

**CRITICAL SUCCESS FACTORS AND PERFORMANCE OF FIBRE OPTIC  
INFRASTRUCTURE PROJECTS BY INFORMATION AND  
COMMUNICATION TECHNOLOGY AUTHORITY, KENYA**

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## **DECLARATION**

This research project is my original work and has not been presented for any award in another university.

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## **DEDICATION**

To my Family Polly Kinya, Prof Njenga Munene and friends Mrs. Jean Njeri M, Mr. Martin Kuria Karanja you remain the inspiration behind my sedulous. Success for your encouragement, support and unconditional love.

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## **ABBREVIATIONS AND ACRONYM**

<b>ANCI</b>	American National Standards Institute
<b>DRC</b>	Democratic Republic of Congo
<b>ICT</b>	Information and Communication Technology
<b>ICTA</b>	Information and Communication Technology Authority
<b>ITU</b>	International Telecommunication Union
<b>KENET</b>	Kenya Education Network
<b>M and E</b>	Monitoring and Evaluation
<b>NLD</b>	National Long Distance
<b>NOFBI</b>	National Optic Fibre Backbone
<b>SCTE</b>	Society of Cable Telecommunications Engineers

## OPERATIONAL DEFINITION TERMS

<b>Critical Success Factor</b>	Relates to important elements needed for a project or entity to fulfill its purpose such as Project Monitoring, Project Financing, Stakeholders Engagement, Management Support.
<b>Fibre Optics</b>	Relates to a system that sends data as light pulses via glass or plastic fibre over vast ranges.
<b>Project Performance</b>	This is the capacity to complete the project in accordance with the necessary requirements, within the anticipated time frame, within the allocated budget, and while maintaining the satisfaction of the stakeholders and the client.
<b>Project Financing</b>	A long-term, flat or minimal recoverable funding option secured by the borrower's ownership, property, and holdings in the enterprise in question is referred to as this.
<b>Project Monitoring</b>	This is a procedure for determining the degree of progress made toward achieving the targeted goals.
<b>Stakeholder Engagement</b>	This is a procedure that includes consulting the individuals who will be impacted by the choices made by an establishment or a project.
<b>Top Management Support</b>	It relates to the top manager's positive mindset and conduct towards the project, as well as their apparent involvement throughout and beyond the project.

## ABSTRACT

Information and Communication Technology is crucial to Kenya's economy as it fosters growth boosting the country's economy. These businesses have the opportunity to grow, become more competitive, enhancing their earnings. As a result, the government continuously makes efforts to encourage the widespread use of ICT by all organizations. Several infrastructure sharing options, such as trenches, ducts, cables, fibre, and wavelengths, could lead to cost reductions during the installation of fibre optic infrastructure, thereby enhancing performance. There are numerous ICT initiatives in Kenya that have failed to achieve their intended goals and objectives. This is determined by how successfully projects achieve their goals and remain sustainable afterward. Studies have been carried out on critical success factors and performance of projects in different sectors of the economy and environment. The study addressed 125 construction projects in Nairobi City County as the target population. The respondents examined the effects of the best funding for fibre optic projects in Kenya. With a target population of 120 employees, including those in top, middle, and support personnel divisions of administration. However, this study focused on the effect of critical success factors and performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. Specifically, the study aimed to examine the effect of project financing, top management support, stakeholders' engagement, and project monitoring on the performance of fibre optic projects by Information and Communication Technology, Kenya. The study alluded to the following theories: Agency Theory, Theory of Change, and Financial Liberalization Theory. The study employed a descriptive and exploratory research design. Project managers, the finance team, stakeholders, and the management team on the various projects being carried out under ICTA, Kenya, are the study's target population. Collection of data is mainly primary and secondary. The study examined and enhance the validity of results using SPSS, which was based on descriptive, correlation, and multiple regression techniques. Ethical standards were duly followed. The study found that project financing, top management support, stakeholder engagement, and project monitoring had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The study concluded that financing projects through the project finance route offers various benefits, such as the opportunity for risk sharing, extending debt capacity, releasing free cash flows, and maintaining a competitive advantage in the market. Top management support relates to effective decision-making to manage risk and authorize business process change. Stakeholder engagement is an ongoing process because the stakeholder landscape is forever shifting. The organization facilitates immediate monitoring of project tasks upon onset and eventually conducts evaluations of these tasks to obtain clear and concise information on every achievement made. The study recommended that project managers should focus on a few critical financial metrics essential to specific business cases. The top management of the organization should communicate the vision to team members on the project being implemented to set clear expectations about the spirit of the project. Any effective stakeholder management approach requires you to first identify, assess, and map stakeholders according to interest and influence to identify who key stakeholders are and how they are similar or different in terms of needs and opinions. Project managers should create a plan for monitoring and evaluating the projects to capture and organize the project's data in one place, track each team member's progress, and allocate resources accordingly.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

Fibre Infrastructure for running ICT applications is becoming a need for daily living in distribution of information from the global population. It is now a significant factor of development rather than the end consequence. Information and communication technology is used to support the vast majority of organizational activities in both private and public enterprises. This includes city links and interoffice connections for users worldwide. There are further businesses that operate exclusively online and make billions of dollars for the global economy. The lifetime of fibre optic projects involves numerous organizations in the United States.

In Virginia State, one must adhere to the guidelines established by the Society of Cable Telecommunications Engineers (SCTE), Rural Utility Services, and International Telecommunication Union (ITU). Although it is not always the case, city councils also typically offer pits for the cabling to be installed in various channels in exchange for a charge. The American National Standards Institute provides the policy guidelines. (Mauriello, 2012).

Different strategies have been employed by European nations for performance of fibre optic cable. The final mile has been heavily controlled by the United Kingdom, Netherlands, and Sweden in an effort to provide consumers with superfast access. The major goal of this is to give new competitors incentives so they can serve customers well. Fibre optic service providers are required to link to building foundations and share investing in infrastructure in Spain and France (Kiminiza & Were, 2016).

African countries started working on a number of initiatives to improve connection and promote the spread and use of the Internet across Africa. The prospect of delivering internet to the region led to a number of fibre optic projects, some of which have already been built or are in the process of being built. Many countries have combined the rollout of broadband Internet with the advancement of their socioeconomic development, a claim that can only be supported by duration with the appropriate distribution strategy and Internet usage inside these countries. It's crucial to remember that, since 2009, Internet access and usage have increased dramatically across Africa. For instance, the prevalence of the internet has increased from 5.6% in

2009. Additionally, the percentage of people using the internet has climbed from 5.6% in 2009 to 8.6% in 2013. (internetworldstats.com). African nations are experiencing an ICT revolution, and as a result, the continent has advanced to become a paradise for venture capital (Musee, 2017).

The biggest obstacle to creating these networks in Southern Africa is obtaining permission from local authorities. Over 22,000 km of fibre networks have been installed by Liquid Telecom in nations like South Africa, Zimbabwe, Zambia, the DRC, and much of East Africa. In 2016, the business declared the opening of Liquid Sea, an undersea cable infrastructure that will link Europe to the Middle East and the eastern and southern regions of Africa. Every nation has its unique issues and eccentricities, claims Liquid Telecom Group Managing Executive Willem Marais. Obtaining the necessary permits to provide telecommunication products within a certain market is likely the most crucial factor. (2016) Sheldon Uganda, Rwanda, Zambia, Zimbabwe, Botswana, the Democratic Republic of the Congo, Lesotho, and South Africa are currently included in Liquid Telecom's largest single fibre network in Africa (Liquid Telecommunications, 2017).

The National Optic Fibre Backbone (NOFBI) project, started by the Kenyan government, was implemented in two stages with the goal of ensuring connectivity at all times. The project's first phase, which included the district offices and a few border towns, was finished in 2009. Most deliveries have fibre infrastructure with access points. The project, which is nearly finished, intends to improve government services in Kenya's 47 counties while also facilitating communication across counties. A National Optic Fibre Backbone has been built, and it spans 4,300 kilometers across 58 towns in 35 counties in Kenya. In order to connect the local government transmission network with the central government, this phase is already in place.

Phase 2, which aimed to further expand coverage, only utilized 1,200 km of the 1,600 km of civil works, and was carried out by Telkom, Safaricom, Jamii Telecom, and KENET, utilizing more than 3,000 km of the cable (Lemlem & Moronge, 2017). Metropolitan fibre civil works have been used by the national government to complete 900 km of fibre that aided in safety protection of the current transmission to devolved unit of the 47 counties that commenced building works in September 2014; to date,

with completion in 35 of the 47 counties. The Chinese initiative is being fought by working with the implementing agency, Huawei as the building, and Telkom Kenya provides supervisory role, ICT Authority as the contractor of the national fibre optic infrastructure. Telkom Kenya's responsibility is to run and ensure sustainability of the cable with financing from government and the Ministry of information and communications technology (ICT Authority, 2017).

### **1.1.1 Project Performance**

Setting a benchmark or criteria for evaluating project deliverables can be thought of as the simplest definition of project success. Project success was initially and for a considerable amount of time measured by a constrained set of generally agreed criteria related to time, scope, and cost. This has since been broadened throughout time to take into account additional factors such achieving the enterprises' financial and strategic goals, as well as a general focus on stakeholder satisfaction (Munyao, 2016). The achievement of set project targets, which often includes standards like timeframe, budget, and quality, is viewed as a sign of project performance (Kerzner, 2013; Gichimu & Mutuku, 2022).

The success of the project depends on meeting these requirements with great efficiency because any shortcomings in any of these criteria will impede the success process. Project performance is determined by both internal (project-related) and external (proponent-related) elements. Time, cost, and performance are fundamental (project) characteristics that the project manager has significant power in. Relevance, satisfaction, and effectiveness of the overall project are extrinsic (proponents) aspects; unfortunately, these variables cannot be evaluated prior to project finalization; one can only assure them during project execution, up to a point, by understanding customer needs and translating them into requirements of the project delivery (Mutuku; 2019).

Service Quality, Training and Utilization, Stakeholder Targets, Overall Satisfaction, and Functional Reliability were found to be the five main component variables that contributed to the efficiency and success of the project (Takim, Roshana, & Hamimah, Adnan 2019). Given that project "outcome" is linked to effective project performance measurements, elements such achieving user and customer experience, gaining from projects, and achieving pre-stated involved parties' targets (achieving



project goals as well as primary focus), and being backed by well-organized contracting programs. This is because efficiency such as timeframe, budget, and quality in project performance metrics are linked to the project's "success rates."

