due to government interest. This position subjects the department to a wide array of issues from different viewpoints. By thoroughly understanding the challenges encountered by this department, effective strategies can be formulated to tackle these complex issues. The Project Management Office (PMO) plays a crucial role in ensuring successful project execution and completion, making it essential to identify and address these challenges to achieve favorable project outcomes.

Only project managers, experts, Supervisors, Specialists, and Analysts within the Wireless PMO Department were included in the scope of this study. Gaining knowledge from their surveys and interviews could illuminate practical solutions applicable to future initiatives. Moreover, focusing on those primarily responsible for guiding post-project oversight provides valuable insight into eliminating hurdles that impede their work and the company's strategic goals.

3.5 DATA SOURCE AND TYPES

This study conducted a comprehensive analysis of the research topic utilizing both primary and secondary sources of information to develop a well-rounded understanding. Primary data was gathered directly from employees working on 5G wireless projects at Ethio Telecom through surveys and interviews to obtain their first-hand perspectives and insights into the real-world challenges faced, specifically obstacles relevant to the study. Secondary data from internal records, public portals, and documented lessons learned and experiences from other implemented network projects within the organization supplemented the primary data and provided important contextual information. Collecting both forms of data allowed for triangulation which strengthened the validity and reliability of the findings by creating a robust dataset and analytical framework with the primary data anchoring the study by offering hands-on perspectives and the secondary sources helping to fill in gaps and establish industry standards to benchmark the primary information.

3.6 DATA COLLECTION PROCEDURES

A mixed-methods research design (Creswell, J.W., & Creswell, J.D., 2017) was utilized to conduct a comprehensive analysis of the topic. Quantitative data was collected through questionnaires containing 36 questions distributed to 63 project managers, experts, supervisors, specialists and analysts within Wireless PMO departments, of which 61 responded, this provided

numerical response data. To gain additional perspective, qualitative interviews were also performed using a semi-structured interview guide with five key informants holding roles relevant to the research - two project managers, two supervisors, and one expert associated with the departments. Their in-depth insights supplemented the survey results. Collectively, this dual approach generated both broad quantitative data through the questionnaires as well as rich qualitative findings from interviews, allowing for a well-rounded examination of patterns in the statistical information alongside more nuanced perspectives beyond what could be captured in surveys alone. This mixed-methods research approach thus developed a thorough understanding of the research area.

3.7 ETHICAL CONSIDERATIONS

The researcher personally conducted all surveys and interviews for this study to collect both quantitative and qualitative data. Prior to distributing questionnaires and conducting interviews, the researcher ensured that participants were well informed about the study's purpose, the confidentiality of their responses, and the estimated time required. Throughout the data collection process, ample time was provided for respondents to answer each question thoroughly, with follow-up probes used to gain more detailed and informative responses. Interviews concluded only after participants had the chance to add any additional relevant information. Participants were assured that their data would be kept strictly confidential and used exclusively for the research. This structured and personal approach by the researcher facilitated open and honest participation, resulting in a rich dataset that served as the foundation for a comprehensive analysis and findings.

3.8 DATA ANALYSIS

The study utilized both quantitative and qualitative methods to analyze the data collected, aiming to identify and comprehend the challenges affecting the execution and closure of 5G network projects. The statistical data from the questionnaire responses were analyzed using SPSS Version 26 and Microsoft Excel Version 2016 to derive logical conclusions. Responses on a five-point Likert scale, ranging from "Strongly disagree" to "Strongly agree," were evaluated to calculate the mean, standard deviation, and variance for each identified challenge. In addition, qualitative data obtained from interviews were coded and discussed descriptively to provide further insights. As Harris & Brown (2019), the combination of quantitative survey analysis and qualitative interview data enabled a comprehensive understanding of the challenges.

3.8.1 CRONBACH'S ALIPHA

Cronbach's alpha is a reliable measure for determining the internal consistency of items within a questionnaire. It provides a score between 0 and 1, with values closer to 1 indicating stronger correlations between items, suggesting they measure the same underlying construct. When the correlation between items is near zero, it means the items are measuring different traits (Taber, 2017).

For this research, Cronbach's alpha was calculated using SPSS Version 26 to test the reliability of the items included in the survey instrument. According to Cronbach's alpha results above, 0.7 demonstrate good internal consistency. The findings showed alpha values for all parameters were above 0.7, indicating a high level of homogeneity between items designed to measure similar factors hindering the challenging of project execution and closing on 5G's network project. This established the data collection tool as a reliable means of assessing perceptions among respondents.

Cronbach's alpha scores exceeding 0.7 indicate that the items within each parameter, such as those related to Scope, Schedule, Resource allocation or other aspects of project implementation, consistently measured the same underlying concept. Achieving alpha levels above this threshold confirmed that the instrument reliably captured the core challenges by including closely related items. This reliability testing demonstrated that the questionnaire was well designed and effectively applied to collect meaningful data. The results of the reliability tests for the parameters included in the survey are shown below:

Cronbach's Alpha

Table 1 Reliability Test for the total Items outcome

Item No.	Variables	Cronbach's Alpha Value	Number of Questions
1	Scope Management	.749	3
2	Schedule Management	.859	4
3	Budget Management	.769	3
4	Stakeholder Management	.819	4
5	Risk Management	.840	4
6	Project Success	.729	3

Source survey own data, (2024)

CHAPTER FOUR

4 DATA ANALYSIS AND PRESENTATION

This chapter presents the quantitative and qualitative analysis of the data collected for this research. A comprehensive assessment is conducted on the challenging factors for effective execution and closing of 5G network projects, as examined in the questionnaires and interviews. The statistical results from SPSS are evaluated to derive meaningful insights. Qualitative findings from coded interviews provide supplemental context. Descriptive statistics including mean, standard deviation and distribution are employed. Correlation analysis is performed to

reveal relationship strengths between variables. Together, these quantitative and qualitative techniques facilitate a well-rounded understanding of implementation challenges to guide project success.

4.1 RESPONSE RATE

In a study, the response rate indicates the proportion of sampled subjects who engage with the research instruments. Out of 65 questionnaire copies distributed, 61 were fully completed, resulting in an impressive 96.83% response rate. Despite diligent follow-up attempts, a mere 3.17% did not respond. According to (Sataloff & Vontela, 2021), acceptable response rates range from 40% to 75% depend on the size of the sampling size Therefore, the study achieved a remarkable response rate of 96.83%, indicating adequacy for analysis and reporting.

4.2 DEMOGRAPHIC PROFILE

The demographic information is used to analyze the characteristics of the population working on 5G Network projects at Ethio Telecom Wireless PMO Department, thus the profiles of project implementers who are working in Ethio Telecom Wireless PMO Department are summarized by the following tables to understand the characteristics of the population working on 5G network projects at the organization. The demographic data helps analyze the characteristics of staff working on 5G projects at Ethio Telecom Wireless PMO Department. The profiles of employees implementing these projects in the department are then summarized in subsequent tables, which aid in understanding the traits of the workforce engaged in 5G network projects at the organization.

4.2.1 IMPLEMENTER PROFILE FOR PROJECT

Table 2 General Demographic Data of the respondent

Variables	Category	Frequency	Percentage (%)	Valid Percent
Gender	Male	43	70.5	70.5
	Female	18	29.5	29.5
Age	<30	2	3.3	3.3
	31-40	39	63.9	63.9
	41-50	16	26.2	26.2
	>50	4	6.6	6.6
Educational Background	Degree	51	83.6	83.6
	Masters	10	16.4	16.4
Work Experience	6-10	29	47.5	47.5
	11-15	12	19.7	19.7
	16-20	13	21.3	21,3
	>20	7	11.5	11.5
Position/Title	Project Manager	2	3.3	3.3
	Expert	4	6.6	6.6
	Supervisor	5	8.2	8.2
	Specialist	40	65.6	65.6
	Analyst	10	16.4	16.4
Project work Experience	3-5	11	18.0	18.0
	>5	50	82.0	82.0

Source: Survey own data (2024)

The gender-wise distribution of the respondents showed that 70.5% were male and 29.5% were female. Considering the age of the respondents, majority of them falling in the 31-40 years bracket accounting for 63.9% of the respondents. About 26.2% of respondents were between 41-50 years, while only 3.3% were less than 30 years and 6.6% more than 50 years.

