PROJECT MANAGEMENT PRACTICES AND PROJECT IMPLEMENTATION IN PUBLIC TVET INSTITUTIONS IN NAIROBI COUNTY, KENYA

DAVID GATIMU GATIBIRI

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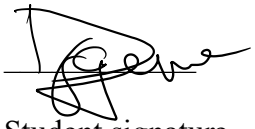
MAY 2024

DECLARATION

I declare that this document and the research it describes are my original work and that they have not been presented in any other university for academic work.

Name: David Gatimu Gatibiri, 12J03EMBA039

29/05/2024



Student signature

This research study was written under our supervision and is submitted with our approval as university supervisors.

Supervisor Name: Dr. John Kamau Njau



_____ ___ Date_____31/05/2024_____

University supervisor signature

Supervisor Name: Dr. Kiprop Kibos



Date_30/05/2024__

University supervisor signature

Africa Nazarene University

Nairobi, Kenya

DEDICATION

To my loving and caring wife Lucy and our children Elvis, Sharon and Angela.

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I sincerely thank my supervisors Dr. John Kamau Njau and Dr. Kiprop Kibos for their guidance, support and encouragement in writing this research study. I appreciate my wife Lucy for moral support and understanding as I undertook the journey of writing this study. I further appreciate all the Lecturers in Nazarene University who imparted me with knowledge and moulded me as I undertook my studies. I am grateful to my classmates who we revised together, for the discussions we held and for moral support. I am also indebted to Africa Nazarene University for giving me a chance to study in this prestigious University and to all administrators in the University who accorded me assistance whenever I needed it.

ABSTRACT

This study aimed to determine the influence project management practices have on project implementation in public TVET institutions in Nairobi County, Kenya, due to limited empirical evidence on the phenomenon. The dynamics of measuring the success of public projects have evolved over the years and become more complex and integrated. Assessing time, cost, and quality, collectively known as the triple constraint model, is no longer enough to determine project success. This is because public projects are complex and have numerous different stakeholders who may not have the same definition of success. Therefore, ensuring success in all aspects of managing a public project is essential, which is why project management practices are paramount and becoming more popular. The application of project management practices has been shown to improve the success of projects. However, their effectiveness has not been tested well in regard to projects in public TVET institutions. For this reason, this study sought to fill this gap by examining project management practices and implementation of projects in public TVET institutions in Nairobi County, Kenya. The project management practices – project planning, project team competence, communication, and risk management –formed the independent variables, with the implementation of projects in public TVET institutions serving as the dependent variable. Hoshin's model, project management competency framework, functional theory of communication, and risk management theory made up the study's theoretical framework. The study adopted an explanatory research design and was conducted in public TVET institutions in Nairobi County. The target population for the study constituted Ministry of Education officials, top management of public TVET institutions, and staff members of each institution who were selected using a multistage sampling approach. Data was collected using semi-structured questionnaires and analyzed using descriptive (measures of central tendency, measures of frequency, and measures of dispersion) and inferential statistics (correlation analysis and regression analysis). The study found that all four project management practices, project planning (p=.000), project team competence (p=.023), communication (p=.037), and risk management (p=.026) have significant positive effect on project implementation. Therefore, this research concluded that planning, project team competence, communication, and risk management are significant predictors of projects success in public TVET institutions in Nairobi County. The study urges future research to explore other types of project management practices and how they influence project implementation.

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DEFINITION OF TERMS

Communication: the process where knowledge, data, ideas, opinions, and thoughts are exchanged successfully so that the message is received and understood clearly and with purpose.

Project Implementation: Execution of a project to realize its objectives

Project Management Practice: Process whereby project activities are planned, designed and managed to help the project team identify and address possible challenges in the lifecycle of a project.

Project Planning: a component of project management that defines the execution and control of stages of a project

Project Team Competence: the qualifications that a group of people responsible for executing a project hold.

Project: A temporary endeavour undertaken to create a unique service or product.

Public project: A project executed to benefit citizens and is funded wholly or partly by the government.

Risk Management: the continuous process of identifying, analyzing, evaluating, monitoring, and treating risk exposures.

TVET Institutions Projects: projects implemented in public TVET institutions that are funded by the Government through the Ministry of Education or by development partners, or by institutions themselves through fees collected from trainees. The projects include infrastructural projects such as the establishment of buildings, equipping of workshops and laboratories and capacity building of trainers.

ABBREVIATIONS AND ACRONYMS

ADB:	African Development Bank
ANOVA:	Analysis of Variance
CDF:	Constituency Development Fund
CSFs:	Critical Success Factors
GOK:	Government of Kenya
ICT:	Information Communication Technology
ILO:	International Labor Organization
ISO:	International Organization for Standardization
IT:	Information Technology
KURA:	Kenya Urban Roads Authority
LNGOs:	Local Non-governmental Organizations
NGO:	Non-Governmental Organization
PERT:	Program Evaluation Review Technique
PLS-SEM:	Partial Least Squares - Structural Equation Modeling
PMCF:	Project Management Competency Framework
PPPs:	Public Private Partnerships
SEM:	Structural Equation Modeling
SMEs:	Small and Medium Enterprises
SPSS:	Statistical Package for the Social Sciences
TVET:	Technical and Vocational Education and Training
UNESCO:	United Nations Educational, Scientific and Cultural Organization
USAID:	United States Agency for International Development
WBS:	Work Breakdown Structure

CHAPTER ONE
INTRODUCTION AND BACKGROUND

1.1 Introduction

The concept of project management has been relevant since ancient times, from the construction of the Great Wall of China and ancient Roman roads to the Industrialization Age. Today, these best practices are central to the completion of critical government programs. This study aimed to determine the influence of project management best practices on implementing projects in public TVET institutions in Nairobi County, Kenya. The background of the topic is provided in this chapter. Also covered include problem statement, the purpose of the study, objectives, research questions, the significance of the study, the scope of the study, delimitations, limitations, assumptions, theoretical framework and conceptual framework.