### **1.1.2 Critical Success Factors**

The elements of a project that are seen to be most crucial to its accomplishment or loss are known as critical success factors. Critical success variables are project elements that, when changed, increase the likelihood of success, according to Muller and Jugdev (2012). Critical success factors are the collection of conditions, causes, or influences that affect the project's outcomes. Monitoring, planning, layout, personnel, and regulatory context were named as the crucial success aspects (Ika, Diallo & Thuillier, 2012). A variable must be acceptable to both the project team and the beneficiaries in order to qualify as a critical success factor (Muller & Jugdev, 2012). The goals of the specific project, the political and regulatory context, funding, organizational capabilities, and the level of expertise of the implementation team are just a few of the aspects that have been noted over time by many communities and experts (Omolo, 2021).

The act of supplying money for investing, making purchases, or conducting business is known as financing. In order to set up and install ICT infrastructure, the Kenyan government has started making certain capital investments. Partnerships between the government and development partners are used to raise money for these developments. The major portion of this investment in terms of technology is made up of foreign funds (LemLem & Moronge, 2017). When a project is financed, the necessary resources are guaranteed to be available. Every funded project tries to keep the contributors they already have while also working to get more. Fundraising is a component of financing and is characterized as an effort to raise money for a purpose. Authorities fund a lot of programs in underserved regions, which might lead to reliance because most of these groups don't make an effort to find additional contributors. Many contributors place a cap on the portion of their funds that can be used for these administrative expenses. Non-profit regulator Charitable Audit thinks that organizations that spend less than one-third of their resources on cost of the program are not fulfilling their objective (Gilbert, 2021).

To offer valuable, fast, and accurate standard details, managerial frameworks can be used and developed as a component of a firm's management support and linked with the overall company-wide information system. By getting the correct facts to the top management and at appropriate time allows the appropriate decisions to be undertaken, management commitment plays a crucial role in promoting excellent management during the successful execution of fibre optic. An important element affecting the efficiency and overall efficacy of IT operations has been recognized as managerial assistance. The definition of managerial support is a positive approach towards and overt backing for management systems. The initiative should have the open backing of the institution 's highest executives, who must also acknowledge its significance as a highest concern. Top management must be dedicated to the change initiative by being personally involved and being willing to spend worthwhile resources. They are also involved in creating performance review committees, which examine projects' activity and look for possibilities and high-risk areas. Top management should assist in finding the appropriate individuals, release them from other obligations, form a multidisciplinary team, and give them authority over the project's tasks (Kemei, Oboko & Kidombo, 2018).

Stakeholders are people or organizations who have a direct interest in a project. In addition, stakeholders include those whose support is necessary for an entity to function. According to (Lynda, 2015), stakeholders are individuals or groups of individuals who have an impact on or are affected by how well an organization achieves its goals. Most of the programs that are supported by donors strive to improve the lives of those living in disadvantaged areas. One of the most important aspects of project ownership is including the community since it gives the people the power to take charge of their own development and develop solutions to their own challenges (Ltumbesi & Okech, 2016). Additionally, it is stated that the community must fully participate in crucial responsibilities like organizing and carrying out every activity in a project.

The procedure through which the main actors are updated on a project's status with a view to maintaining consistency with the original goals. Monitoring is a continuous process that managers and stakeholders utilize to show if results are being attained or not (UNDP, 2019). There are numerous justifications for the stringent control regime. The ability to serve as a guideline for decision-making, the identification of guiding

principles to determine whether the intended goals are accomplished on schedule and within the approved budget, and for accountability and knowledge among all of the key participants, including but not limited to donors, are a few of the purposes. Additionally, monitoring, which is a routine task, concentrates on the effectiveness of program execution (Omolo, 2021).

### **1.1.3 Information and Communication Technology Authority of Kenya**

A State Corporation under the Ministry of Information, Communication, and Technology is the Information and Communication Technology (ICT) Authority. The business was founded in August 2013. All ICT-related functions within the Government of Kenya must be managed rationally and efficiently by the Authority. The broad mandate includes strengthening the oversight of government electronic communication and enforcing ICT standards in the latter. In accordance with the 2017 Kenya National ICT Masterplan, the Authority also encourages ICT proficiency, competence, innovation, and entrepreneurship (Communication Authority of Kenya, 2018)

ICT Authority responsibilities include the following: Install and supervise all ICT personnel in the government service; Establish and maintain ICT rules and standards for the training and development, facilities, operations, and technologies for political institutions and the civil good. Boost e-Government operations; Enable optimum digital, digital system, electronic document, and technology being used in government good; Enable conception, development, and utilization of ICTs in the social sector; Improve ICT knowledge and ability; ICT structure and procedures should be established, developed, and kept secure. Oversee the planning, creation, and execution of important ICT projects across the public sector. The Kenya National Spatial Data Initiative should be implemented and managed (Communication Authority of Kenya, 2018).

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

However, despite ICT being crucial to Kenya's economy since it fosters growth and gives the country's economy a boost, its full reach and performance is still below set targets. As a result, the government continuously makes efforts to encourage the widespread use of ICT by all organizations. Several infrastructure sharing options, such as trenches, ducts, cable, fibre, and wavelengths, could result in cost reductions

when installing fibre optic infrastructure, thereby increasing performance. Operators collaborate to share the expense of construction work in shared trenches, but each operator or service provider is free to install their own ducts and cables (ICT Africa, 2017).

There are numerous ICT initiatives in Kenya that have failed to achieve their intended goals and objectives. Notably, the optic fibre infrastructure projects are aimed at improving government services across the country while also facilitating communication across counties, however, only 35 of the 47 counties have these projects built which spans 4,300 kilometers across 58 towns. Therefore, it is crucial to evaluate the performance of these projects while determining its success. This is mostly determined by how successfully projects accomplish their goals and remain sustainable afterward. The goal of ICTA has been to guide Kenya's transformation into an economic powerhouse for East Africa and a globally competitive country in the digital market. The National Optic Fibre Backbone (NOFBI) initiative, launched for the project's implementation, which consists of two phases, has been finished. Development of NOFBI Phase 2, which expands the coverage and ensure sustainability of the existing transmission network, began in September 2014. However only 1,200km out of the 1,600km of civil works are complete, and 900km of fibre has established under backbone section. This was done to allow the district government units of the 47 counties to form an effective transmission network with the national government (ICT Authority, 2017). ICT authority is anticipated to assist Kenya's efforts to create a digital economy.

Even though these possibilities for sharing infrastructure exist, Kenya's implementation of optical fibre is vertically integrated, meaning that one operator deploys, owns, and manages all of its own fibre optic equipment. This concept requires the fabricator to incur \$200 million for a 1000 km network connection, with a significant portion of the funds going toward civil works, or trenching, with reference to research based on recent operations in Kenya. For a 1000-kilometer link, the civil works alone might cost up to 80% of the total cost, or \$160 million. The entire cost of civil works alone might reach \$480 million if three operators trench along the same path (ICT Africa, 2017). This is because there is no framework or policy for infrastructure sharing. Also due to network outages, the need to replace broken cable, and the high cost of operations, Kenya's absence of fibre optic networks has resulted

in a significant loss of investment. "Inadequate policy guidelines on approval have led to lost opportunities in delivery lead time, causing customers to withdraw from the undertaking either before or in the middle of project performance. This has resulted in increased costs and delays. Additionally, inadequate preparations for the development and expansion of the nation's roads have caused the destruction of cables that were already established during road or sewer line extensions (LemLem & Moronge, 2017)."

Kemei, Oboko and Kidombo (2018) looked into the connection amongst top management core skills and ERP systems performance of projects. With a focus on gated communities in Nairobi County, Kihoro and Waigango (2015) conducted a survey to determine the impact of stakeholders' engagement on the performance of construction projects in Kenya, nevertheless these studies were carried out on other sectors and area of the projects in Kenya which are not related to ICTA projects. Ahmed (2016) looks into the connection between a number of top management support factors and project performance in Pakistan, Mambwe, Mwanaumo, Nsefu and Sakala (2021) assess the impact of stakeholder participation on the execution of road construction projects in the Lusaka District in Zambia, In Poland, Demirkesen and Reinhardt (2021) investigated the impact of stakeholder involvement on project performance, which is all different from Kenya's economic and environmental setting. Also, with very limited studies carried out on Kenya and specifically ICTA projects, this study aims at closing these gaps. Therefore, the study aimed at examining the consequences of critical success factors on the performance of fibre optic infrastructure.

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

To examine the effect of critical success factors on performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya.

#### **1.3.2 Specific Objectives**

- i. To determine the influence of project financing on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya.

- ii. To determine the influence of top management support on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya.
- iii. To determine the influence of stakeholder's engagement on the performance of fibre optic infrastructure projects Information and Communication Technology Authority, Kenya.
- iv. To determine the influence of project monitoring on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya.

#### **1.4 Research Questions**

- i. How does project financing influence on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya?
- ii. How does the top management support influence on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya?
- iii. How does stakeholders' engagement influence on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya?
- iv. How does project monitoring influence on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya?

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

Understanding the impact of critical success factors and project performance on fibre optic projects on the Information and Communication Technology Authority would be crucial. The ministry of communication and the ICTA would profit from the study's findings because, as decision-makers, they could develop and put into practice policies and management techniques that would lower the failure rate of upcoming initiatives. Given that many initiatives are sponsored by development partners, this was essential. The results of this study might potentially be advantageous to the development partners. The methods they employ in their projects to make them more effective may be influenced by their understanding of the elements affecting project performance. Members of the project team may also indirectly gain from the study's

findings because they would gain from policymakers' initiatives. This study could also be useful to academics since they can use its results as a guide for more research.

### **1.6 Scope of the Study**

This study focal point is on performance of fibre optic infrastructure projects and the impact of critical success factors in Kenya's information and communication technology authority. Agency theory, theory of change and financial liberalization theory served as the study's foundation. Study period which was years 2018 to 2022 was focused on. The particular fibre optic the investigator has selected was the target population. Questionnaires were employed as data collecting tools.

### **1.7 Limitations of the Study**

Data collection could be hampered by the unwillingness of some of the targeted respondents to volunteer information. Not all respondents could have access to or a thorough understanding of the information being requested. Since information supplied would be held in absolute confidence, the researcher both disclosed the study's aim and guarantee its confidentiality. Additionally, the inclusion of focus groups to select project stakeholders aided in the understanding of some project material that may not have been clear to all respondents.