Looking at the educational qualifications, an overwhelming 83.6% of respondents had a degree as their highest educational background. The remaining 16.4% had a master's degree. In terms of work experience, highest proportion of 47.5% had an experience of 6-10 years. Around 19.7% and 21.3% of respondents had 11-15 years and 16-20 years of experience respectively. The experience level of 11.5% was more than 20 years.

Considering the position or title held by the respondents, most common was specialist with 65.6% of respondents having this designation. About 16.4% worked as analysts while the remaining positions of project manager, expert, and supervisor were held by less than 10% each. Finally, the project work experience showed that a large majority of 82% had experience of over 5 years in project-related roles. Only 18% had 3-5 years of project work experience.

In summary, the dominant category in each demographic aspect provides a profile of a typical respondent as a male between 31-40 years age with a degree, having 6-10 years of work experience most likely working as a specialist with more than 5 years of project experience.

4.3 ANALYSIS OF CHALLENGING FACTORS OF 5G NETWORK PROJECT IMPLEMENTATION FOR EXECUTION AND CLOSING PHASE.

The primary objective of this research was to ascertain the challenging factors at Ethio Telecom deemed essential for implementing 5G network projects within the organization. By identifying and prioritizing these factors, the aim was to offer project management invaluable insights for creating effective strategies. Drawing on data collected from project managers, experts, Supervisors, Specialists, and Analysts, Ethio Telecom meticulously evaluated the results to discern actionable insights. Participants emphasized the importance of various challenging factors, including the establishment of clear and realistic goals and scope, the crucial support of management or stakeholders, active involvement of vendors, good communication with regulatory bodies, and the composition and dynamics of the project team. These findings are further detailed in the subsequent tables to help project management craft effective strategies for implementing 5G network projects within the organization by gaining valuable insights into ascertaining and prioritizing the challenging factors.

4.3.1 ANALYSIS OF SCOPE MANAGEMENT

Table 3 Analysis of Scope Management Practice

Variables	1=SD	2=D	3=N	4=A	5=SA	Mean	Standard Deviation
	# (%)	# (%)	# (%)	# (%)	# (%)		
The project scope was clearly defined at the outset of the 5G network project.			7 (11.5)	44 (72.1)	10 (16.4)	4.05	.530
Stakeholder input was integrated effectively into the scope management process.			33 (54.1)	25 (41.0)	3 (4.9)	3.51	.595
The final deliverables of the 5G network project aligned well with the project scope.			12 (19.7)	46 (75.4)	3 (4.9)	3.83	.477

Source survey own data, (2024)

The Table 3, results provide valuable insights into respondents' perceptions regarding the clarity of project scope definition, the effectiveness of stakeholder integration, and the alignment of final deliverables with the project scope in the context of a 5G network project. The analysis includes the mean values and standard deviations for each statement, alongside the distribution of responses across a Likert scale from "Strongly Disagree" (SD) to "Strongly Agree" (SA).

For the statement, "The project scope was clearly defined at the outset of the 5G network project," the mean value is 4.05, with a standard deviation of 0.530. This high mean value suggests that respondents overwhelmingly agree that the project scope was clearly defined from the beginning. A well-defined project scope is crucial for the success of any project, as it sets clear boundaries and expectations, thus reducing the likelihood of scope creep and ensuring that all stakeholders are aligned from the beginning. In the context of Ethio Telecom's 5G network project, the data reveals a strong consensus among the project participants regarding the clarity of the project scope at the outset. Specifically, the survey results indicate that 72.1% of respondents agreed, and an additional 16.4% strongly agreed, that the project scope was clearly defined from the beginning. This overwhelming agreement (totaling 88.5%) underscores the importance of clear scope definition in mitigating challenges

during project execution and closing phases. The neutral responses accounted for only 11.5%, suggesting that a small portion of respondents may have had reservations or insufficient information regarding the scope clarity.

Regarding the statement, "Stakeholder input was integrated effectively into the scope management process," the mean value is 3.51, with a standard deviation of 0.595. This reflects a more moderate agreement on the effectiveness of stakeholder input integration into scope management. The effective integration of stakeholder input into the scope management process is a vital component for the successful implementation of complex projects such as Ethio Telecom's 5G-network rollout. According to the survey results, a notable proportion of respondents recognized the effective incorporation of stakeholder input, with 41.0% agreeing and 4.9% strongly agreeing, while 54.1% remained neutral. This indicates that a majority of participants acknowledged some level of stakeholder involvement in the scope management process, although a significant portion remained neutral, suggesting potential areas for improvement.

For the statement, "The final deliverables of the 5G network project aligned well with the project scope," the mean value is 3.83, with a low standard deviation of 0.477. This suggests that respondents generally agree that the final deliverables were well aligned with the project scope. A substantial majority (75.4%) agreed with this statement, and an additional 4.9% strongly agreed. However, a notable minority (19.7%) were neutral, indicating some degree of uncertainty or variability in perceptions regarding the alignment of final deliverables with the project scope.

Overall, the results indicate a positive perception among respondents regarding the clarity of the project scope and its alignment with the final deliverables. The high mean values for these statements suggest that most respondents believe the project's scope was well defined and

effectively managed throughout the project lifecycle. However, the integration of stakeholder input into the scope management process received a lower mean score, indicating room for improvement in this area. While the majority agreed that stakeholder input was effectively integrated, the significant portion of neutral responses suggests that not all respondents were convinced of its effectiveness.

The low standard deviations across all statements indicate a relatively consistent set of responses among participants, reinforcing the reliability of these findings. To enhance future project outcomes, efforts should focus on improving stakeholder engagement and integration into the scope management process. This could potentially lead to even higher satisfaction and perceived alignment with project goals in future projects.

4.3.2 ANALYSIS OF SCHEDULE MANAGEMENT

Table 4 Analysis of schedule management.

Variables	1=SD	2=D	3=N	4=A	5=SA	Mean	Standard Deviation
	# (%)	# (%)	# (%)	# (%)	# (%)		
The project schedule was accurately estimated prior to project execution.		8 (9.8)	3 (4.9)	45 (73.8)	7 (11.5)	3.87	.741
Scheduling tools and techniques were effective during the 5G network project.		4 (6.6)	16 (26.2)	38 (62.3)	3 (4.9)	3.66	.680
Milestones and deadlines were consistently met during the execution phase.		5 (8.2)	7 (11.5)	40 (65.6)	9 (14.8)	3.87	.763
Critical delays were effectively managed during the project execution.		8 (13.1)	5 (8.2)	39 (63.9)	9 (14.8)	3.80	.853

Source survey own data, (2024)

Table 4, survey results provide insights into the perceptions of project scheduling effectiveness in the 5G network project. The responses reflect how accurately the project schedule was

estimated, the effectiveness of scheduling tools and techniques, the adherence to milestones and deadlines, and the management of critical delays.

Firstly, the statement, "The project schedule was accurately estimated prior to project execution," received a mean score of 3.87 with a standard deviation of 0.741. This mean score indicates that respondents generally agree that the project schedule was accurately estimated, the data shows that a significant majority of respondents (85.3%) agreed (73.8%) or strongly agreed (11.5%) that the project schedule was accurately estimated prior to project execution. This indicates a high level of confidence among stakeholders regarding the initial scheduling process for Ethio Telecom's 5G-network project. A smaller percentage either disagreed (9.8%) or were neutral (4.9%), suggesting some minor concerns or uncertainties about the accuracy of the initial schedule estimation. The mean score for this item was 3.87, reflecting a generally positive perception of the scheduling accuracy, with a standard deviation of 0.741, indicating moderate variability in responses.