1.1.1 Background of the Study

Public sector projects have undergone significant evolution from a simple set of activities to complex and extremely intricate activities that must be implemented in a systematic manner to ensure success (Kerzner, 2019). Project management practices and principles ensure government agencies deliver projects in the most effective and cost-efficient manner for the benefit of all stakeholders, especially the taxpayers (Irfan et al., 2020). Because of this, some governments, according to Irfan et al. (2020), such as the United States, have created specific regulations – Program Management Improvement Accountability Act – that aims to ensure proven project management practices are used in implementing federal programs and initiatives.

The effect of management practices in the implementation of public sector initiatives is an area that has widely been explored. In theory, project management greatly improves public project success. However, no consensus in the research community on how individual management practices and public project success relate. Pellerin and Perrier (2019), Mohsin (2021), and Irfan et al. (2021) all observed that planning is a significant predictor of project success. This is because when planning is done properly, goals and objectives

are well-defined, project scope is determined, resources are allocated efficiently, risks are managed, communication is enhanced, accountability is established, and overall project efficiency is improved. According to Ibrahim and Cross (2020), while project planning as a whole improves project success, the impact of specific planning practices varies. For instance, out of 19 practices tested, only seven of them had a significant impact.

Still, in the United States, among the key requirements for the successful completion of public sector projects is project team competence, as demonstrated by Hutchinson et al. (2022). Staff competence encompasses "observable and measurable knowledge, skills, abilities and personal attributes contribute to enhanced employee performance and ultimately result in organizational success" (Hutchinson et al., 2022). Staff competence is an important determinant of project success because every project need staff as one of its primary resources, and this resource must be used properly to ensure success. Therefore, as Hutchinson et al. (2022) suggest, it is important to first evaluate staff competence when embarking on a government-funded project.

A similar approach applies to projects funded by the European Union (EU). According to De Marco and Mangano (2022), efficient project management is more critical than ever due to the global economy increasingly becoming competitive over the decades. As a result, the European Commission developed a robust project management methodology dubbed PM^2 Methodology, which ensures effective management of the entire lifecycle of projects (De Marco & Mangano, 2023). The application, impact, and effectiveness of the methodology have widely been examined. For instance, Kourounakis (2019) found an 89% satisfaction rate among PM^2 Methodology users. In another study, Marques et al. (2023) found the PM^2 Methodology to be a superior and sustainable project management approach compared to its alternatives.

The rapid development of China's transportation, energy, manufacturing, construction, electronic machinery, petrochemicals and the larger economy can largely be attributed to its enhanced project management practices (Sun et al., 2024). In the quest to become the world's largest economy, the Chinese government continues to up the ante in project management. For this reason, accountability in project management is high, from scope,

size, and schedule to cost, making the country a leader in project purview (Zhai et al., 2020). In their study, Liu et al. (2022) found that the experience and competence of project managers have a significant impact on the success of government-funded projects in China.

Project management practices are also increasingly becoming a critical part of public project implementation in developing nations. For instance, in South Africa, project management maturity is considered an important indicator of the readiness of government agencies to implement national development plans (NDPs), programs, strategies, and policies (van der Waldt, 2020). However, as the study further points out, the country lacks a standardized project management methodology as far as the execution of public sector initiatives across government departments is concerned. As a result, the following complications become imminent: legislative compliance, performance monitoring, auditing and reporting, quality assurance, interoperability, and joint planning between departments (van der Waldt, 2020).

An empirical research study by Kwofie et al. (2019) recognizes communication practices as a key determinant of project success in private-public partnerships projects (PPPs) in Ghana and South Africa. According to scholars, effective communication is the basis for the successful delivery of complex PPPs. However, at national levels, a diverse range of communication challenges emanating from "multi-disciplinary, multi-national, and multi-cultural teams can have adverse effects on the exploration process of solutions, decisions and sharing of technical and scientific knowledge" (Kwofie et al., 2019). In other words, if communication practices are not properly managed, communication can work against successful project delivery.

The significance of project management practices in national development is well recognized by the Kenyan government. This notion is well illustrated by Omar and Moi (2020), who cite that one of the main reasons for promulgating the new constitution was to eliminate the barriers to national development. The 2010 Constitution led to significant institutional changes, bringing relevant development projects to deserving communities (Muthini & Nyang'au, 2022). In other words, relocating government services from the central government to county governments makes it possible to improve the efficiency and

effectiveness of public projects. Devolution has been a contributing factor to the major strides the country has made towards national development.