### **1.8 Organization of the Proposed Study**

The proposed study consists various sections. The foundation of the study, the problem description, and the parameters, which are also known as the study goal, will all be presented in the first chapter. The significance of the research and its constraints will be discussed. Both theoretical and the empirical assessment of the literature will be covered in the second chapter. The features of the variables influencing the success of fibre optics projects will be the main emphasis of this. The third section will discuss data collecting and analytics methods, participant characteristics, sample strategies, and procedures. Chapter four presents that research findings and discussions. Chapter five presents the summary of findings, conclusions, recommendations and suggestions for further studies.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The impact of critical success factors on the performance of fibre optic projects in ICTA, Kenya, will be discussed in this chapter, along with related literature reviews and empirical studies carried out by other researchers. The literature review and conceptual framework will be presented.

#### **2.2 Theoretical Literature Review**

##### **2.2.1 Agency Theory**

In 1976, Jensen and Meckling created Agency theory. Jensen and Meckling classified agency conflicts into two categories. In the first, the dispute between managers and shareholders is the main topic, whereas in the second, the conflict between equity and debt holders is the main topic. Conflicts between shareholders and managers develop as a result of the fact that managers do not have whole claims, making it impossible for them to profit fully from their value-maximizing actions. The second sort of conflict occurs between equity and debt holders when loan holders incentivize equity holders to make less-than-ideal investments (Mandell, 2008). According to the argument, asset managers who are left on their own are supposed to work in their employers' or electors' best interests. Thus, anticipates that project should be completed in a manner that benefits the principals (Lan, 2010).

In accordance with agency theory, project managers are the agents and the project beneficiaries are the principals. Therefore, the agents are required to execute management for the advantage of the principals by providing adequate returns as they have responsibility on the principal's behalf. As stated by (Bonazzi, 2007). Managers also should behave in the beneficiaries' greatest advantage since agency theory outlines processes that minimize loss and increase rewards (wealth creation) to the principal. This theory is important for project management because it underlines the importance of considering stakeholder interests in all project management choices. Agency theory is pertinent to the study since it supports project managers' efforts to make sure that resources like time, money, and stakeholders are used in the citizens' and beneficiaries' best interests. This theory supports top management support and stakeholders' engagement variables.



### **2.2.2 Theory of Change**

According to Burt, theory of change is a paradigm for describing how an intervention is supposed to end up working, with an emphasis on the change that it is supposed to bring about (Burt, 2012). Additionally, according to Jean *et al.* (2011), managers use the theory when making crucial choices throughout the duration of a project's life cycle. The theory should assist in the evaluation of the project's procedures, giving valuable feedback that will aid to get fantastic results that can guide best practices (Jean *et al.*, 2011). It's possible that different organizations have different turnaround times for projects. While one might accomplish the desired change in the agreed-upon amount of time, another one might drag on.

According to Woolcock (2011, 2011), this just indicates that the theory represents the project's natural trajectory rather than any irregularity. Burt also illustrates the significance of theory during implementation by including controls and stabilizes to differentiate between theory errors and technology problems (Burt, 2012). According to Annie (2009), the theory of change can be crucial in ensuring that a firm achieves a number of desired goals, including the strengthening of systems and the development of capability. Highlights the impact of community support and behavior change on the success of organizations (Annie, 2009). Our is an excellent feature of project monitoring, which is one of the goals of this investigation. Additionally, it was noted that important stakeholders and staff members should participate in policies formulation as aforementioned in theory of change. This theory supports project monitoring variable

### **2.2.3 Financial Liberalization Theory**

The theory of financial liberalization developed by Mckinnon and Shaw is in the context of more savings is made and invested more effectively than if savings are made directly in the sector in which they occur, without financial intermediation (Mckinnon 1973; Shaw 1973). This is because as real interest rates rise and financial deepening increases, more savings will be made and invested. Financial saving, in McKinnon's view, is essential for investment, and by extension, for economic growth. In current markets, saving resources are available but stringent policies have not been established in their management. According to the hypothesis, businesses eliminate or lessen government limitations placed on the domestic financial market.

Infrastructure project development is a time- and resource-consuming process. However, all projects may be examined in regard to a similar life cycle, which consists of a number of stages. However, the project's economic and financial assessment is likely the element of feasibility stage that stands out the most, external factors will have an implication on whether a project will move forward. The nature of the project will have an impact on the financing's structure and method. Main financial support for some projects arises from regional or national government sources; in other circumstances, the project will generate its own income, which will be used to pay back loans and cover maintenance and operation costs. In some projects, the private sector could also contribute with the intention of eventually owning and controlling all or a portion of the assets (LemLem & Moronge, 2017). According to this hypothesis, project financing is variable.

## **2.3 Empirical Literature Review**

### **2.3.1 Project Financing and Performance**

The development of the Bukomane-gikoma Road in the Gatsibo District of Rwanda served as the research study for Siborurema, Mbera, and Shukla's (2015) investigation of the impact of project financing on project efficiency in Rwanda. The initiative cost assessment, project design process, and the project funding framework applied in Rwanda were the project funding aspects that were taken into consideration throughout this research. These three components were the study independent indicators on the one side, and the project performance was the study dependent variable. The population target consisted of two categories; one category was established by the people participating in the initiatives design and financing, while the other set was created by individuals engaged in projects performance management. Data were gathered using a specifically made survey, the review of pre-existing records, and discussions. According to data analysis, the scientific layout and price estimates both have an adverse impact on the funding policy for projects and the planned project execution time. Results and recommendations based on best practices were made in light of the findings. The research study is based on constructions in Rwanda, this study was based on fibre optic infrastructure projects in Kenya.

With reference to Liquid Telecom Kenya, Lemlem and Moronge (2017) examine the effects of the best funding for fibre optic projects in Kenya. From a population target of 120 employees, including the Senior level , middle level , and support personnel

divisions in administration, the researcher used a descriptive research approach. Considering how small the population was, sampling was not done. The main tools for gathering data were questionnaires, which were distributed using the drop-and-pick approach. Statistical Package for the Social Sciences was used to analyze the collected data using descriptive statistics (SPSS Version 21). It was noteworthy that there was a high, positive correlation between project financing and successful implementation. Financing is important; thus, it must be taken into account in any endeavor to speed up the development of fibre optic projects. The study looks at project implementation of optic project in Liquid Telecom, Kenya, this study focused on project performance of fibre optic infrastructure projects in ICTA, Kenya.

Ndavi (2019) looked on how financial resource planning techniques affected how well building projects performed in Nairobi City County, Kenya. One hundred twenty-five construction projects in Nairobi City County were the target population. Project managers who responded were among the targeted 125 respondents. The census method was used in this study since the population was manageable in size. Primary data were gathered via a semistructured questionnaire. The Statistical Package for the Social Sciences was used to code and enter the data for analysis (SPSS). The different study variables were correlated using Pearson correlation analysis. The study found that financial resource planning considerably and favorably influences how well building projects operate. The aforementioned study looked at project planning and performance as its main objective, this study looked at critical success factor and performance of fibre optic infrastructure projects in ICTA Kenya as the main objective of its study.

### **2.3.2 Top Management Support and Performance of ICT Authority.**

Ahmed (2016) looks into the connection between a number of top management support factors and project performance. In this quantitative study, cross-sectional data from public sector projects was gathered using an online survey and random sampling techniques. The participants were the management consultants and program directors operating on government projects in Pakistan. We used confirmatory and explanatory factor analyses to examine the construct's validity. Correlation and regression analyses were carried out to test the study hypotheses. Results show that all aspects of senior management assistance significantly improve project performance in

Pakistan's public sector. The study was carried out in Pakistan, this study was carried out in Kenya.

Using data from the Kenyan energy sector, Kemei, Oboko, and Kidombo (2018) looked into the connection amongst top management core skills and ERP systems performance of projects. This report is based on a sample of state parastatals in Kenya's energy sector that have adopted the SAP ERP system as of the end of 2016. For the aim of analysis, a questionnaire was utilized to get information from respondents in their individual organizations, and a structured interview guide was used to gather information from the heads of ICT in those organizations. To ascertain how closely the variables were related, correlational design and mixed approaches were also used. Given the size of the study sample, a census was employed in addition to both descriptive and inferential analysis methods. The study's findings, which are in line with those of other authors' inquiries, indicate that top management assistance has a beneficial impact on the relationship between project manager leadership competence and ERP system projects performance. The study focused on energy sector in Kenya, this study centre of attention is on ICTA in Kenya.

The effect of managerial engagement on program performance in several domains is evaluated by Orazaly, Assel, Aknur, and Sharbanu (2020), who also identify key processes that boost it. The study uses data from 261 managers in the Republic of Kazakhstan between 2018 and 2019 to deliver quantitative research findings. Business expansion programs, scholarly projects, social initiatives, and projects from the services sector make up the research sample. The study's findings demonstrate the various top management support quality levels and their strong relationship to project effectiveness. The study also identifies the distinct procedures for each type of project under investigation that strongly connect with project performance aspects. The most effective commercialized projects were those that heavily utilized managerial engage mechanisms, with the best cost overrun (15%) and second-best schedule overrun (17%) results. These results have theoretical and practical ramifications that might help project managers increase the effectiveness of their projects by selecting the essential, appropriate project management tools and practices. The study focused on business expansion, scholarly and social projects in Kazakhstan, this study focused on fibre optic projects in Kenya

### **2.3.3 Stakeholders Engagement and Performance of ICT Authority.**

With a focus on gated communities in Nairobi County, Kihoro and Waigango (2015) conducted a survey to evaluate the impact of stakeholders' engagement on the performance of construction projects in Kenya. In order to close a research gap, a desk-top literature review was conducted, looking at both local and global viewpoints. We employed a descriptive survey design. Data gathering and analysis methods included both quantitative and qualitative approaches. Both closed-ended and open-ended questionnaires were utilized as data gathering tools. The statistical program SPSS was used to analyze the data. The results show a significant positive correlation among stakeholder management and project performance. The study focused on building projects in Nairobi, the study centre of attention is on ICTA projects in Kenya.