Secondly, the statement, "Scheduling tools and techniques were effective during the 5G network project," had a mean score of 3.66 and a standard deviation of 0.680. This slightly lower mean score shows a general agreement among respondents about the effectiveness of scheduling tools and techniques. The standard deviation indicates moderate variability in responses, the data reveals that a majority of respondents (67.2%) agreed (62.3%) or strongly agreed (4.9%) that scheduling tools and techniques were effective during the 5G network project. This indicates a strong consensus among stakeholders regarding the utility and efficacy of the tools and techniques employed for scheduling purposes. A smaller proportion expressed neutral feelings (26.2%), while only a minority disagreed (6.6%) with the effectiveness of these tools. The mean score for this item was 3.66, suggesting a generally positive perception of the effectiveness of

scheduling practices, with a standard deviation of 0.680, indicating moderate variability in responses.

Thirdly, the statement, "Milestones and deadlines were consistently met during the execution phase," received a mean score of 3.87 and a standard deviation of 0.763. This mean score suggests that respondents generally agree that milestones and deadlines were met consistently. The data indicates that a significant majority of respondents (80.4%) agreed (65.6%) or strongly agreed (14.8%) that milestones and deadlines were consistently met during the execution phase of the 5G network project. This suggests a strong consensus among stakeholders regarding the project's ability to adhere to planned timelines and achieve important milestones. A smaller proportion expressed neutral sentiments (11.5%), indicating some variability in perception, while a minority (8.2%) disagreed with the statement. The mean score for this item was 3.87, with a standard deviation of 0.763, indicating generally positive perceptions with moderate variability in responses.

Lastly, the statement, "Critical delays were effectively managed during the project execution," had a mean score of 3.80 and a higher standard deviation of 0.853. This higher mean score indicates a general agreement that critical delays were managed effectively. However, the higher standard deviation points to greater variability in responses, the data reveals that a substantial majority of respondents (78.7%) either agreed (63.9%) or strongly agreed (14.8%) that critical delays were effectively managed during the project execution. This indicates a strong consensus among stakeholders that the project team successfully addressed and mitigated significant delays as they arose. A smaller proportion expressed neutral sentiments (8.2%), suggesting some variability in perceptions, while a minority (13.1%) disagreed with the effectiveness of managing

critical delays. The mean score for this item was 3.80, with a standard deviation of 0.853, highlighting generally positive perceptions with moderate variability in responses.

.4.3.3 ANALYSIS OF BUDGET MANAGEMENT

Table 5 Analysis of Budget Management

Variables	1=SD	2=D	3=N	4=A	5=SA	Mean	Standard Deviation
	# (%)	# (%)	# (%)	# (%)	# (%)		
Budget monitoring and control mechanisms were effective during the 5G network project.		16 (26.2)	28 (45.9)	17 (27.9)		3.02	.741
Financial resources were allocated efficiently throughout the project lifecycle.		7 (11.5)	23 (37.7)	31 (50.8)		3.39	.690
Actual project costs are closely aligned with the initial budget estimates.		22 (36.1)	19 (31.1)	18 (29.5)	2 (3.3)	3.00	.894

Source survey own data, (2024)

Table 5, survey results reveal insights into the perceptions of budget management effectiveness during the 5G network project. The responses reflect views on the effectiveness of budget monitoring and control mechanisms, the efficiency of financial resource allocation, and the alignment of actual project costs with initial budget estimates.

First, the statement, "Budget monitoring and control mechanisms were effective during the 5G network project," received a mean score of 3.02 with a standard deviation of 0.741. This mean score suggests a neutral stance among respondents; the data indicates that perceptions regarding the effectiveness of budget monitoring and control mechanisms during the 5G network project were varied among respondents. A significant portion (45.9%) expressed neutral sentiments, suggesting ambiguity or mixed experiences with the effectiveness of these mechanisms. Meanwhile, 27.9% of respondents agreed that the budget monitoring and control mechanisms were effective, indicating a positive but not overwhelming endorsement. On the other hand,

26.2% of respondents disagreed with the effectiveness of these mechanisms, indicating a substantial minority who perceived issues or challenges with budget management. The mean score for this item was 3.02, with a standard deviation of 0.741, highlighting variability in perceptions and indicating a tendency towards neutrality rather than strong agreement or disagreement.

Second, the statement, "Financial resources were allocated efficiently throughout the project lifecycle," had a mean score of 3.39 and a standard deviation of 0.690. The mean score indicates a slight agreement among respondents, suggesting that financial resource allocation was viewed as moderately efficient. The data reveals that perceptions regarding the efficient allocation of financial resources throughout the project lifecycle were varied among respondents. A majority of respondents (50.8%) agreed financial resources were allocated efficiently, indicating a general satisfaction with how funds were managed and utilized. On the other hand, 37.7% of respondents expressed neutral sentiments, suggesting some uncertainty or mixed experiences regarding the efficiency of resource allocation. A smaller portion (11.5%) disagreed with the efficient allocation of financial resources, indicating a minority who perceived issues or inefficiencies in how funds were managed. The mean score for this item was 3.41, with a standard deviation of 0.752, reflecting a moderate level of agreement overall among respondents.

Lastly, the statement, "Actual project costs are closely aligned with the initial budget estimates," received a mean score of 3.00 and a standard deviation of 0.894. This score indicates a neutral perception, with considerable variability in responses. The data suggests varied perceptions among respondents regarding how closely actual project costs aligned with the initial budget estimates. A significant portion (36.1%) disagreed that actual costs matched the initial budget estimates, indicating that for these respondents, there were substantial deviations between

planned and actual expenditures. Similarly, 31.1% expressed neutral sentiments, suggesting uncertainty or mixed experiences regarding the alignment of costs. On the positive side, 29.5% agreed that actual costs were closely aligned with initial estimates, indicating some level of satisfaction with budget management. A small percentage (3.3%) strongly agreed that costs closely matched estimates, highlighting a minority with very positive views on budget accuracy. The mean score for this item was 3.00, with a standard deviation of 0.894, indicating a moderate level of dispersion in responses.

4.3.4 ANALYSIS OF RISK MANAGEMENT

Table 6 Analysis of Risk Management.

Variables	1=SD # (%)	2=D # (%)	3=N # (%)	4=A # (%)	5=SA # (%)	Mean	Standard Deviation
Potential risks were comprehensively identified and assessed before project execution.		5 (8.2)	18 (29.5)	34 (55.7)	4 (6.6)	3.61	.737
Risk mitigation strategies were effective during the 5G network project.		4 (.6.6)	12 (19.7)	37 (60.7)	8 (13.1)	3.80	.749
Unforeseen risks were effectively addressed during project execution.		4 (6.6)	22 (36.1)	31 (50.8)	4 (6.6)	3.57	.718
Lessons learned from risk events were incorporated into future project activities.		4 (6.6)	28 (45.9)	25 (41.0)	4 (6.6)	3.48	.721

Source survey own data, (2024)

Table 6, survey results shed light on the risk management practices employed during the 5G network project and the perceptions of their effectiveness among respondents.

Firstly, the statement "Potential risks were comprehensively identified and assessed before project execution" received a mean score of 3.61, with a standard deviation of 0.737. This indicates a moderate agreement among respondents, with the data reveals that a majority of respondents (55.7%) agreed and (6.6%) Strongly agreed that potential risks were

comprehensively identified and assessed before the 5G network project execution. This indicates that a significant portion of stakeholders believed that Ethio Telecom's project management team effectively anticipated and evaluated potential risks prior to initiating the project. Additionally, 29.5% expressed neutral views, suggesting some uncertainty or mixed perceptions regarding the thoroughness of risk assessment. A smaller percentage disagreed (8.2%) with the statement, indicating a minority who felt that the risk identification and assessment processes were not adequately thorough. The mean score for this item was 3.61, with a standard deviation of 0.737, indicating moderate agreement among respondents with some variability in perceptions.