The relationship between project management practices and the execution of public projects has widely been explored. For instance, Muthini and Nyang'au (2022) discovered that project planning is a moderate but significant predictor of government housing projects in Kenya. The researchers cited that project planning leads to success by helping the project team and other stakeholders understand project design and the required resources for successful implementation. Similar sentiments were shared by Wanjau et al. (2024), who observed that planning practices explain up to 51.3% of the success of public housing projects, and Muiruri and Bett (2020) in the public water sector.

Unlike project planning, the impact of project team competence on project success is highly contested. This is because different researchers have different understandings of what constitutes competence. The general sentiment among Oh and Choi (2020), Dumrak et al. (2020), Duale and Kaumbulu (2023), and Muriuki and Severina (2021) is that project team competence favours project success. However, while Oh and Choi (2020) believe intellectual capacity is the most important competence, Duale and Kaumbulu (2023) argue that leadership and conflict resolution skills matter more. On the other hand, Dumrak et al. (2020) suggest that the importance of communication, effectiveness and cognitive ability are felt more in project implementation.

Communication management as a practice of project management has also been shown to be an important determinant of success in public project implementation. Muluka et al.'s (2021) research shows that communications were necessary for the implementation and delivery of digital literacy programs in Western Kenya. According to the researcher, communication management practices contributed 11.9% of project success. However, in another investigation highlighting the critical success factors for public projects, Chileshe et al. (2022) recognized communication and employee training as the least important predictors of project success.

Risk management is another critical factor in managing government-funded projects. Its importance and influence in public projects in Kenya have been tested from an empirical perspective. An excellent example is Musyoka's (2020) research, which was based on the implementation of national government constituency development fund projects. Among the project management practices examined, including scope management, monitoring and evaluation, risk management, and stakeholder participation, risk management had the strongest impact, denoting that it was the most important predictor (Musyoka, 2020). Risk management is a crucial factor because projects, especially critical public projects, are not without risks. These risks must be identified, assessed, and mitigated to ensure successful completion of projects.

1.1.2 Project Management Practices

Project management involves planning, designing and managing projects to help the team identify and address possible challenges in the lifecycle of a project (Pinto, 2020). It ensures government agencies deliver projects in the most effective and cost-efficient manner for taxpayers (Irfan et al., 2020). The common project management practices include building a business case, project planning, risk management, procurement, people's participation, monitoring, communication, technology use, planning for setbacks and scheduling (Irfan et al., 2020; Pinto, 2020). These practices cover all the stages of a project lifecycle, from preparation, definition, assessment, problem identification, defining gaps, project execution, evaluating progress and project closure (Kerzner, 2019). This research focused on four project management practices: project planning, project team competence, communication, and risk management.

Project planning is a critical phase of project management that examines the critical steps needed to complete a project. According to Abazajian et al. (2019), a project plan details "all the necessary details of the project, such as goals, tasks, scope, deadlines, and deliverables." It serves as a roadmap for implementing a project, ensuring resources are optimized, risks are minimized, effective communication, and cost reduction, among several other benefits. Proper project planning ensures projects are completed on time, within budget, and to the expected standards (Abazajian et al., 2019). On the other hand,

the risks of not having a quality project plan can be detrimental, including missed deadlines, frustrated teams, scope changes, quality problems, cost overruns, and more.

Project planning is a broad concept, but according to Abazajian et al. (2019), it boils down to defining three aspects of a project: scope, budget, and timelines. A project scope sets out the specific things a project aims to deliver, features it will have, and how everything will work (Pinto, 2020). In simpler terms, it comprises the vision, requirements, goals and objectives, deliverables, and activities of a project. Budgeting is also a critical part of a project because when planning, it is crucial to figure out how much money and resources will be needed and where they will be used. Lastly, when planning, it is crucial to map out a schedule that describes when certain tasks will be performed. This study focused on the following elements as measures of project planning: scope development, budget management, resource planning, schedule management, and team roles and responsibilities.

Project team competence is necessary for project success. Team competence, in the context of project management, is "a group of individuals with the right combinations of knowledge, skills, and attitudes to execute a project successfully" (Pavez et al., 2021). As Hutchinson et al. (2022) further explain, implementing a project requires competent staff members with the right "combination of observable and measurable knowledge, skills, abilities and personal attributes that contribute to enhanced performance and ultimately result in success." Hutchinson et al. (2022) suggest that team members should exhibit competencies in the following areas: professionalism, technical abilities, communication and socialization, leadership, and personal attributes.

The benefits of building a competent project team are tremendous. On the other hand, the risks of working with an incompetent team are high. According to Hutchinson et al. (2022), whose views on project team competence align with those of Muriuki and Severina (2021), working with incompetent staff is a risk in itself. An incompetent project team can lead to a decline in performance, erode confidence, waste resources, poor quality control, and increase the risk of legal and ethical effects. Therefore, members of a project team must first be evaluated to ensure they possess the right skills before beginning a project.

Communication management practice “aims to ensure the right messages are sent, received, and understood by the right people” (Kordova & Hirschprung, 2023). Communication management encompasses “all the processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information” (Kordova & Hirschprung, 2023). It creates a bridge between diverse stakeholder groups who may have different cultural and organizational backgrounds, different levels of expertise, and different perspectives and interests, which impact or have an influence upon the project execution or outcome.