With respect to the L400 roads project, Mambwe, Mwanaumo, Nsefu, and Sakala (2021) assess the effect of stakeholder involvement on the execution of road construction projects in the Lusaka District. The goal of the study was accomplished by analyzing the connections between stakeholder participation and the three performance indicators, namely project cost, schedule, and specifications. A quantitative and descriptive research design was used as the study strategy. With a 98% response rate, a semi-structured questionnaire was used to gather both primary and secondary data. Results showed that stakeholder engagement and the project timeline and specifications had a strong and favorable association. The engagement of stakeholders with the project was also found to be highly but adversely connected with project cost. The study focused mainly on stakeholders' involvement in Lusaka projects in Zambia, this study focused on critical success factors on performance of fibre optic projects in Kenya.

Gilbert (2021) aimed to investigate the crucial elements in the execution of initiatives supported by donors. The study specifically looked into the impact of stakeholder participation on the execution of donor-supported projects. A descriptive research strategy was used in this study, which focused on 34 donor-funded projects taking place in the county. Since there are only a limited number of donor initiatives, the study choose to conduct a census. The primary responders for the study were the 102 project staff members in total. A semi-structured questionnaire was used to collect the information. Data analysis includes both qualitative and quantitative methodologies.

Tables were used to present the data while descriptive statistics were generated using SPSS 20. Correlation and regression analysis were used to establish the relationship between the study variables. According to the study, stakeholder involvement has a positive impact on how donor-funded projects are implemented in Tharaka Nithi County. The analysis comes to the conclusion that there is little participation from major beneficiaries in crucial project operations. The study suggests that donors and supporting organizations should encourage stakeholder participation in project implementation. The study focused on donor funded project in Tharaka Nithi County, this study focused on ICTA projects in Kenya.

In Kisumu County, Kenya, Omolo (2021) looked into how stakeholder involvement affected the effectiveness of HIV/AIDS programmes among NGOs. An audience of 54 projects hosted by 26 NGOs was targeted using the descriptive research design. Through the use of questionnaires, respondents' qualitative and quantitative data was collected, and SPSS Version 25.0 was then used to evaluate it. 63% of respondents to the survey stated that performance was impacted by stakeholder involvement. The report advised involving stakeholders from the beginning of the initiative to encourage buy-in. The study although essential focused on HIV/AIDS project in Kisumu County, this study focused on ICTA fibre optic projects in Kenya.

In Poland, Demirkesen and Reinhardt (2021) explored the impact of stakeholder participation on project performance. The descriptive research design was used for the investigation. The type of design used in descriptive research involves information gathering based on participant opinions and viewpoints. 13 government initiatives were included in the target population. Project managers and other support workers inside the projects served as the observational unit. Questionnaires were utilized as the study instruments. The study's findings showed that a significant factor affecting how well initiative's function is stakeholder involvement. The study came to the conclusion that performance is favorably and strongly correlated with stakeholder involvement. This study was carried out in Poland, this study was carried out in Kenya.

#### **2.3.4 Project Monitoring and Performance of ICT Authority.**

The impact of project M&E techniques on construction project success criteria is examined by Kissi, Agyekum, Baiden, Tannor, Asamoah, and Andam in 2019. In

order to get the opinions of project experts working in the Ghanaian construction sector, structured questionnaires were used. A pilot interview on the topic was added to the questions that were generated following a critical assessment of the literature. The hypothesis-based impact of project M&E practices (constructs) on project success was established in this paper using partial least square-structural equation modeling (PLS-SEM). The findings demonstrated a positive statistically significant association between M&E practices and the success criterion for construction projects. The study used partial least square modeling, this study used descriptive and regression analysis to arrive at result.

Nega (2020) examined how information network security agency projects were affected by project monitoring practices (INSA). The researcher used both primary and secondary data sources, quantitative and qualitative research methods, and descriptive and explanatory research designs to meet the study's aims. The 115 agency workers who participated in commercial software development projects were the study's target population. The commercial software creation project always consists, thus only projects completed in the previous five years were chosen using a purposeful sample strategy, and respondents were chosen from various functional teams using a stratified sampling technique. The qualitative data was analyzed, reported, and interpreted in the form of statements while the quantitative data was analyzed using descriptive, correlation, and regression analysis using SPSS version 23.0. The study's key findings showed that while project change control procedures are generally weak, project monitoring is generally good. The study comes to the conclusion that a project's success is significantly influenced by its overall project monitoring practices. This implies that good project monitoring practices result in higher levels of project success. This study was carried out on INSA in Ethiopia, this study was carried out in ICTA in Kenya.

Gilbert (2021) aimed to investigate the crucial elements in the execution of initiatives supported by donors. The study specifically looked into the impact of monitoring on the execution of donor-supported projects. A descriptive research strategy was used in this study, which focused on 34 donor-funded projects taking place in the county. Since there are only a limited number of donor initiatives, the study chose to conduct a census. The primary responders for the study were the 102 project staff members in total. A semi-structured questionnaire was used to collect the information. Data

analysis includes both qualitative and quantitative methodologies. Tables were used to present the data while descriptive statistics were generated using SPSS 20. Correlation and regression analysis were used to establish the relationship between the study variables. According to the study, stakeholder involvement has a positive impact on how donor-funded projects are implemented in Tharaka Nithi County. The analysis comes to the conclusion that there is little participation from major beneficiaries in crucial project operations. The study suggests that donors and supporting organizations should encourage monitoring and evaluation in project implementation. The study focused on donor funded project in Tharaka Nithi County, this study focused on fibre optic infrastructure projects in ICTA Kenya.

## 2.4 Summary of Literature Review and Research Gaps

Review of literature demonstrates the gap in knowledge required to describe the critical success factors and performance of fibre optic infrastructure projects in ICTA, Kenya, which is summarized in table 2.1.

**Table 2.1: Summary of Reviewed literature and Research Gaps**

<b>Table 2.1: Summary of Reviewed literature and Research Gaps</b>				
<b>Author</b>	<b>Research Objective</b>	<b>Key Findings</b>	<b>Research Gap</b>	<b>How the Gap were Filled</b>
Siborurema, Mbera, and Shukla's (2015)	The development of the Bukomane-gikoma Road in the Gatsibo District of Rwanda served as the research study for investigation of the impact of project financing on project efficiency in Rwanda.	According to data analysis, the scientific layout and price estimates both have an adverse impact on the funding policy for projects and the planned project execution time. Results and recommendations based on best practices were made in light of the findings.	The study was based on constructions in Rwanda.	this study was based on fibre optic in Kenya
Kihoro and Waigango (2015)	Conducted a survey to examine the impact of stakeholders' engagement on the performance of construction projects in Kenya, with a focus on gated communities in Nairobi County	The results show a significant positive correlation among stakeholder management and project performance.	The study focused on construction projects in Nairobi	This study focused on ICTA projects in Kenya



Lemlem and Moronge (2017).	examine the effects of the best funding for fibre optic projects in Kenya with reference to Liquid Telecom Kenya	There was a high, positive correlation between project financing and successful implementation.	The study looked at project implementation of optic project in Liquid Telecom, Kenya	This study focused on project performance of fibre optic projects in ICTA, Kenya
Kemei, Oboko, and Kidombo (2018)	looked into the connection amongst top management core skills and ERP systems performance of projects using data from the Kenyan energy sector	The study's findings, which are in line with those of other authors' inquiries, indicate that top management assistance has a beneficial impact on the relationship between project manager leadership competence and ERP system projects performance.	The study focused on energy sector in Kenya	This study focused on ICT in Kenya
Kissi, Agyekum, Baiden, Tannor, Asamoah, and Andam in 2019.	The impact of project M&E techniques on construction project success criteria	The findings demonstrated a positive statistically significant association between M&E practices and the success criterion for construction projects.	The study used partial least square modeling	This study used descriptive and regression analysis to arrive at result
Orazaly, Assel, Aknur, and Sharbanu (2020),	The effect of managerial engagement on program performance in several domains is evaluated	These results have theoretical and practical ramifications that might help project managers increase the effectiveness of their projects by selecting the essential, appropriate project management tools and practices.	The study focused on business expansion, scholarly and social projects in Kazakhstan	This study focused on fibre optic projects in Kenya
Nega (2020)	Examined how information network security agency projects were affected by project monitoring	Project's success is significantly influenced by its overall project monitoring	The study was carried out on INSA in Ethiopia,	This study was carried out in ICTA in Kenya