Secondly, regarding the effectiveness of risk mitigation strategies during the project, the mean score was 3.80, with a standard deviation of 0.749. The data indicates that a significant majority of respondents (73.8%) either agreed or strongly agreed that risk mitigation strategies were effective during the 5G network project. Specifically, 60.7% agreed and 13.1% strongly agreed with the statement, demonstrating a strong consensus that the strategies implemented to mitigate risks were successful. Conversely, 19.7% expressed neutral views, suggesting some uncertainty or mixed perceptions regarding the effectiveness of these strategies, while only 6.6% disagreed with their effectiveness. The mean score for this item was 3.80, with a standard deviation of 0.749, indicating generally positive perceptions with moderate variability among respondents.

Thirdly, the statement "Unforeseen risks were effectively addressed during project execution" received a mean score of 3.57, with a standard deviation of 0.718. The data indicates that a significant majority of respondents (50.8% agree and 6.6% strongly agree) believed that unforeseen risks were effectively addressed during project execution, totaling to 57.4% who expressed positive sentiments. On the other hand, 36.1% were neutral, indicating some uncertainty or mixed perceptions about how well these risks were managed retrospectively. Only

6.6% disagreed with the effectiveness of addressing unforeseen risks. The mean score for this item was 3.57, with a standard deviation of 0.718, suggesting a generally positive perception with moderate variability among respondents.

Lastly, regarding the incorporation of lessons learned from risk events into future project activities, the mean score was 3.48, with a standard deviation of 0.721. The data reveals that a substantial portion of respondents (41.0% agree and 6.6% strongly agree) acknowledged that lessons learned from risk events were incorporated into future project activities, totaling to 47.6% expressing positive sentiments. However, 45.9% of respondents were neutral, indicating a significant proportion of uncertainty or lack of clarity on whether these lessons were effectively integrated. A smaller percentage (6.6%) disagreed with the incorporation of lessons learned. The mean score for this item was 3.48, with a standard deviation of 0.721, suggesting moderate agreement with variability among respondents.

4.3.5 ANALYSIS OF STAKEHOLDER MANAGEMENT

Table 7 Analysis of Stakeholder Management

Variables	1=SD	2=D	3=N	4=A	5=SA	Mean	Standard Deviation
	# (%)	# (%)	# (%)	# (%)	# (%)		
Stakeholder expectations were well identified and managed throughout the project lifecycle.		5 (8.2)	5 (8.2)	47 (77.0)	4 (6.6)	3.82	.671
Communication strategies effectively engaged stakeholders during the 5G network project.		5 (8.2)	16 (26.2)	37 (60.7)	3 (4.9)	3.62	.711
Conflicts among stakeholders were effectively resolved during project execution.		16 (26.2)	16 (26.2)	24 (39.3)	5 (8.2)	3.30	.955
Stakeholders were appropriately involved in decision-making processes.		11 (18.0)	24 (39.3)	16 (26.2)	10 (16.4)	3.41	.973

Source survey own data, (2024)

Table 7, shows that the survey results that provide insights into stakeholder management practices during the 5G network project, along with perceptions of their effectiveness among respondents.

Firstly, regarding the identification and management of stakeholder expectations throughout the project lifecycle, the mean score was 3.82, with a standard deviation of 0.671. This indicates a moderate agreement among respondents; the data illustrates a high level of agreement among respondents regarding the identification and management of stakeholder expectations throughout the project lifecycle. Specifically, 77.0% agreed and 6.6% strongly agreed that stakeholder expectations were well identified and managed. This cumulative agreement of 83.6% suggests that a majority of stakeholders perceived that Ethio Telecom effectively addressed their expectations. However, 16.4% of respondents expressed either neutrality or disagreement, indicating a minority view that may reflect varying levels of stakeholder engagement or satisfaction. The mean score for this item was 3.82, with a standard deviation of 0.671, indicating a relatively high level of consensus among respondents.

Secondly, concerning the effectiveness of communication strategies in engaging stakeholders during the project, the mean score was 3.62, with a standard deviation of 0.711. This suggests a moderate agreement among respondents; the data indicates a strong perception among respondents that communication strategies effectively engaged stakeholders during the 5G network project. Specifically, 60.7% agreed and 4.9% strongly agreed that communication strategies were effective, making up a cumulative agreement of 65.6%. This indicates a predominant positive sentiment regarding how Ethio Telecom managed communication with stakeholders. However, 34.4% of respondents expressed either neutrality or disagreement,

suggesting room for improvement in communication effectiveness. The mean score for this item was 3.62, with a standard deviation of 0.711, indicating moderate consensus among respondents.

Thirdly, regarding the resolution of conflicts among stakeholders during project execution, the mean score was 3.30, with a relatively high standard deviation of 0.955. This suggests a mixed perception among respondents; the data reveals varying perceptions regarding the effectiveness of resolving conflicts among stakeholders during the 5G network project at Ethio Telecom. Specifically, 39.3% agreed and 8.2% strongly agreed that conflicts were effectively resolved, totaling 47.5% agreement. This suggests a significant proportion of stakeholders perceived positive conflict resolution outcomes. However, 26.2% expressed disagreement and another 26.2% remained neutral, indicating a notable portion of stakeholders were not fully satisfied with conflict resolution efforts. The mean score for this item was 3.30, with a standard deviation of 0.955, indicating some variability in responses.

Lastly, regarding stakeholder involvement in decision-making processes, the mean score was 3.41, with a high standard deviation of 0.973. This suggests a moderate agreement among respondents; the data illustrates varying degrees of stakeholder involvement in decision-making processes throughout the project lifecycle. Specifically, 42.6% (26.2% + 16.4%) strongly agreed or agreed that stakeholders were appropriately involved in decision-making. This indicates a substantial portion of stakeholders perceived their involvement positively. However, 18.0% disagreed and 39.3% were neutral, suggesting room for improvement in engaging stakeholders more effectively in decision-making processes. The mean score for this item was 3.41, with a standard deviation of 0.973, indicating moderate variability in responses.

4.4 ANALYSIS OF PROJECT SUCCESS

Table 8 Analysis of Project Success

Variables	1=SD # (%)	2=D # (%)	3=N # (%)	4=A # (%)	5=SA # (%)	Mean	Standard Deviation
The project did meet stakeholder expectations and requirements.		1 (1.6)	13 (21.3)	43 (70.5)	4 (6.6)	3.82	.563
Key performance indicators (KPIs) or success metrics were met.		3 (4.9)	24 (39.3)	30 (49.2)	4 (6.6)	3.57	.694
Project management practices employed throughout the project lifecycle were ineffective.			29 (47.5)	25 (41.0)	7 (11.5)	3.64	.684

Source survey own data, (2024)

Table 8, provides insights into the perceptions of project success in terms of meeting stakeholder expectations, achieving key performance indicators (KPIs), and the effectiveness of project management practices.

Firstly, the statement "The project did not meet stakeholder expectations and requirements" received a mean score of 3.82 with a standard deviation of 0.563. This relatively high mean suggests a general agreement among respondents that stakeholder expectations and requirements were not fully met. Notably, the majority of respondents (77.1% from Agree and Strongly Agree categories combined) indicated that the project met stakeholder expectations and requirements. This suggests that Ethio Telecom successfully aligned the project outcomes with the identified needs and desires of its stakeholders. However, 23.0% of respondents expressed neutral or disagreeing views, indicating that a subset of stakeholders may have perceived gaps between their expectations and the project outcomes. The mean score for this item was 3.82, with a standard deviation of 0.563, suggesting a moderate level of agreement among respondents.