An effective communication system helps the project team communicate with the stakeholders, organize, and coordinate more efficiently. Project communication, as Kordova and Hirschprung (2023) add, ensures the right information gets to the right people in a clear and understandable manner to facilitate effective decision-making. The importance of project communication cannot be overstated; this is because project managers and project teams, as well as other stakeholders, spend most of their time communicating, whether internally or externally. Effective communication puts everyone on board on the same page, including those with different organizational and cultural backgrounds, expertise, experience, and interest levels.

Risk management is paramount to any project undertaking, and more so for public projects, which tend to be more complex and have high demands. Risk management aims to identify, assess, and manage potential risks that could impact the success of a project (Ebole & Paul, 2021). It is, therefore, a crucial part of project management because risks are an inevitable part of completing a project. Examples of common risks in public projects include subcontractor default, contractual issues, changes in regulatory frameworks, financial issues, scope creep, natural disasters, design flaws, operational issues and conflict of interests.

According to Ebole and Paul (2021), risk management process comprises five key steps: identification, analysis, evaluation, mitigation, and monitoring. The first step involves identifying potential risks which is accompanied by in-depth risk analysis which involves

assessing the potential impacts or outcomes of identified risks. “Risk mitigation is a culmination of the techniques and strategies that are used to minimize risk levels and pare them down to tolerable levels” (Algremazy et al., 2023). Once the risks are identified their potential impact evaluated, and strategies adopted to respond to these risks if they occur, a continuous monitoring strategy is essential to track and report the status of these risks.

1.1.3 Project Implementation

Project implementation is the execution of a project to realize its objectives. Here, the project manager, together with the team and other stakeholders, coordinates and directs activities and resources to ensure the set goals of a project are attained. Public projects are instituted for the benefit of the public. Therefore, according to Volden and Welde (2022), since public sector programs and initiatives are considered drivers of social and economic development, those who benefit the most are the citizens and taxpayers. The overarching goal of public programs may seem specifically targeted. However, the main goal is to ensure that various stakeholders benefit from the project both in the short and long run (Volden & Welde, 2022). For instance, an investment to expand education will result in a more trained workforce in the labour supply, which is a key determinant for economic growth.

Measuring the success of a well-executed public project is a highly debated subject. As Volden and Welde (2022) explain, this is because a public project is conducted for the benefit of many stakeholders from various backgrounds with different understandings of what constitutes a successful project. Generally, time, cost, and quality (performance), simply known as the triple constraint model, are applied to measure project success. However, according to Volden and Welde (2022), this does not offer a complete picture of project success for all stakeholders. Instead, Volden and Welde (2022) proposed a six-criteria model for a holistic view in determining success. The model looks into a project’s relevance, efficiency, sustainability, benefit-cost efficiency, effectiveness and other additional outcomes (the outcomes beyond the agreed-upon goals).

1.1.4 Overview of Projects in Public TVET Institutions in Kenya

Technical and Vocational Education and Training (TVET) consists of education, training, and skill development relating to various occupational fields. UNESCO and ILO define TVET as an aspect of the educational process that involves studying technologies and related sciences as well as acquiring practical skills, attitudes, understanding, and knowledge relating to various sectors of social and economic life (Riyanda et al., 2022). TVET aims to improve labour productivity in rural and urban sectors and realize economic returns to investments in the education sector. Many countries take advantage of TVET to contribute to equity, access to training, and social responsibility.

The role of TVET has seen the Kenyan government overhaul educational reforms and revamp resources in education to cope with the fast-paced globalization. The Technical and Vocational Education and Training Act was established in 2013 to provide for the establishment of TVET education, training system, governance, management of institutions, assessment, examinations, and certifications. The regulation instituted the Technical and Vocational Education and Training Authority (TVETA).

Multiple development projects have been completed and are ongoing for the overall development of the TVET ecosystem. Some of them are partner projects, public-private partnership projects, and public projects, while others are funded by the institutions through fees collected from the trainees. Karen Technical Training Institute for the Deaf and Nairobi Technical Training Institute are beneficiaries of GOK/ADB project support to technical vocational education and training for relevant skills development in which Electrical and Electronics Engineering workshops have been constructed and equipped for the former while Applied Sciences workshops have been equipped in the latter. Kasarani Technical and Vocational College was constructed from scratch by the Government of Kenya and equipped with equipment for Welding and Fabrication, while Kamukunji Technical and Vocational College was also constructed by the Government of Kenya and is a Centre of Excellence in Institutional Management. Under the Kenya–France Renewable Energy and Energy Efficiency Project, PC Kinyanjui Technical Training Institute has been equipped with modern equipment on energy, and trainers are trained on

how to train trainees using the equipment. At Kabete National Polytechnic, the Government funded the construction of the Applied Sciences block, which consists of workshops and theory rooms, while in the same institution, the Government, together with the institution, funded the construction and equipping of Electrical and Electronics Engineering workshops and theory rooms.