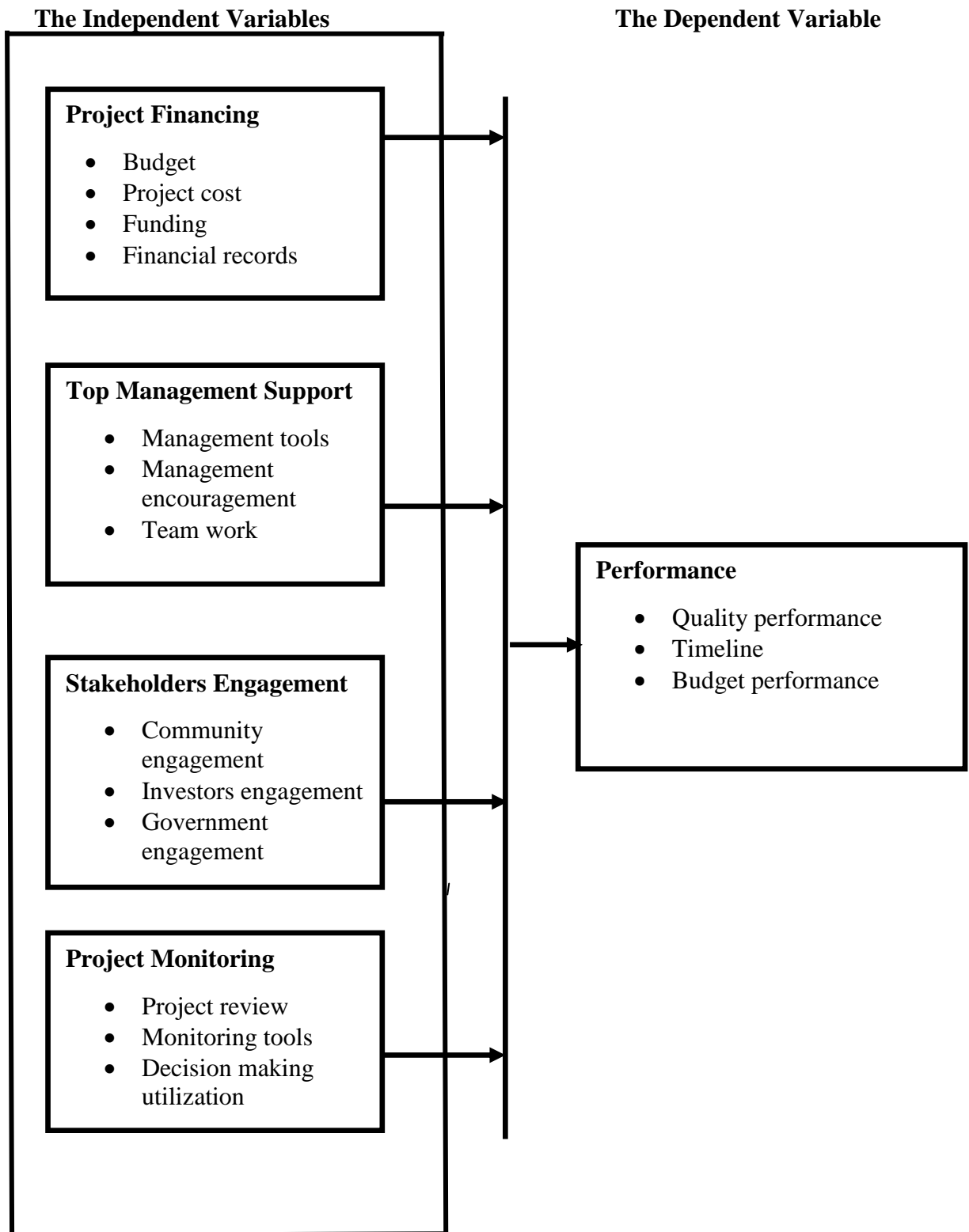
	practices (INSA)	practices. This implies that good project monitoring practices result in higher levels of project success.		
Mambwe, Mwanaumo, Nsefu, and Sakala (2021).	assess the effect of stakeholder involvement on the execution of road construction projects in the Lusaka District	Results showed that stakeholder engagement and the project timeline and specifications had a strong and favorable association. The engagement of stakeholders with the project was also found to be highly but adversely connected with project cost.	The study focused mainly on stakeholders' involvement in Lusaka projects in Zambia	This study focused on critical success factors on performance of fibre optic projects in Kenya.
Omolo (2021).	Looked into how stakeholder involvement affected the effectiveness of HIV/AIDS programmes among NGOs	Result showed a positive relationship between stakeholders' involvement and project effectiveness	The study although essential focused on HIV/AIDS project in Kisumu County	this study focused on ICTA fibre optic projects in Kenya
Demirkesen and Reinhardt (2021).	Investigated the impact of stakeholder involvement on project performance	The study's findings showed that a significant factor affecting how well initiative's function is stakeholder involvement.	Performance is favorably and strongly correlated with stakeholder involvement	This study was carried out in Poland, this study was carried out in Kenya
Gilbert (2021)	Aimed to investigate the crucial elements in the execution of initiatives supported by donors. The study specifically looked into the impact of monitoring on the execution of donor-supported projects	According to the study, stakeholder involvement has a positive impact on how initiatives supported by donors are implemented in Tharaka Nithi County	The study focused on donor funded initiatives in Tharaka Nithi County,	This study focused on ICTA projects in Kenya.

Source: Researcher 2022

## 2.5 Conceptual Framework

The link between the study variables is shown visually in the figure below. This makes it possible to determine the linking trajectory of the research by showing the

relationship between the enquiry explaining characteristics and the dependent variables. This illustrates the relationships between the independent and dependent variables in the study area in a detailed format. In this study the performance of fibre optics was measured to determine the dependent variables, and critical success factors such project financing, Senior management support, stakeholder engagement, and project monitoring was used to determine the correlation amongst the parameters under study.



**Figure 2.1: Conceptual Framework**

Source: Researcher (2022.)

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter provided a developed analysis on the various procedures that should be undertaken in analyzing data for presentation.

#### **3.2 Research Design**

This is a methodical process used by a researcher to carry out a scientific investigation. The research design should adhere to a strategic methodology that can work with the sort of research chosen in order to produce dependable and accurate results. A research's design can be thought of as an outline or strategy that directs the study process via data collection and analysis to achieve the research goal. Therefore, it should be adaptable, minimize errors, be effective in cutting expenses, and be appropriate for the research project (Kothari, 2011). The descriptive research design was used in the investigation. A topic or problem might be explored in order to learn more about it using an exploratory research design. Descriptive research, on the other hand, paints a picture of the specifics of a circumstance, social context, or connection.

#### **3.3 Target Population**

Ngechu (2004) asserts that the targeted demography consists of a variety of individuals, ideas, deeds, and things that are the subject of a study. According to Mugenda and Mugenda (2013), population-based research is more egalitarian because everyone has an equal chance of being chosen for the data collection. Study target population includes 150 individuals consisting of the project managers, the finance team, the stakeholders, and the management team on the various projects being carried out under ICTA, Kenya, are the study's target population.

#### **3.4 Sample Size & Technique**

A sample design, according to Kothari (2004), is the method the researcher uses to choose or get a sample or items from a particular population. Additionally, it specifies the sample size, or how many items were included in the sample. This study used a convenience sampling technique because all of the projects are government-funded and they can be managed. The choice of convenience sampling technique was attributed to its benefit of allowing the researcher to focus of the available members of the target population.

### **3.5 Data Collection Instrument.**

Data collection, according to (Kothari, 2004), is the process of acquiring information on specific variables. The distribution of questionnaires were the primary method of gathering data. Multiple questions are printed or typed in a predetermined format on a form or collection of forms to make up a questionnaire (Kothari, 2004). Because they can acquire a lot of data quickly and efficiently across a wide area, questionnaires were used to collect data. The questionnaire were divided into two sections: a section for demographic data and one with a 5-point Likert scale. There was also usage of secondary data. Data may come from project reports that have been published or unpublished.

### **3.6 Pilot Test.**

Pilot testing, according to Wanjohi (2014), helps determine whether the data gathering instruments are useful in the actual world by testing them first with a small number of carefully chosen respondents. Before distributing the questionnaires to the entire sample group, pilot testing enables us to ensure the respondents fully understand the questions. People with the same characteristics as the target group are tested in a pilot study (Hurst, Arulogun, Owolabi, Akinyemi, Uvere, Warth & Ovbiagele (2015). The questionnaire was improved as a result of this study, which selected participants from Safaricom home fibre connection target population. Getting feedback made it easier to efficiently shape the surveys in terms of the questions' clarity, flow, and response time.

#### **3.6.1 Validity of the Research**

Validity is defined as the accuracy and significance of conclusions drawn from research findings (Field, 2013). It is the degree to which the data analysis results accurately depict the phenomenon under examination. Instead of employing simply a sample, conducting a census from all of the targeted projects served to increase generalizability, confirming the external validity of the entire research. The researcher worked in close cooperation with his research-savvy supervisor to create an effective questionnaire that can measure the dependent variable reliably, assuring content validity. A pilot study helped to improve the questionnaire's quality and ensure its content validity.

### 3.6.2 Reliability of the Research

Shenton (2004) defined reliability as the extent to which the results remain consistence over time and accurately represent the whole research target. Shenton claims that a research tool is considered reputable when the findings of a study assessment are reliable and consistent. It refers to how consistently a tool of measure produces the similar outcomes throughout different experiments. The consistency of survey responses across time is evaluated using the dependability of research tools. There are several ways to evaluate the dependability of the necessary components, but in various research, construct validity with Cronbach's alpha has been used to evaluate tool reliability. The results of reliability tests are presented in Table 3.1.

**Table 3.1: Reliability Tests Results**

<b>Variable</b>	<b>Cronbach's Alpha Value</b>	<b>Conclusion</b>
Project financing	0.729	Reliable
Top management support	0.803	Reliable
Stakeholder engagement	0.774	Reliable
Project monitoring	0.726	Reliable
Project performance	0.836	Reliable
<b>Aggregate Score</b>	<b>0.774</b>	<b>Reliable</b>

**Source: Pilot Study (2023)**

The results as presented in Table above show that all the variables had a Cronbach's alpha value above 0.7 and the aggregate score was at 0.774. This shows that the instrument was reliable based on the recommendation made by Davis (2015), who stated that Cronbach's alpha value alpha ranging between 0.70 and 0.90 shows that a high reliability of research instruments

### 3.7 Data Analysis and Presentation

After gathering, the data it shall be processed and examined with the aim of producing results. Analysis of survey or experimental data entails making educated guesses about the population's unknown parameters and responding to research queries to derive conclusions. Descriptive analysis and inferential analysis are the two main categories of analysis. Inferential statistics deal with the process of generalization, whereas descriptive analysis focuses on the creation of specific indices from the raw data. Tables and charts were used to describe the replies for descriptive statistics such as percentage and frequency, as well as for measures of central tendency and measure of dispersion. In addition to inferential analysis techniques like correlation and

multiple regression analysis was used to determine how every independent variable and every dependent variable relates to one another. The data was examined using analytical techniques from the Statistical Package for Social Sciences version 23.

The following is the study's model:

$$Y = \beta_0 + \beta_1PF_1 + \beta_2MS_2 + \beta_3SE_3 + \beta_4PM_4 + \varepsilon$$

Where,

Y = Performance of Fibre Optic Infrastructure

B<sub>0</sub> = Constant

B<sub>1</sub>, β<sub>2</sub>, β<sub>3</sub> = Coefficients of determination

PF = Project Financing

MS = Top Management Support

SE = Stakeholders Engagement

PM = Project Monitoring

### **3.8 Ethical Considerations.**

Following receipt of letters of authorization from NACOSTI and Kenyatta University, the researcher started the process of data collection. The would-be responders' permission was requested in advance, along with an explanation of the study's goals. The researcher took great care to guarantee that the answers are utilized in complete secrecy and for solely educational purposes.



## CHAPTER FOUR

### RESEARCH FINDINGS AND DISCUSSIONS

#### 4.1 Introduction

This chapter presents the results of the analysis of data collected from the field based on the response rate, background information of the respondents, descriptive statistics and regression analysis.

#### 4.2 Response Rate

The questionnaires were administered to a sample of 150 respondents. The following Table 4.1 gives the distribution of study response rate.