Secondly, regarding the achievement of key performance indicators (KPIs) or success metrics, the mean score was 3.57 with a standard deviation of 0.694. The majority of respondents (55.8% from Agree and Strongly Agree categories combined) indicated that the project successfully met its key performance indicators (KPIs) or success metrics. This suggests that Ethio Telecom achieved its predefined measures of success as perceived by stakeholders. However, 44.2% of respondents expressed neutral or disagreeing views, indicating that a notable portion of stakeholders may have perceived gaps in meeting these metrics. The mean score for this item was 3.57, with a standard deviation of 0.694, suggesting a moderate level of agreement among respondents.

Lastly, the statement "Project management practices employed throughout the project lifecycle were ineffective" had a mean score of 3.64 and a standard deviation of 0.684. A significant proportion of respondents (52.5% from Agree and Strongly Agree categories combined) expressed that project management practices employed throughout the project lifecycle were perceived as ineffective. This indicates a substantial concern among stakeholders regarding the execution and effectiveness of project management methodologies applied. Specifically, 47.5% of respondents expressed neutral views, suggesting uncertainty or lack of strong opinion, while 41% agreed and 11.5% strongly agreed that the practices were ineffective. The mean score for this item was 3.64, with a standard deviation of 0.684, reflecting a moderate level of consensus among respondents.

In summary, the perceived ineffectiveness of project management practices throughout the 5G network project highlights the importance of continuous improvement and adaptation in project management methodologies. By addressing these concerns proactively, Ethio Telecom can strengthen its project execution capabilities and better meet stakeholder expectations.

4.5 THE RELATION SHPE BETWEEN PROJECT SUCCESS AND OTHER VARIABLES

In this study, Pearson correlations were calculated to identify significant relationships between dependent and independent variables. As noted by Gautam (2020), correlation is a statistical technique used to evaluate the potential linear association between two continuous variables and measure the strength of their co-variation. The correlation coefficient ranges from -1, indicating a perfect negative correlation, through 0, signifying no correlation, to +1, indicating a perfect positive correlation. This method helps determine the degree to which changes in one variable are associated with changes in another, providing insights into the nature and strength of their relationship. This analysis is crucial for understanding the dynamics between variables and guiding data-driven decision-making in research and practical applications.

The correlation table provides insights into the relationships between various project management variables and project success. The dependent variable in this study is project success, while the independent variables include scope, schedule, budget, stakeholder engagement, and risk management.

The scope has a significant positive correlation with project success ($r = 0.454$, $p < 0.01$), indicating that clear and well-defined project scopes are associated with higher project success rates. It also shows moderate to strong correlations with other variables such as schedule ($r = 0.519$), suggesting that a well-defined scope positively affects these aspects as well.

Table 9 Correlations between variables

		SCOPE	SCHEDULE	BUDGET	STAKEHOLDER	RISK	SUCCESS
SCOPE	Pearson Correlation	1	.519**	.429**	.450**	.543**	.454**
	Sig. (2-tailed)		.000	.001	.000	.000	.000
	N	61	61	61	61	61	61
SCHEDULE	Pearson Correlation	.519**	1	.772**	.875**	.848**	.882**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	61	61	61	61	61	61
BUDGET	Pearson Correlation	.429**	.772**	1	.790**	.764**	.731**
	Sig. (2-tailed)	.001	.000		.000	.000	.000
	N	61	61	61	61	61	61
STAKEHOLDER	Pearson Correlation	.450**	.875**	.790**	1	.907**	.917**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	61	61	61	61	61	61
RISK	Pearson Correlation	.543**	.848**	.764**	.907**	1	.874**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	61	61	61	61	61	61
SUCCESS	Pearson Correlation	.454**	.882**	.731**	.917**	.874**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	61	61	61	61	61	61

Source survey own data, (2024)

The schedule exhibits a very strong positive correlation with project success ($r = 0.882$, $p < 0.01$). This implies that accurately planned and adhered-to schedules are critical for project success. The schedule also correlates strongly with stakeholder engagement ($r = 0.875$), and risk management ($r = 0.848$), underscoring the interconnectedness of effective scheduling with other project management practices.

The budget has a strong positive correlation with project success ($r = 0.731$, $p < 0.01$). Effective budget management is crucial for achieving project success. It also shows high correlation with stakeholder engagement ($r = 0.790$), highlighting the importance of financial planning and control.

Stakeholders' engagement is highly correlated with project success ($r = 0.917$, $p < 0.01$). Effective stakeholder management is paramount for project success. It also shows very strong correlation with other variable such as risk management ($r = 0.907$), indicating that involving stakeholders positively affects other aspects of project management.

Risk management correlates strongly with project success ($r = 0.874$, $p < 0.01$). Effective identification and mitigation of risks contribute significantly to successful project completion. It also has strong correlation with stakeholder engagement ($r = 0.907$), highlighting the importance of risk management in overall project strategy.

CHAPTER FIVE

5 SUMMARY, CONCLUSION AND RECOMMENDATION

The aim of this research was to conduct an in-depth assessment of Ethio Telecom's implementation of its 5G network project from a project management perspective, with a specific focus on the execution and closing phases. The study sought to evaluate both the successes and challenges experienced across key areas of project management. Valuable lessons learned from the project were to be identified to improve current and future project delivery.

5.1 SUMMARY

The 5G network project implemented by Ethio Telecom demonstrated a mix of strengths and areas for improvement across various dimensions of project management. Stakeholder management emerged as a critical area with varying degrees of effectiveness. While the identification and management of stakeholder expectations were moderately successful, communication strategies and conflict resolution showed inconsistencies. These findings suggest that while some stakeholders were effectively engaged, others experienced significant gaps in

communication and involvement in decision-making. This highlights the need for more inclusive and proactive stakeholder engagement strategies to ensure consistent and effective management throughout the project lifecycle.

Overall project success, as measured by stakeholder satisfaction, achievement of key performance indicators (KPIs), and effectiveness of project management practices, indicated areas for significant improvement. Although the project management practices exhibited some strengths, the perception that the project did not fully meet stakeholder expectations and the mixed results in achieving KPIs suggest that there are critical areas requiring attention. Enhancing governance, risk planning, stakeholder engagement, and skills development will be crucial for future projects to achieve better outcomes and support broader goals of digital inclusion and infrastructure development.

5.2 CONCLUSION

The assessment of Ethio Telecom's 5G network project highlights both achievements and areas requiring significant improvement. While the project exhibited strengths in certain aspects of documentation and knowledge transfer, critical challenges in stakeholder management, project execution, and closing processes were evident. Addressing these issues through enhanced documentation practices, improved stakeholder engagement, robust project management techniques, and the adoption of advanced technologies will be essential for future project success. By fostering a culture of continuous improvement and learning, Ethio Telecom can better navigate the complexities of 5G network implementation and contribute to broader digital transformation goals. This research provides valuable insights and practical recommendations for improving project management practices in similar large-scale telecommunication projects, particularly in developing markets.

5.3 RECOMMENDATIONS

5.3.1 STRENGTHEN DOCUMENTATION AND KNOWLEDGE TRANSFER

Implement stricter controls and standardize documentation processes to ensure all project activities are comprehensively documented. Enhance knowledge transfer mechanisms through structured training sessions and regular updates. Adopting a centralized document management system can ensure all stakeholders have access to the latest information, reducing delays during project handovers.

5.3.2 IMPROVE STAKEHOLDER MANAGEMENT

Develop robust communication strategies and conflict resolution mechanisms to improve stakeholder management. Prioritize proactive engagement and inclusive decision-making processes, ensuring all stakeholders are effectively involved. Regular stakeholder feedback sessions and transparent communication channels can help in identifying and addressing issues promptly. Establishing a stakeholder advisory board can provide ongoing guidance and foster a collaborative environment.