1.2 Statement of the Problem

Kenya's government is increasingly investing in TVET to increase the size of its well-trained workforce and implement Kenya's Vision 2030 programs and projects (Government of Kenya, 2003). Despite significant financing of TVET institutions projects aimed at industrializing Kenya by 2030, some of the projects in Nairobi County have not commenced, some are abandoned, and others have encountered delays in completion. In addition, project delays, non-completion, and cost overruns have been persistent (Ninan & Sergeeva, 2022); some have stalled, while others do not meet the required quality standards. In 2021, the government put on notice a contractor working on KES 48 million Garbatulla TVET centre over delayed work completion. This was due to laxity and a lack of commitment since the government had paid 90% of the project (Wairimu, 2021). In 2022, at Nairobi Technical Training Institute, KES 20 million was provided for the construction of mentee institutions. However, audit verifications carried out in November 2022 revealed that the sites for construction were yet to be identified. Further, the funds advanced for the project were not retained for future use by the State Department of TVET (Auditor-General, 2022). If the various issues affecting the execution of major programs in TVET institutions in Nairobi County are not addressed, it will be difficult for the country to achieve its dream of creating well-trained human resource by 2030.

Other studies that examined project implementation include Gebru (2020), Pellerin & Perrier (2019), Mohsin (2021), Irfan et al. (2021), Ibrahim & Cross (2020), Hutchinson et al. (2022), Kourounakis (2019), Liu et al. (2022), and Kwofie et al. (2019). Although these studies offer valuable insights into the topic, they are not without methodological, conceptual and contextual gaps. Not only that, they also lack Kenya's context as far as public project implementation is concerned. Even those that focus on government projects

in Kenya, like (Muthini & Nyang'au, 2022; Musyoka, 2020; Karithi, 2021; Muiruri & Bett, 2020; Omar & Moi, 2020; Wanjau et al., 2024; Duale & Kaumbulu, 2023; Muluka et al., 2021), barely captured projects in TVET institutions. On top of that, many studies fail to quantify the impact these project management practices have on project implementation. This study sought to focus on project implementation in TVET institutions in Nairobi County because many of the previous studies focusing on public projects were done outside Kenya and even those done in Kenya did not cover projects in TVET institutions. Therefore, this study sought to fill scope, contextual, conceptual and methodological gaps by investigating project management practices and how they affect the implementation of projects in public TVET institutions in Nairobi County.

1.3 Purpose of the Study

The purpose of this study was to explore the effect project management practices have on project implementation in public TVET institutions in Nairobi County. The study sought to contribute to public project management literature by producing empirical evidence on the correlation between project management practices and the implementation of public projects. The evidence the research has produced is instrumental in improving the implementation of projects in public TVET institutions.

1.4 Objectives of the Study

The objectives of the study are:

i. To determine the effect of project planning on project implementation in public TVET institutions in Nairobi County.

ii. To examine the effect of project team competence on project implementation in public TVET institutions in Nairobi County.

iii. To determine the effect of communication on project implementation in public TVET institutions in Nairobi County.

iv. To examine the effect of risk management on project implementation in public TVET institutions in Nairobi County.

1.5 Hypotheses

$H_0$1: Project planning has no significant effect on project implementation in public TVET institutions in Nairobi County.

$H_0$2: Project team competence has no significant effect on project implementation in public TVET institutions in Nairobi County.

$H_0$3: Communication has no significant effect on project implementation in public TVET institutions in Nairobi County.

$H_0$4: Risk management has no significant effect on project implementation in public TVET institutions in Nairobi County.

1.6 Significance of the Study

The findings of this study contribute to the knowledge of the topic. As such, the study is beneficial in a number of ways. For instance, the findings of the project are instrumental in informing policymaking on public project management. By highlighting the correlation between project planning, project team competence, communication, and risk management practices, policymakers of public project implementation are better informed on what practices to place more emphasis on to ensure the successful completion of projects in public TVET institutions.

Secondly, the pool of information the study has generated is useful to project managers of public projects. The study informs the decision-making process on what project management practices to adopt or prioritize to improve efficient and effective completion of public projects. Besides project managers, the government also benefits from the project by providing the necessary information needed for policy-making on the implementation of public projects.

Thirdly, the project is relevant to the research and academic community. It serves as a credible reference for academicians to have a deeper insight into the effect of project management practices on public sector project implementation, in particular, projects in TVET institutions. Future researchers will find the project a useful source in developing

literature and serve as a basis for formulating hypotheses and guiding the decision on appropriate research methodology. In addition, the outcome of this study is valuable in identifying knowledge gaps in the research field and determining where to focus future investigations.

1.7 Scope of the Study

The study aimed to determine the effect of project management practices on project implementation in public TVET institutions in Nairobi County, Kenya. In this study, the effects of project planning, project team competence, communication, and risk management constituted the independent variables, and the implementation of projects in public TVET institutions was the dependent variable. The geographical scope of the study was limited to Nairobi County. In particular, the study covered the following 5 of the 11 sub-counties of Nairobi: Dagoretti South, Kamukunji, Kasarani, Westlands and Langata. The study focused on TVET institutions owned by the national government offering Diploma programs, and hence, Vocational Training Centres are not covered. The study was conducted in April 2024.