**Table 4.1: Response Rate**

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Response	145	96.7
Non response	5	3.3
<b>Total</b>	<b>150</b>	<b>100</b>

**Source: Research Data (2023)**

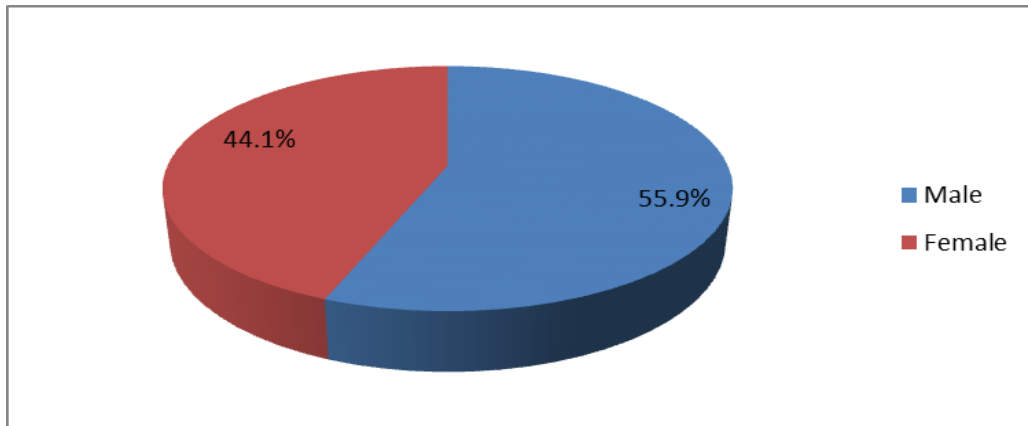
From the results in Table 4.1, those who responded to the questionnaires accounted for 96.7% and those who did not accounted for 3.3%. Baruch and Holtom (2014) recommended 80 percent or more on response rate is enough data analysis. Therefore, having attained a response rate of 96.7% it was sufficient to carry on with the analysis of data.

#### 4.3 Demographic Background

The study obtained the demographic background of the respondents regarding their gender, age, highest level of education level, position in the project, years served in the project and the number of team members. The findings are presented as follows:

### 4.3.1 Gender of the Respondents

The results regarding the gender of respondents are presented in Figure 4.1.



**Figure 4.1: Gender of the Respondents**

**Source: Research Data (2023)**

The findings illustrated in Figure 4.1 show that majority of the respondents were male as represented by 55.9% while female respondents were represented by 44.1%. Gender of the respondents was necessary to show a true representative of both men and women in the study to avoid gender biasness.

### 4.3.2 Age of the Respondents

The results regarding the age bracket of respondents are presented in Table 4.2.

**Table 4.2: Age of the Respondents**

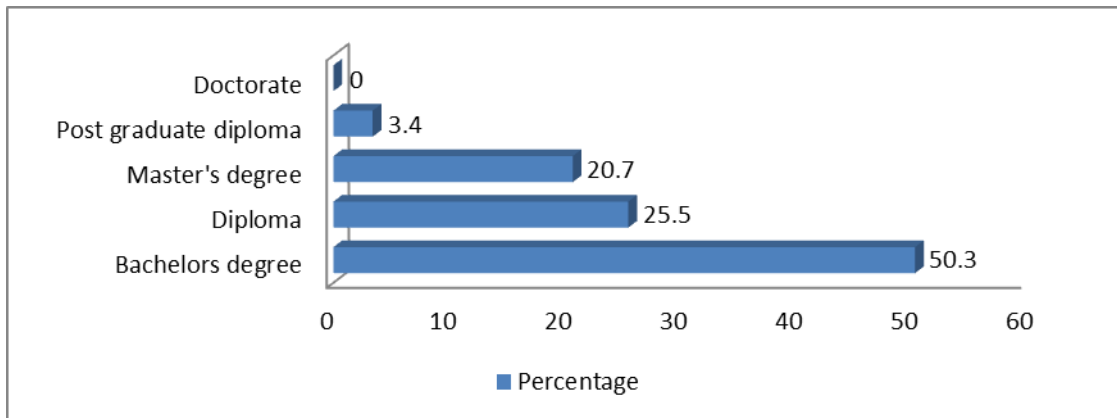
Years	Frequency	Percentage
20 to 30	16	11.0
31 to 40	62	42.8
40 to 50	41	28.3
50 and above	26	17.9
<b>Total</b>	<b>145</b>	<b>100</b>

**Source: Research Data (2023)**

From the findings in Table 4.2, majority (42.8%) of the respondents were aged between 31 to 40 years, 28.3% were aged between 40 to 50 years, 17.9% aged between 50 years and above and 11.0% aged between 20 to 30 years. These findings show that the study participants were obtained from different categories of ages.

### 4.3.3 Level of Education of the Respondents

The results regarding the level of education of the respondents are presented in Figure 4.2.



**Figure 4.2: Level of Education of the Respondents**

**Source: Research Data (2023)**

The findings from Figure 4.2 show that majority (50.3%) of the respondents had attained a Bachelor degree level of education, 25.5% diploma level, 20.7% master's level and 3.4% post graduate diploma level. It was necessary to establish the education level of the respondents because differences in educational background increase the likelihood to have a diverse perspectives and opinions from the employee's enhancing reliability.

### 4.3.4 Position in the Project

The results regarding the respondent's position in the project are presented in Table 4.3.

**Table 4.3: Position in the Project**

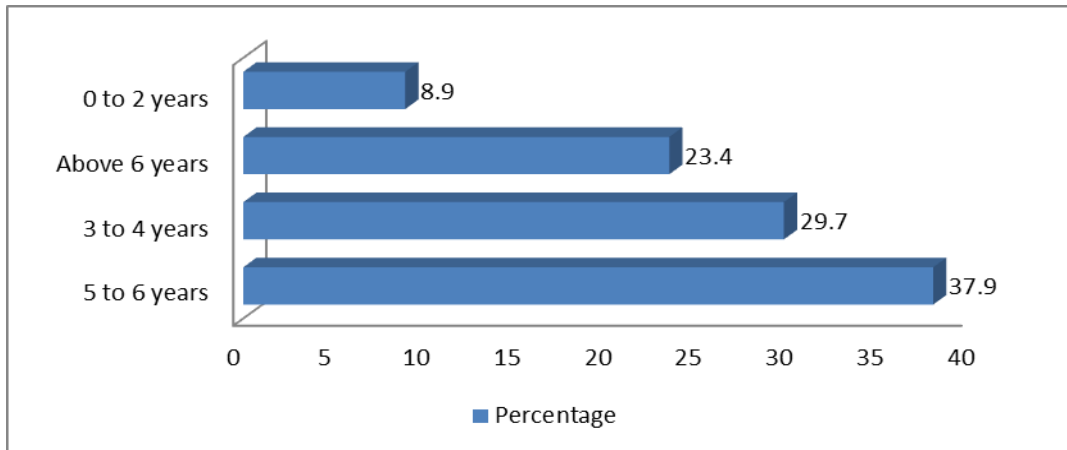
Years	Frequency	Percentage
Project manager	65	44.8
Project accountant	8	5.5
Finance team member	10	6.9
Management team	40	27.6
Stakeholder	22	15.2
<b>Total</b>	<b>145</b>	<b>100</b>

**Source: Research Data (2023)**

The results presented in Table 4.3 indicate that majority (44.8%) were project managers, followed by management team as represented by 27.6%, 15.2% stakeholders, 6.9% finance team members and 5.5% project accountant.

#### 4.3.5 Years Served in the Project

The results regarding the years served in the project by the respondent are presented in Figure 4.3.



**Figure 4.3: Years Served in the Project**

**Source: Research Data (2023)**

The results as presented in Figure 4.3 show that 37.9% formed majority of the respondents who had served in the project between 5 to 6 years, 29.7% between 3 to 4 years, 23.4% above 6 years and 8.9% for 2 years or below. This was an indicator that the respondents had a diverse work experience meaning that the respondents had better understand of the projects being implemented. In addition, the respondents were asked to indicate the number of people in the team and indicated that the number of people in the team ranged between 10 and 30.

#### 4.4 Results of Descriptive Analysis.

Mean (M) and Standard Deviation were used in descriptive statistics to analyze the quantitative data (SD). The outcomes are displayed as follows;

##### 4.4.1 Project Financing

The study sought to determine the influence of project financing on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The descriptive statistics on project financing are presented in Table 4.4.

**Table 4.4: Project Financing**

	<b>Mean</b>	<b>Std Dev</b>
The performance of the project lies on the funding	4.23	0.767
The project follows the budget planned	4.09	0.909
There is sufficient quality cost control in the project	4.35	0.648
Records are kept on all project funding, cost and utilization of funds	4.59	0.406
Adequate purchase of equipment cost in the project	4.56	0.438
Proper project financing improves the project performance	4.62	0.375

**Source: Research Data (2023)**

The results as illustrated in Table 4.4 show that the respondents strongly agreed on the statements that proper project financing improves the project performance, records are kept on all project funding, cost and utilization of funds and that adequate purchase of equipment cost in the project as shown by mean score of 4.62, 4.59 and 4.56 respectively and standard deviation of 0.375, 0.406 and 0.438 respectively. The findings concur with Lemlem and Moronge (2017) study which examined the effects of the best funding for fibre optic projects in Kenya and it was noteworthy that there was a high, positive correlation between project financing and successful implementation. Financing is important; thus, it must be taken into account in any endeavor to speed up the development of fibre optic projects.

The results in Table 4.4 also show that the respondents agreed on the statements that; there is sufficient quality cost control in the project, the project follows the budget planned and that the performance of the project lies on the funding as shown by mean score of 4.35, 4.23 and 4.09 respectively and standard deviation of 0.648, 0.767 and 0.909 respectively. The findings concur with Siborurema, Mbera, and Shukla's (2015) study which investigation of the impact of project financing on project efficiency in Rwanda. According to data analysis, the scientific layout and price estimates both have an adverse impact on the funding policy for projects and the planned project execution time.

#### **4.4.2 Top Management Support**

The study sought to determine the influence of top management support on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The descriptive statistics on top management support are presented in Table 4.5.