5.3.3 ENHANCE PROJECT MANAGEMENT PRACTICES

Focus on centralized governance to streamline decision-making and risk management. Proactive risk planning and regular performance reviews can help identify potential issues early and develop mitigation strategies. Investing in skills development for the project team can ensure better preparedness and adaptability to challenges, ultimately leading to more successful project outcomes. Consider adopting advanced project management tools and techniques, such as agile methodologies, to enhance flexibility and responsiveness.

5.3.4 ADOPT ADVANCED TECHNOLOGY AND TOOLS

Advantage advanced technology and tools to enhance project management efficiency. Implement project management software that supports real-time updates, collaboration, and data analytics. Tools like AI for predictive analytics and machine learning can help in forecasting potential issues and optimizing resource allocation.

5.4.5 FOSTER A CULTURE OF CONTINUOUS IMPROVEMENT

Create a culture that values continuous improvement to sustain project success. Encourage regular reflection and learning sessions where the team can discuss what worked well and what did not. Implement a formal process for capturing and analyzing lessons learned to apply insights to future projects.

5.4 FUTURE RESEARCH AREA

Future research in the domain of telecommunication project management, especially concerning large-scale initiatives like 5G network rollouts, should focus on several key areas. One important avenue is the development and evaluation of advanced risk management techniques tailored specifically for such complex projects. This involves leveraging predictive analytics, machine learning, and artificial intelligence to anticipate potential risks and devise proactive mitigation strategies. Integrating these technologies into project management frameworks could significantly enhance risk management capabilities.

Another promising research area is the impact of emerging technologies such as the Internet of Things (IoT) on project management practices. Investigations could explore how these technologies can improve transparency, efficiency, and collaboration during the execution and closing phases of telecommunication projects. Similarly, delving deeper into effective

stakeholder engagement strategies is crucial. Research could examine innovative communication tools, conflict resolution mechanisms, and decision-making frameworks to ensure comprehensive and inclusive stakeholder participation in 5G network projects.

Additionally, the exploration of more sophisticated knowledge management and transfer techniques within telecommunication projects is vital. Future studies could investigate the use of collaborative platforms, virtual reality (VR) for training, and knowledge-sharing networks to enhance the retention and dissemination of critical project information. Other essential areas include examining the sustainability and environmental impact of 5G network deployments, understanding the influence of cultural and organizational factors on project success, and exploring the regulatory and policy challenges associated with 5G rollouts. By addressing these areas, future research can provide valuable insights and practical solutions to optimize project management practices and support the successful implementation of 5G networks worldwide.

REFERENCE

Ethio Telecom (2023). *ETHIO TELECOM OFFICIALLY LAUNCHES ITS COMMERCIAL 5G SERVICE!*.[Online]. Ethio Telecom. Available at: https://www.ethiotelecom.et/ethio-telecom-officially-launches-its-commercial-5g-service/5/ [Accessed 25 March 2024].

Ethio Telecom (2022). *Three-years (2022-2025) LEAD Growth Strategy and 2022/23 Annual Business Plan*. [Online]. Ethio Telecom. Available at: https://www.ethiotelecom.et/three-years-2022-2025-lead-growth-strategy-and-2022-23-annual-business-plan/ [Accessed 25 March 2024].

Ethio Telecom (2023). *Ethio Telecom Three-Years LEAD Growth Strategy and 2023/24 Annual Business Plan*. [Online]. Ethio Telecom. Available at: https://www.ethiotelecom.et/ethio-telecom-three-years-lead-growth-strategy-and-2023-24- annual-business-plan/2/ [Accessed 25 March 2024].

Ethio Telecom (2022). *Ethio Telecom Annual Business Performance Summary Report*. [Online]. Ethio Telecom. Available at: https://www.ethiotelecom.et/ethio-telecom-2014-efy-2021-22-annual-business-performance-summary-report/ [Accessed 25 March 2024].

ITU (2018). *Setting the Scene for 5G: Opportunities & Challenges*. [Online]. ITU. Available at: https://www.itu.int/en/ITU-D/Documents/ITU_5G_REPORT-2018.pdf [Accessed 25 March 2024].

PMI (2017). PMI's Project Management Body of Knowledge (PMBOK Guide), 6th Edition, 2017

Ethio Telecom (2024). *ETHIO TELECOM LAUNCHES 5G SERVICE IN CENTRAL EAST REGION, HARAR AND HAROMAYA CITIES!*. [Online]. Ethio Telecom. Available at: https://www.ethiotelecom.et/ethio-telecom-launches-5g-service-in-central-east-region-harar-city-and-its-environs [Accessed 25 March 2024].

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approach*, 5th ed, Thousand Oaks, CA: SAGE Publications, Inc

Kerzner, H. (2017). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*. Hoboken, NJ: John Wiley & Sons.

Khan, F (2023). Schedule Delays in Construction Projects: 7 Key Factors, Viewed 10 April 2024, <https://www.planacademy.com/schedule-delays-7-key-factors/>.

Larsen, J. K., Shen, G. Q., Lindhard, S. M., & Brunø, T. D. (2016). *'Factors Affecting Schedule Delay, Cost Overrun, and Quality Level in Public Construction Projects'*, Journal of Management in Engineering, vol. 32, no. 1, pp. 15-17.

Siemiatycki, M (2015), *Cost Overruns in Infrastructure Projects: Patterns, Causes, and Cures*, no.11, pp. 1-6

Global Tenders and Bids Company (2023). *Effective Project Cost Management: Ensuring Success and Budget Control*. [Online]. Global Tenders and Bids Company. Available at: https://www.linkedin.com/pulse/effective-project-cost-management-ensuring [Accessed 13 April 2024].

Hillson, D., & Murray-Webster, R. (2017). *Understanding and Managing Risk Attitude*, 2nd edn, New York, NY: Routledge.

Chapman, C.B., & Ward, S. (2011). *Project Risk Management Processes, Techniques and Insights*. Chichester, UK: John Wiley & Sons.

Coolman, A. (2015). *7 Keys* to *Project Stakeholder Management March 19, 2021*. Ashley Coolman Blog. [Online]. Available at: https://www.wrike.com/blog/project-stakeholder-management-pmchat/ [Accessed 13 April 2024].

Eby, K. (2023). *Hone Your Skills With This Guide to Project Success Criteria*. Smartsheet [Online], June 6, 2023. Available at: https://www.smartsheet.com/content/project-success-criteria [Accessed 16 April 2024].

Venczel, B.T., Berényi, L. and Hriczó, K. (2021). *Project Management Success Factors*. In: Journal of Physics Conference Series 1935(1):012005 1935(1): 012005. 012005. [online] researchgate. Available at: https://www.researchgate.net/publication/352043540 [Accessed 16 Apr. 2024].

Ardebili, A.A. (2018). *Methodology for risk management and decision making in resource allocation based on an index for measuring the 'risk taking capability'*. [online] researchgate. Available at: https://www.researchgate.net/publication/325967448 [Accessed 16 Apr. 2024].

Drob, C. & Zichil, V. (2016). *OVERVIEW REGARDING THE MAIN GUIDELINES, STANDARDS AND METHODOLOGIES USED IN PROJECT MANAGEMENT*. In: Journal of Engineering Studies and Research, Vol. 19, No. 3. [Online]. researchgate. Available at: https://www.researchgate.net/publication/328620111 [Accessed 18 Apr. 2024].

ITU, World Bank (2020). *Spectrum management: Key applications and regulatory considerations driving the future use of spectrum* 13 Oct. 2020. [Online]. ITU, World Bank. Available at: https://digitalregulation.org/spectrum-management-key-applications-and-regulatory-considerations-driving-the-future-use-of-spectrum/ [Accessed 17 Apr. 2024].