1.8 Delimitations of the Study

Because of the strict ethical guidelines governing empirical investigations as well as the limited accessibility of government data, the study was narrowed down to make it more manageable and relevant to the established objectives. Therefore, data collection was delimited to licensed TVET institutions in Nairobi County. These are PC Kinyanjui Technical Training Institute, Kabete National Polytechnic, Nairobi Technical Training Institute, Karen Technical Training Institute for the Deaf, Kasarani Technical and Vocational College, Kamukunji Technical and Vocational College, Langata Technical and Vocational College, Kibra Technical and Vocational College and Kenya School of TVET. Data was gathered via semi-structured questionnaires, which were distributed physically and electronically.

1.9 Limitations of the Study

The study was limited to primary data, which was collected via questionnaires, as pointed out above, which demanded contact with respondents. This was particularly a challenge because accessing the management of TVET institutions for research was not easy. Recruiting participants required going through government institutions, and some of them put up barriers, especially due to the research topic. In addition, the study also faced time and financial resource limitations. The time and finances allocated to travel between sub-counties to gather information was not sufficient.

1.10 Assumptions of the Study

The study was based on a number of assumptions. Firstly, the study was anchored on the idea that there is a cause-and-effect relationship between the variables (project management practices and project implementation in public TVET institutions). Secondly, the study assumed that all the targeted respondents would participate in the study. Thirdly, respondents would fill out the questionnaires honestly, providing reliable information without bias. Fourthly, the study was relevant to the target respondents, enabling them to provide accurate responses to the questions.

1.11 Theoretical Framework

The theoretical framework in research is like a blueprint for constructing a house. According to the scholars, a theoretical framework guides and supports the research process by providing a structure on which a study's philosophical, epistemological, methodological, and analytical aspects are based. Therefore, according to Braidotti (2019), a theoretical framework, just like a blueprint, is a critical aspect of research. Without it, the entire study lacks structure and vision. With that said, this study was underpinned by the principles of the Hoshin model of strategic planning, project management competency framework (PMCF) theory, functional theory of communication and risk management theory.

1.11.1 Hoshin Model of Strategic Planning

The Hoshin model, also called policy deployment or Hoshin Kanri, is a model for strategic planning. It is a planning system designed to expedite and improve processes in order to achieve long-term strategic goals through everyday operations (Dias & Tenera, 2020). The model is derived from Japanese tradition and was proposed by Hoshin Kanri in the 1950s (Dias & Tenera, 2020). According to Thürer et al. (2019), Hoshin Kanri was influenced by Peter Drucker's "The Practice of Management" and the Deming Prize in 1951. Here, the Japanese theoretician and a distinguished scholar wanted to develop a framework for planning that aimed to achieve optimal results with minimum or no waste by providing a clear line of sight.

The central goal of the Hoshin model is to ensure an organization's strategic goals drive progress and action. Therefore, it proposes seven steps for achieving this goal: establish a vision, develop breakthrough objectives, develop annual objectives, deploy annual objectives, implement annual objectives, monthly reviews, and annual reviews (Balzer & Sinha, 2023). The seven-step process serves as a systematic process for tackling long-term strategic goals through day-to-day operations.

The Hoshin model has a widespread application in project management literature. For instance, Leth et al. (2019) used the model to identify and eliminate inefficiencies, resulting in smooth project execution in project management. Despite the usefulness of the model, it is not without its limitations. The biggest shortcoming of Hoshin's model of strategic planning is that it does not allow room for error; it requires a high level of commitment from everyone involved, which sometimes may not be achievable (Dias & Tenera, 2020). Nonetheless, since it is designed to assess the process of strategic planning from theory to practice implementation, the model was relevant to the study. It played a crucial role in examining the impact of planning practice on public project implementation.

1.11.2 Project Management Competency Framework Theory

The project management competency framework (PMCF) theory was proposed in 1980 by McClelland and McBer in their quest to establish a model that focuses on leadership,

emotional intelligence, technical skills and other project management competencies (Muriuki & Severina, 2021). It holds that a person's competency is the fundamental characteristic that causally relates to their effective and superior performance. Since its development, PMCF has played a crucial role in helping project management professionals gain insights into whether and to what degree project team competency as a determinant underscores project success. This is because, according to Muriuki and Severina (2021), a project's setting, scale, size, and complexity may be the reason for the difficulty in accessing and retaining a competent project team.

Popular project management standards such as PRINCE2, PMBOK, Kanban, Scrum and Lean have their own set of competencies. McClelland and McBer built up on these competencies to come up with PMCF, which is more comprehensive and covers 11 key areas of competencies: cognitive skills, project management knowledge, communication skills, influencing skills, knowledge and experience, personal skills and attributes, teamwork skills, management skills, contextual skills, professionalism, and emotional skills (De Rezende & Blackwell, 2019). PMCF outlines 43 individual competencies that project team members should excel at to ensure success.

The PMCF model also has extensive application in project management literature. An excellent example is Chen et al.'s (2019) study that sought to look into "how project management competencies change within the project management career in large Chinese construction companies." In this study, Chen et al. (2019) used the PMCF model to define the profile of project management positions and determine the specific competencies needed for the role. However, PMCF has been criticized for overly focusing on the past, not keeping up with the changing environment, and creating project team members who are alike instead of taking into account the individuality of roles (De Rezende & Blackwell, 2019). Nevertheless, since this study sought to determine how project team competence influences public project implementation, the theory was relevant. As such, the theory was instrumental in examining how project team competence affects public project implementation.