**Table 4.5: Top Management Support**

	<b>Mean</b>	<b>Std Dev</b>
There are adequate ergonomics (tools of work or infrastructure) in the workplace	3.64	1.356
Management hires credible and experienced members to the team	4.11	0.799
Management work together with all team members of the projects.	4.53	0.467
The management have good relationship with stakeholders.	4.28	0.718
There are good support systems following from the management down to other members of the project.	4.57	0.429
Good management support improves the project performance	4.52	0.476

**Source: Research Data (2023)**

The results as illustrated in Table 4.5 show that the respondents strongly agreed on the statements that there is well defined hospital structure that propagates systematic work flows, the health set up environment climate motivate employees to work more and that the employee's language of interaction in the work place creates a favourable service delivery as shown by mean score of 4.57, 4.53 and 4.52 respectively and standard deviation 0.429, 0.467 and 0.476 respectively. The results agree with Ahmed (2016) study which looks into the connection between a number of top management support factors and project performance. Results show that all aspects of senior management assistance significantly improve project performance in Pakistan's public sector.

The results in Table 4.5 also show that the respondents agreed on the statements that; the hospital culture allows employees to coexist with one another, safety of the employees is a major concern in the health set up and there are adequate ergonomics (tools of work or infrastructure) in the workplace as shown by mean score of 4.28, 4.11 and 3.64 respectively and standard deviation of 0.718, 0.799 and 1.356 respectively. The results are consistent with Kemei, Oboko, and Kidombo (2018) study which looked into the connection amongst top management core skills and ERP systems performance of projects and indicate that top management assistance has a beneficial impact on the relationship between project manager leadership competence and ERP system projects performance.

### 4.4.3 Stakeholder Engagement

The study sought to determine the influence of stakeholder's engagement on the performance of fibre optic infrastructure projects Information and Communication Technology Authority, Kenya. The descriptive statistics on stakeholder engagement are presented in Table 4.6.

**Table 4.6: Stakeholder Engagement**

	<b>Mean</b>	<b>Std Dev</b>
The members of the community contribute to decision making of the project	3.58	1.419
The members of the community support the ongoing project	4.21	0.777
The donors and investors are carried along with activities of the project	4.50	0.497
Stakeholders' analysis helps with the success of projects	3.91	1.086
Interactions with project beneficiaries in project activities improves performance	4.53	0.467
Proper stakeholder engagement improves the project performance	4.55	0.447

**Source: Research Data (2023)**

The results as illustrated in Table 4.6 show that the respondents strongly agreed on the statements that proper stakeholder engagement improves the project performance, interactions with project beneficiaries in project activities improves performance and that the donors and investors are carried along with activities of the project as shown by mean score of 4.55, 4.53 and 4.50 respectively and standard deviation of 0.447, 0.467 and 0.497 respectively. The result agrees with Kihoro and Waigango (2015) who conducted a survey to evaluate the impact of stakeholders' engagement on the performance of construction projects in Kenya. The results show a significant positive correlation among stakeholder management and project performance.

The results in Table 4.6 also show that the respondents agreed on the statements that; the members of the community support the ongoing project, the members of the community contribute to decision making of the project and that stakeholders' analysis helps with the success of projects as shown by mean score of 4.21, 3.91 and 3.58 respectively and standard deviation of 0.777, 1.086 and 1.419. The results concur with Mambwe, Mwanaumo, Nsefu, and Sakala (2021) study which assessed the effect of stakeholder involvement on the execution of road construction projects in the

Lusaka District. Results showed that stakeholder engagement and the project timeline and specifications had a strong and favorable association.

#### 4.4.4 Project Monitoring

The study sought to determine the influence of project monitoring on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The descriptive statistics on project monitoring are presented in Table 4.7.

**Table 4.7: Project Monitoring**

	<b>Mean</b>	<b>Std Dev</b>
The Project has an ongoing monitoring activity	4.56	0.439
Project monitoring tools are in place	3.67	1.328
Stakeholders participate in monitoring	4.61	0.388
Monitoring of projects enables every team to be focused	4.36	0.636
Monitoring helps review project and know if the project is going as planned	3.21	1.786
Proper project monitoring improves the project performance	3.45	1.549

**Source: Research Data (2023)**

The results as illustrated in Table 4.7 show that the respondents strongly agreed on the statements that stakeholders participate in monitoring and that the project has an ongoing monitoring activity as shown by mean score of 4.61 and 4.56 respectively and standard deviation of 0.388 and 0.439 respectively. The results agree with Kissi, Agyekum, Baiden, Tannor, Asamoah, and Andam (2019) study focused on the impact of project M&E techniques on construction project success criteria and the findings demonstrated a positive statistically significant association between M&E practices and the success criterion for construction projects.

The results in Table 4.7 also show that the respondents agreed on the statements that; mmonitoring of projects enables every team to be focused and that project monitoring tools are in place as shown by mean score of 4.36 and 3.67 respectively and standard deviation of 0.636 and 1.328 respectively. The findings concur with Gilbert (2021) study which aimed to investigate the crucial elements in the execution of initiatives supported by donors. According to the study, stakeholder involvement has a positive impact on how donor-funded projects are implemented in Tharaka Nithi County.



#### 4.4.5 Project Performance

The study sought to determine the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The descriptive statistics on project performance are presented in Table 4.8.

**Table 4.8: Project Performance**

	Mean	Std Dev
Performance is measure by time	3.97	1.026
Projects are delivered with budget are considered well performed	4.09	0.906
The quality of project delivers good performance	3.64	1.357

**Source: Research Data (2023)**

The results in Table 4.8 show that the statements that were agreed by the respondents are; projects are delivered with budget are considered well performed, Performance is measure by time and that the quality of project delivers good performance as shown by mean score of 4.09, 3.97 and 3.64 respectively and standard deviation of 0.906, 1.026 and 1.357 respectively. According to Kerzner (2013) the achievement of set project targets, which often includes standards like timeframe, budget, and quality, is viewed as a sign of project performance.

#### 4.5 Results of Regression Analysis.

Regression analysis was done to determine the influence of independent variables on the dependent variables. The results of the combined regression analysis are displayed in Tables 4.9, 4.10 and 4.11 as follows:

**Table 4.9: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.806 <sup>a</sup>	.715	.701	1.062

**Source: Research Data (2023)**

The results in Table 4.9 show that there was a best fit of study since the value of  $R^2$  was 0.806. The value of Adjusted R square was 0.701 which shows that there was a variation of 70.1% of the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya which was caused by the project financing, top management support, stakeholder engagement and project

monitoring. Therefore, the remaining 29.9% is attributed to other variables that were not studied.

**Table 4.10: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.964	4	3.741	44.422	.001
	Residual	11.790	140	.084		
	Total	26.754	144			

**Source: Research Data (2023)**

The significance value is 0.001 which is less than 0.05 thus the model is statistically significant in predicting how project financing, top management support, stakeholder engagement and project monitoring had an influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The statistical mean square value was 3.741. Since statistical F value was 44.422 greater than the statistical mean value, this shows that the overall model was significant.

**Table 4.11: Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.609	.117		5.205	.001
	Project financing	0.806	.156	4.208	5.167	.000
	Top management support	0.674	.274	1.134	2.459	.000
	Stakeholder engagement	0.837	.192	2.820	4.359	.000
	Project monitoring	0.649	.319	1.317	2.034	.001

**Source: Research Data (2023)**

The results as presented in Table 4.11, show that, taking all the independent variables into constant, the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya will be 60.9%. The study observed that a 0.806 represented the factor by which the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya would change when project financing would be changed by one

unit. A unit increase in top management support would lead to an increase in the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya by 67.4%. A unit increase in stakeholder engagement would lead to an increase in the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya by 83.7% and a unit increase in project monitoring would lead to an increase in the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya by 64.9%. This therefore, led to the following regression equation output.

Project performance = 0.609 + 0.806(project financing) + 0.674(top management support) + 0.837(stakeholder engagement) + 0.649(project monitoring).

The results in Table 4.11 also show that project financing had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya as indicated by t-value of 5.167 with a significance value of 0.000. The findings concur with Lemlem and Moronge (2017) study which examined the effects of the best funding for fibre optic projects in Kenya and it was noteworthy that there was a high, positive correlation between project financing and successful implementation.

The study found that top management support had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya as indicated by t-value of 2.459 with a significance value of 0.000. The results are consistent with Kemei, Oboko, and Kidombo (2018) study which looked into the connection amongst top management core skills and ERP systems performance of projects and indicate that top management assistance has a beneficial impact on the relationship between project manager leadership competence and ERP system projects performance.

The study revealed that stakeholder engagement had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya as indicated by t-value of 4.359 with a significance value of 0.000. The result agrees with Kihoro and Waigango (2015) who conducted a survey to evaluate the impact of stakeholders' engagement on the

performance of construction projects in Kenya. The results show a significant positive correlation among stakeholder management and project performance.

The study established that project monitoring had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya as indicated by t-value of 2.034 with a significance value of 0.001. The findings concur with Gilbert (2021) study which aimed to investigate the crucial elements in the execution of initiatives supported by donors. According to the study, stakeholder involvement has a positive impact on how donor-funded projects are implemented in Tharaka Nithi County.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of findings, conclusions, recommendations and suggestions for further studies.

#### **5.2 Summary**

This section presents summary of findings as per the research objectives as follows;

##### **5.2.1 Project Financing**

The first research objective sought to determine the influence of project financing on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The study found that project financing had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. Proper project financing improves the project performance, records are kept on all project funding, cost and utilization of funds and that adequate purchase of equipment cost in the project and that there is sufficient quality cost control in the project, the project follows the budget planned.

##### **5.2.2 Top Management Support**

The second research objective sought to determine the influence of top management support on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The study found that top management support had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. There is well defined hospital structure that propagates systematic work flows, the health set up environment climate motivate employees to work more and that the employee's language of interaction in the work place creates a favorable service delivery and that the hospital culture allows employees to coexist with one another.

##### **5.2.3 Stakeholder Engagement**

The third research objective sought to determine the influence of stakeholder's engagement on the performance of fibre optic infrastructure projects Information and Communication Technology Authority, Kenya. The study revealed that stakeholder engagement had a significant positive influence on the project performance of fibre

optic infrastructure projects in Information and Communication Technology Authority, Kenya. Effective stakeholder engagement improves the project performance, interactions with project beneficiaries in project activities improves performance and that the donors and investors are carried along with activities of the project and the members of the community support the ongoing project.

#### **5.2.4 Project Monitoring**

The fourth research objective sought to determine the influence of project monitoring on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. The study established that project monitoring had a significant positive influence on the project performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. Stakeholders participate in monitoring; the project has an ongoing monitoring activity and that monitoring of projects enables every team to be focused.