Nuamah, J. (2024). *From 1G to 5G: The Evolution of Mobile Network*. Available at: https://www.megamac.com/blog/from-1g-to-5g-the-evolution-of-mobile-networks [Accessed 17 Apr. 2024].

Odida, M. O. (2024). *From 1G to 5G: The Evolution of Mobile Communication: A Comprehensive Survey on 5G Technology. J Sen Net Data Comm*, 4(1), 01-11. Available at: https://www.opastpublishers.com/open-access-articles/the-evolution-of-mobile-communication-a-comprehensive-survey-on-5g-technology.pdf [Accessed 20 Apr. 2024].

Locke, J. (2024). *Key Features and Benefits of 5G Technology*. Available at: https://www.digi.com/blog/post/5g-benefits. [Accessed 21 Apr. 2024].

Pons, M., Valenzuela, E., Rodríguez, B., Nolazco-Flores, J. A. and Del-Valle-Soto C. (2023). *Utilization of 5G Technologies in IoT Applications: Current Limitations by Interference and Network Optimization Difficulties—A Review*. Available at: https://www.researchgate.net/publication/369943012 [Accessed 20 Apr. 2024]

Khuntia, M., Singh, D. and Sahoo, S. (2021). *Impact of Internet of Things (IoT) on 5G*. Available at: https://www.researchgate.net/profile/Debabrata-Singh/publication/343969540 [Accessed 23 March 2024].

LuxCarta (2024). *7 practical challenges of 5G network deployment*. Available at: https://www.luxcarta.com/blog/5g-network-deployment [Accessed 12 May 2024].

Alnaas, M., Laias E., Hanasih A. and Alhodairy O. (2023). *Upgrading to 5G Networks: Existing Challenges and Potential Solutions*. Available at: https://www.researchgate.net/publication/376190507 [Accessed 23 Apr. 2024]

Daraojimba, E. C., Nwasike, C. N., Adegbe, A. O., Adegbite, C. A., and Gidiagba, J. O. (2024). *COMPREHENSIVE REVIEW OF AGILE METHODOLOGIES IN PROJECT MANAGEMENT*. Available at: https://www.researchgate.net/publication/377434258 [Accessed 23 Apr. 2024].

Ullah, N., Rashid, M.U., Islam T., Ayub M., Tanzi S. A., and Utsho M. O. (2023). *Roles of Stakeholders Towards Project Success: A Conceptual Study*. Available at: https://mpra.ub.uni-muenchen.de/118717/ [Accessed 27 March 2024].

Abbas, A. and Khan, K. (2023). *Risk Management and Cost Overruns: A Project Manager's Guide*. Available at: https://www.researchgate.net/publication/373042553 [Accessed 25 April 2024].

Seikola, M. (2022). *Agile Network Evolution in the 5G Era*. Available at: https://www.ericsson.com/en/blog/3/2022/2/agile-network-evolution-in-the-5g-era [Accessed 12 May 2024].

FasterCapital, (2024). *Governance: Mastering Governance: Essential Skills for Executive Directors*. Available at: https://fastercapital.com/content/Governance: Mastering Governance: Essential Skills for Executive Directors - FasterCapital [Accessed 29 Apr. 2024].

TCS, (2021). Goodbye 3G: Get Ready for the 5G Sunrise with our Five-Pronged Strategy, Tata Consultancy Services Ltd (TCS), India, Available at: https://www.tcs.com/content/dam/global-tcs/en/pdfs/insights/whitepapers/3g-sunset-5g-sunrise-strategies-implement-technology0.pdf [Accessed 15 May 2024].

Schwierking, J. and Anantatmula, V. S. (2015). Project Management and Regulatory Compliance. Available at:

https://www.researchgate.net/publication/282993934_Project_Management_and_Regulatory_Compliance [Accessed 23 Apr. 2024].

Chiaraviglio L., Elzanaty A. and Alouini M. S. (2020). Health Risks Associated with 5G Exposure: A View from the Communications Engineering Perspective. Available at: https://www.researchgate.net/profile/Ahmed-Elzanaty-3/publication/341815740 [Accessed 10 May 2024].

Buehler, T. L. (2023). *Managing Relationships with Suppliers and Vendors You Use*, American Public University, Available at: https://www.apu.apus.edu/area-of-study/business-and-management/resources/managing-relationships-with-suppliers-and-vendors-you-use/ [Accessed 10 Apr. 2024].

Shanthi, P., Sanchez D. T., Khanm, J. A. and Raman A. M. (2023). *PROJECT MANAGEMENT*, Sun International Scientific Publications. Available at: https://www.researchgate.net/publication/374530423 [Accessed 13 Apr. 2024].

Jusoh, Z. M., and Kasim, N. (2017). A Review on Implication of Material Management to Project Performance. Available at: https://www.researchgate.net/publication/311629030 [Accessed 1 May 2024].

Williams, R.T. (2023). *Project Management Toolkit: Essential Resources for Beginners*, Version 1.2. Available at: https://www.researchgate.net/publication/370765907 [Accessed 1 May 2024].

Balaban, S., Đurašković, J. (2021). Agile Project Management as an Answer to Changing Environment. Available at: https://www.researchgate.net/publication/351858054 [Accessed 24 Apr. 2024].

METAVSHN, (2024). Ensuring Quality: The Role of Service Assurance in Telecoms, METAVSHN, The Omniprovisioning Company. Available at: https://metavshn.com/ensuring-quality-the-role-of-service-assurance-in-telecoms/ [Accessed 29 Apr. 2024].

Reaiche, C., Papavasiliou, S., and Anglani, F. (2022). Risk assessment and quality project management. James Cook University, Australia. Available at: https://jcu.pressbooks.pub/pmriskquality [Accessed 18 Apr. 2024].

Sedmak, J. (2021). What is Stakeholder Engagement, and Why is it Important for Strategic Planning?. SMC (Strategy Management Consultant). Available at: https://www.smestrategy.net/blog/stakeholder-engagement-management-for-strategic-planning [Access 18 Apr. 2024].

MoldStud, (2024). The Importance of Effective Communication in Project Management. Available at: https://moldstud.com/articles/p-the-importance-of-effective-communication-in-project-management [Accessed 3 May 2024].

MATHUR, S. (2023). Understanding Acceptance Criteria in Project Management. Available at: https://projectmanagementpath.com/understanding-acceptance-criteria-in-project-management/ [Accessed 5 May 2024].

Mosaicprojects, (2017). V&V = the Verification and Validation of Deliverables. Available at: https://mosaicprojects.com.au/WhitePapers/WP1098_V_and_V.pdf [Accessed 2 June 2024].

Agarwal, N. K., Islam, M. A. (2015). Knowledge retention and transfer: How libraries manage employees leaving and joining. Available at: http://web.simmons.edu/~agarwal/files/Agarwal-Islam-2015-VINE-Knowledge%20retention%20and%20transfer-author.pdf [Accessed 2 June 2024].

Verma, E. (2024). Project Documentation and Its Importance in 2024. Available at: https://www.simplilearn.com/project-documentation-article [Accessed 29 May 2024].

Sima, K. S. (2023). Closing a Project, the right way. Available at: https://www.researchgate.net/profile/Kifle-Sima/research [Accessed 29 May 2024].

PWC, (2017). Understanding a financial statement audit. Available at: https://www.pwc.com/im/en/services/Assurance/pwc-understanding-financial-statement-audit.pdf [Accessed 3 June 2024].

Eby, K. (2021). Guide to Lessons Learned in Project Management. Available at: https://www.smartsheet.com/content/lessons-learned [Accessed 6 May 2024].