1.11.3 Functional Theory of Communication

The functional theory of communication helps rationalize the association between effective communication and quality decisions in group dynamics. It posits that, in a group setting, effective communication empowers decision-making. Keenan and Sokol (2023) say that theory is important because it helps us think correctly and prevents mistakes from happening. It also lets us make good relationships with people. It discusses what occurs with teams and their actions. By doing this, we see interaction as a method that groups can use to fix issues and make good choices. So, the theory prevents group members from making bad decisions.

John Dewey made it in his effort to develop a framework for solving problems in the early 20th Century (Keenan & Sokol, 2023). Since then, Robert Bales and Irving Janis have enhanced it to what it is today. It has been used a lot, especially in studies about project management. In their investigation, Keenan and Sokol (2023) used the functional theory of communication as a framework to explore the communication gap between artificial intelligence and human understanding. Behring (2015) found the functional theory of communication to be useful in empowering decision-making in the virtual world.

Several studies have shown that the idea of communication leads to better decisions in many ways. For this reason, the functional theory of communication gives a format for finding out what's needed in a project, making it relevant to this investigation since it seeks to determine how project communication practices influence implementation. This also includes how to do things right and making guidelines so people can check progress in an orderly manner. The major critique of the theory relates to the broader context in which project managers conduct work. The theory assumes that communication and decision-making occur in a group setting when, in reality, team members often communicate outside the group setting (Salazar, 2019). So, functional theory helped examine good communication practices and their influence on public projects being done well.

1.11.4 Risk Management Theory

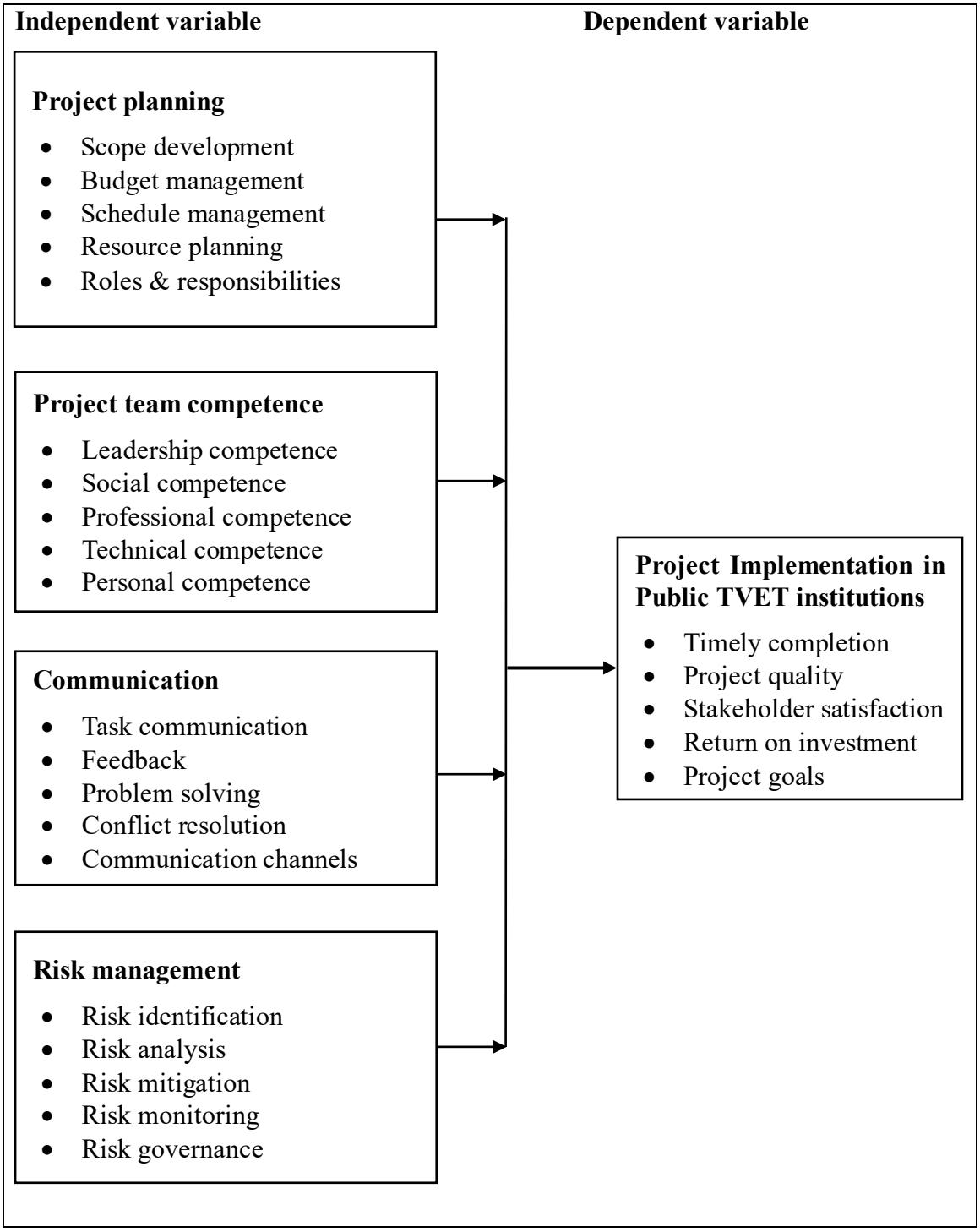
The theory of risk management suggests a way to manage risks well. It says that risks need to be thought about in any important task so we can reach our goals well (Dias & Tenera, 2020). The idea of managing risk includes steps for finding out, measuring and sorting risks in project work. The plan also has steps to reduce, watch and answer unexpected things (Dias & Tenera, 2020). The model is important in project management because risks often happen and can stop a problem from being solved successfully. Risk management theories are important because they help manage many different risks that can happen in public projects.