### **5.3 Conclusions**

Based on the research findings, this study arrived at the following conclusions;

#### **5.3.1 Project Financing**

The study concluded that financing projects through the project finance route offers various benefits such as the opportunity for risk sharing, extending the debt capacity, the release of free cash flows, and maintaining a competitive advantage in a competitive market. Project finance is a useful tool for companies that wish to avoid the issuance of a corporate repayment guarantee, thus preferring to finance the project in an off-balance sheet manner. The project finance route permits the sponsor to extend their debt capacity by enabling the sponsor to finance the project on someone's credit, which could be the purchaser of the project's outputs. Sponsors can raise funding for the project based simply on the contractual commitments.

#### **5.3.2 Top Management Support**

The study concluded that top management support relates to effective decision-making to manage risk and to authorize business process change. It appears that top management support is most dependent on the ability of the project client to work with other top managers to authorize business process changes and make decisions to mitigate or bear risk. The study also concluded that the top management support could be in the form of aligning the human and financial resource elements, such as an

experienced team capable of meeting the project needs. It also plays a prime role in the success of a project team by giving the required political backing and aligning the resource management systems (human, financial, and technological) with the needs of projects.

### **5.3.3 Stakeholder Engagement**

The study concluded that the stakeholder engagement is an ongoing process because the stakeholder landscape is forever shifting. Engaging with stakeholders can ultimately save time and money. Stakeholder engagement may help the project managers to identify potential risks before they become threats to the project or organization. Engaging with groups and individuals is key to improving accountability within the organization as well as with external audiences. Listening to the project stakeholders may reinforce a decision already made concerning the projects.

### **5.3.4 Project Monitoring**

The study concluded that the organization allows immediate monitoring of the project tasks upon onset and eventually carries out evaluation of these projects tasks to get clear and concise information on every achievement made. The information provided back to the stakeholders on what is happening creates a positive relationship and by conducting a feasibility study the project managers are able to create focus and efficiency in implementing the project tasks. Monitoring and evaluation has enabled the project managers to identify early risk that might have arisen and through control these risks are effectively managed leading to effective realization of project goals and objectives

## **5.4 Recommendations**

The study makes the following recommendations based on research objective;

### **5.4.1 Project Financing**

The study recommended that the project managers should focus on a few critical financial metrics that are essential to specific business cases. Financial management for projects is only effective when leveraging the right project financial management tools. Project financial plans are effective only when updated and optimized regularly. With new project scope changes, dynamic trends, and technology practices, project financials need to adapt to meet industry requirements. Project managers can

significantly streamline pre-planning, execution, and risk analysis, by incorporating best practices in project financial management.

#### **5.4.2 Top Management Support**

The study recommended that the top management of the organization should communicate vision to the team members on the project being implemented so as to set clear expectations about the spirit of the project. Inspire and motivate the project team members by letting them know what is expected of them, be given the tools necessary to succeed, and receive feedback relative to their performance as well as the project in general. The project leader needs to be creative and methodical about addressing risk without significantly impacting the project schedule or cost.

#### **5.4.3 Stakeholder Engagement**

The study recommended that any effective stakeholder management approach requires you to first identify, assess and map stakeholders according to interest and influence so as to identify who key stakeholders are and how they are similar or different in terms of needs and opinions. Running stakeholder analysis on a regular basis will help project managers to keep the stakeholder list up to date and monitor changing stakeholder relationships and positions over time. The relationships your stakeholders have with one another can also change. This, too, can potentially impact the project. Therefore, a stakeholder network chart is extremely useful for understanding these evolving dynamics.

#### **5.4.4 Project Monitoring**

The study recommended that the project managers should create a plan for monitoring and evaluating the projects being undertaken by creating a platform or system to capture and organize the project's data in one place, track each team member's progress and allocate resources accordingly. Evaluate project reports to identify whether the project was delivered on time or whether there were any unexpected setbacks. Improve workflow processes and if the project did not meet the expectations decide on the way of resolving those flaws. Finally, focus on continuous learning and improvement to ensure that the work processes become even more productive.

### **5.5 Suggestions for Further Studies**

The results from the regression model indicate that there is a remaining 29.9% described by factors not included in the model. Therefore, the study suggests that other variables not considered in the study can be studied to fill the gap. In addition,



the study context was the Information technology projects. Therefore, other studies can be done that focus on the performance of other type of projects.

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## APPENDICES

### **Appendix I: Introduction**

Allan K. Ngugi

Kenyatta University

Dear Respondent,

#### **RE: Introduction Letter**

Allan Ngugi is a student of MBA at Kenyatta University. I'm expected to conduct research as part of my studies requirements for my Master's degree award. I choose to investigate the effect of critical success factors on the performance of fibre optic infrastructure projects in Information and Communication Technology Authority, Kenya. As a result, I appreciate your contribution in providing information to the enclosed survey. Your positive consideration will be critical in realizing the survey's goal. I want to commit to you that all of your answers will be highly confidential. The research results are only meant for research reasons; however, it shall be vital for institutions growth to achieve intended goals.

Appreciate your contribution in my study.

Yours Sincerely.

Allan Ngugi

## Appendix II: Questionnaire

### Section I: Demographic background

Please tick as appropriate

1. Gender:  Male.  Female

2. Age: a) 20-30 Years  b) 30-40 Years  c) 40-50 Years

d) 50 years and above

3. Indicate your highest level of education

Diploma.  Post Graduate Diploma  Bachelor's Degree.

Master's Degree.  Doctorate

4. Position in the Project

a) Project manager b) Project accountant c) Finance team member d)

Management team

e) Stakeholder

6. How many years have you served in this project

a) 0-2 years b) 2-4 years c) 4-6 years d) 6 and Above years

7. How many people are in your team.....

Part B: Choose if you agree or disagree with the assertions below concerning the effect of critical success factors on the performance of fibre optic projects in Information and Communication Technology, Kenya. There are 5 options to choose from that correspond to these comments:

Key: Strongly Agree (SA)=5 Agree(A)=4, Neutral (NU)=3, Disagree (D)=2, and Strongly Disagree (SD)=1.

## PROJECT FINANCING

Statements	1	2	3	4	5
The performance of the project lies on the funding					
The project follows the budget planned					
There is sufficient quality cost control in the project					
Records are kept on all project funding, cost and utilization of funds					
Adequate purchase of equipment cost in the project					
Proper project financing improves the project performance					

## TOP MANAGEMENT SUPPORT

Statements	1	2	3	4	5
Management tools are in place to make project work smooth					
Management work together with all team members of the project					
The management hire credible and experience members to the team					
There is good support system following from the management down to other members of the project					
The management have good relationship with stakeholders					
Good management support improves the project performance					

## STAKEHOLDERS ENGAGEMENT

Statements	1	2	3	4	5
The members of the community contribute to decision making of the project					
The members of the community support the ongoing project					
The donors and investors are carried along with activities of the project					
Stakeholders' analysis helps with the success of projects					
Interactions with project beneficiaries in project activities improves performance					
Proper stakeholder engagement improves the project performance					

## PROJECT MONITORING

<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
The Project has an ongoing monitoring activity					
Project monitoring tools are in place					
Stakeholders participate in monitoring					
Monitoring of projects enables every team to be focused					
Monitoring helps review project and know if the project is going as planned					
Proper project monitoring improves the project performance					

## PERFORMANCE

<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Performance is measure by time					
Projects are delivered with budget are considered well performed					
the quality of project delivers good performance					

## Appendix III: Research Authorization



### KENYATTA UNIVERSITY GRADUATE SCHOOL

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Our Ref: D53/OL/CTY/21188/2020

DATE: 28<sup>th</sup> April, 2023

Director General,  
National Commission for Science, Technology  
and Innovation  
P.O. Box 30623-00100  
NAIROBI

Dear Sir/Madam,

**RE: RESEARCH AUTHORIZATION FOR ALLAN KABIRU NGUGI – REG. NO. D53/OL/CTY/21188/2020**

I write to introduce Mr. Allan Kabiru Ngugi who is a Postgraduate Student of this University. He is registered for M.B.A degree programme in the Department of Management Science.

Mr. Ngugi intends to conduct research for a M.B.A Project Proposal entitled, “Critical Success Factors and Performance of Fibre Optic Infrastructure Projects in Information and Communication Technology, Kenya”.

Any assistance given will be highly appreciated.

Yours faithfully,

  
PROF. ELISHIBA KIMANI  
DEAN, GRADUATE SCHOOL

JL/w





## Appendix IV: Approval Of Research Project



KENYATTA UNIVERSITY  
GRADUATE SCHOOL

E-mail: [dean-graduate@ku.ac.ke](mailto:dean-graduate@ku.ac.ke)

P.O. Box 43844, 00100  
NAIROBI, KENYA  
Tel. 810901 Ext. 4150

Website: [www.ku.ac.ke](http://www.ku.ac.ke)

Internal Memo

FROM: Dean, Graduate School

DATE: 28<sup>th</sup> April, 2023

TO: Allan Kabiru Ngugi  
C/o Management Science Dept.

REF: D53/OL/CTY/21188/2020

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 26<sup>th</sup> April, 2023 approved your Research Project Proposal for the M.B.A Degree Entitled, "Critical Success Factors and Performance of Fibre Optic Infrastructure Projects in Information and Communication Technology, Kenya".

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thankyou.

DR. HARRIET ISABOKE  
FOR: DEAN, GRADUATE SCHOOL

c.c. Chairman, Management Science Department.

Supervisors:

1. Dr. Morrisson Matuku  
C/o Department of Management Science  
Kenyatta University

**Appendix V: NACOSTI Permit**

 <p> <b>REPUBLIC OF KENYA</b>                  National Commission for Science, Technology and Innovation                  Ref No: <b>774935</b> </p>	 <p> <b>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY &amp; INNOVATION</b>                  Date of Issue: <b>14/May/2024</b> </p>
<p><b>RESEARCH LICENSE</b></p>	
	
<p><b>This is to Certify that Mr. Alan KASINDI NGOGI of Kenyatta University, has been licensed to conduct research under the provision of the Science, Technology and Innovation Act, 2013 (Rev. 2014) in Nairobi on the topic: <b>CRITICAL SUCCESS FACTORS AND PERFORMANCE OF FIBRE OPTIC INFRASTRUCTURE PROJECTS IN INFORMATION AND COMMUNICATION TECHNOLOGY, KENYA, for the period ending: 14/May/2024.</b></b></p>	
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<p><b>Applicant Identification Number: 774935</b></p>	
	
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