Luis, P. G., César, A. B.T., Luis, M. A. O., Yavar, J. N., Heither, A. G. B. (2020). Key Lessons to Sustain Continuous Improvement: A Case Study of Four Companies, Journal of Industrial Engineering and Management JIEM, 2020 – 13(1): 195-211 – Online ISSN: 2013-0953 – Print ISSN: 2013-8423. Available at: https://www.econstor.eu/bitstream/10419/261714/1/1693145030.pdf [Accessed 3 May 2024].

Breuker, M. (2021). Earned Value Management: An Introduction. Available at: https://www.pinnaclemanagement.com/blog/earned-value-management-an-introduction [Accessed 6 May 2024].

Harrison, J. S., Freeman, R. E., and Abreu, M.C.S. (2015). Stakeholder Theory As an Ethical Approach to Effective Management: applying the theory to multiple contexts. Available at: https://www.researchgate.net/profile/Monica-Abreu-2/publication/283194075 [Accessed 16 Apr. 2024].

Payne, Y. (2022). Risk Management Theory Explained. MSC. Available at: https://www.iienstitu.com/en/blog/risk-management-theory-explained [Accessed 23 May 2024].

Delke, V. (2015). The Resource Dependence Theory: Assessment and Evaluation as a Contributing Theory for Supply Management. Available at: http://essay.utwente.nl/67470/1/Delke_BA_Management%20and%20Governance.pdf [Accessed 10 June 2024].

Creswell, J.W., & Creswell, J.D. (2017). Research design: Qualitative, quantitative, and mixed methods approach, 5th ed, Sage, SAGE Publications India Pvt. Ltd, Mathura Road, New Delhi 110 044 India, https://spada.uns.ac.id/pluginfile.php/510378/mod_resource/content/1/creswell.pdf.

Harris, L. R., Brown, T. L. (2010). Mixing interview and questionnaire methods: Practical problems in aligning data in aligning data, Volume 15, Number 1, January 2010. Available at: https://www.scribd.com/document/484854194/Mixing-interview-and-questionnaire-methods-Practical-problems-in-1 [Accessed 29 Apr. 2024].

Taber, K. S. (2017). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education, Science Education Centre, Faculty of Education, University of Cambridge, 184 Hills Road, Cambridge CB2 8PQ, UK. Available at: https://link.springer.com/content/pdf/10.1007/s11165-016-9602-2.pdf [Accessed 5 June 2024].

Sataloff, R. T., and Vontela, S. (2021). Response Rates in Survey Research. Available at: https://www.researchgate.net/publication/349069737_Response_Rates_in_Survey_Research [Accessed 25 May 2024].

Kumar, C., and Gautam, A. (2020). Correlation. Available at: https://www.researchgate.net/profile/Akash-Gautam-3/publication/343682955 [Accessed 5 June 2024].

APPENDEX A: QUESTIONNAIRE

Addis Ababa University
College of Business and Economics
School of Commerce
Graduate Program in Project Management

Dear Sir/Madam,

I am a graduate student at Addis Ababa University conducting a study titled "Assessments of Challenging 5G Network Project: A Case Study of Ethio Telecom from Project Management Perspectives, with a Focus on Project Execution and Closing."

As part of this research, I am seeking your expert insights through participation in a hardcopy paper survey to understand various aspects of successful project execution and closing strategies. In particular, the survey will explore factors such as project scope, schedule, budget, risk management, and stakeholder engagement, which can influence the outcomes of complex projects like 5G network implementations.

Your participation in this anonymous survey would provide invaluable information on challenges faced and solutions adopted for managing large-scale technology deployment initiatives, especially in emerging market contexts. All responses will be kept strictly confidential and used solely for academic purposes.

It would be much appreciated if you could take approximately 15-20 minutes to complete the questionnaire at a suitable time. Sharing your professional experience and perspectives would greatly enrich the findings of this research.

If you require any, further details or have additional questions, please do not hesitate to contact me via email at ***wsnmny@gmail.com*** or on my mobile number ***0911519910***.

Thank you in advance for your time and valuable contribution to this study. Your support is important for the advancement of scholarly knowledge in this domain.

Yours Sincerely,

Wosenu Manaye

Post Graduate Candidate, MA in Project Management

Addis Ababa University, School of Commerce

Addis Ababa

SURVEY QUESTIONS

Part One: General Information

Please Mark (**X**) in the appropriate box.

1. Gender

   ☐ Male ☐ Female

2. Age in years

   ☐ Less than 30 ☐ 31 - 40 ☐ 41 - 50 ☐ Above 50

3. Educational Background

   ☐ Below Degree ☐ First Degree ☐ Masters ☐ above Masters

4. Years of work experience

   ☐ 0 to 5 years ☐ 6 to 10 year's ☐ 11 to 15 year's ☐ 16 to 20 years

   ☐ Above 20 years

5. What is your title and respondent Designation in the Organization?

   ☐ Project Manager ☐ Expert ☐ Supervisor ☐ Specialist ☐ Analyst

6. Number of Projects participated in Ethio Telecom network project implementation

   ☐ 1 to 2 ☐ 3 to 5 ☐ More than 5

Part Two: Factors that challenges the 5 G Network project implementation during Project Execution and closing

Below, there are numbers of factors that challenges the 5 G Network project. From your experience, please express your opinion on the importance of the following factors as key performance indicators of Network projects within the Ethio Telecom 5G network project implementation.

Please tick (**X**) in the appropriate box.

5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree and 1 = Strongly Disagree

Scope Management	1	2	3	4	5
The project scope was clearly defined at the outset of the 5G network project.					
Stakeholder input was integrated effectively into the scope management process.					
The final deliverables of the 5G network project aligned well with the project scope.					
Schedule Management	1	2	3	4	5
The project schedule was accurately estimated prior to project execution.					
Scheduling tools and techniques were effective during the 5G network project.					
Milestones and deadlines were consistently met during the execution phase.					
Critical delays were effectively managed during the project execution.					
Budget Constraints	1	2	3	4	5
Budget monitoring and control mechanisms were effective during the 5G network project.					
Financial resources were allocated efficiently throughout the project lifecycle.					
Actual project costs are closely aligned with the initial budget estimates.					
Risk Management	1	2	3	4	5
Potential risks were comprehensively identified and assessed before project execution.					
Risk mitigation strategies were effective during the 5G network project.					
Unforeseen risks were effectively addressed during project execution.					
Lessons learned from risk events were incorporated into future project activities.					
Stakeholder Management	1	2	3	4	5
Stakeholder expectations were well identified and managed throughout the project lifecycle.					
Communication strategies effectively engaged stakeholders during the 5G network project.					
Conflicts among stakeholders were effectively resolved during project execution.					
Stakeholders were appropriately involved in decision-making processes.					
Project Success	1	2	3	4	5
The project did not meet stakeholder expectations and requirements.					
Key performance indicators (KPIs) or success metrics were met.					
Project management practices employed throughout the project lifecycle were ineffective.					
The project did not meet stakeholder expectations and requirements.					

APPENDICES

APPENDEX B: INTERVIEW QUESTIONS

Interview Questions

Project Scope Management

1. How do you ensure that all project deliverables are clearly defined and understood by the team?

2. Can you describe a situation where a significant change in scope occurred? How did you handle it?

3. How do you measure and track the completion of project deliverables and milestones?

Schedule Management

1. What scheduling tools and techniques do you use to plan and monitor the project timeline?

2. How do you handle delays and ensure that the project remains on track?

3. Can you provide an example of a project where you had to adjust the schedule significantly? What was your approach?

Budget Management

1. How do you ensure the accuracy of your initial budget estimates?

2. What methods do you use to monitor and control project costs during execution?

3. Can you describe a time when the project faced cost overruns? How did you manage it?

Stakeholder Management

1. What strategies do you use to keep stakeholders informed and engaged throughout the project?

2. How do you measure and ensure stakeholder satisfaction with the project?

Risk Management

1. What processes do you use to identify and assess risks in your projects?