Risks are diverse and complex and have roots in financial markets, legal liabilities, natural causes, accidents, project failures, etc. (Dias & Tenera, 2020). As such, institutions such as ISO, the Project Management Institute, the National Institute of Science and Technology and even government agencies have developed standards for managing risks (Dias & Tenera, 2020). Incorporating risk management strategies has been shown to bring far-reaching benefits to organizations of all sizes and types. The risk management model helps plan for risks and determine what risks should transferred, avoided, reduced or even accepted to ensure project success.

The risk management theoretical model of project management is not without its limitations. Elms (2019) critiques the model in relation to risk management, citing that it is based on the assumption of the state of full information when approaching risks. In practice, operating on full information is not always possible; instead, organizations are normally forced to operate with available information. Nevertheless, creating a good discipline in risk management through the principles of the theory, particularly for large, intricate, and highly complex government projects, helps improve success, which makes the theory pertinent to the study. The risk management theory was applied to analyze the impact of practising managing risks on project execution.

1.12 Conceptual Framework

The conceptual framework is a graphical illustration of the subject matter under investigation. It breaks down the topic into specific variables, highlighting the expected relationship between the dependent and independent variables. This study aimed to determine the effect of project management practices and implementation of public TVET institution projects in Kenya. So, this was a cause-and-effect study where the dependent variable constitutes the implementation of public TVET institutions projects, and the independent variable is project management practices, which were represented by project planning, project team competence, communication and risk management. The association of study variables is shown in the conceptual framework. The framework is shown in Figure 1.1.



Source: (Researcher, 2024)

Figure 1.1: Conceptual Framework

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this section of the research, an in-depth analysis of existing literature on project management practices and the influence they have on the completion of public projects has been provided. In particular, a comprehensive review of peer-reviewed materials on each of the variables of the topic is done to determine research gaps. The theoretical framework that guided the completion of the study is also provided.

2.2 Empirical Review of Literature

This subsection provides a review and analysis of empirical literature on the topic. The review is broken down into the specific objectives of the study. In particular, peer-reviewed materials on project planning, project team competence, communication, and risk management and their influence on the implementation of projects in public TVET institutions are analyzed to identify knowledge gaps and how the study sought to fill those gaps.

2.2.1 Project Planning and Project Implementation in Public TVET Institutions

Pellerin and Perrier (2019) define project planning as the documentation of the necessary steps to achieve an organizational goal or related objectives. A project plan serves as the basis for performing and managing a project's activities, resources, constraints, risks, deliverables, timeline, and capabilities (Pellerin & Perrier, 2019). Therefore, a project plan is a critical element of project management because it provides a sense of shared vision of what the project aims to accomplish and a roadmap for its effective execution. So, without it, a project is bound to fail altogether. Because of its significance in project management, the impact of project planning on the effective implementation of projects has widely been explored.

For instance, Mohsin (2021) sought to determine the impact of a project plan on project success in Pakistan. The study adopted a quantitative research design. A sample of 211 team members of IT projects in Rawalpindi and Islamabad were recruited using a convenient sampling technique. Primary data was collected using questionnaires and analyzed via regression and correlation statistics. The findings revealed that project planning is a significant predictor of project success. However, despite the study statistically proving that project planning drives project success, the study is limited in that it was contextualized to IT projects in Pakistan. This study focused on projects in public TVET institutions in Kenya.

In a similar investigation, Irfan et al. (2021) contributed to the topic by examining the significance of planning activities and the competence of project managers in public sector project success. A sample of 260 project engineers from government institutions in Balochistan, from whom data was obtained via questionnaires, was recruited. SEM constituted a statistical analysis method. The researchers found out that both planning and project manager competence contribute significantly to project success. Irfan et al. (2021) concluded that to increase public project success, more effort should go towards planning practices. However, since the geographical scope of the study was limited to Pakistan, its findings cannot be inferred for projects in TVET institutions in Kenya.

Using the structural model assessment approach, Chow et al. (2021) sought to examine the "impact of sustainable project management on the project plan and project success of manufacturing firms." 231 respondents participated in the study, and data was analyzed using the PLS method. Chow et al. (2021) observed that "sustainable project management impacts sustainable project success and sustainable project planning significantly; sustainable project planning correlates with sustainable project success." Also, project planning mediates the relationship between sustainable project management and project success. However, a limitation was noticed in the study; it was based in Malaysia and focused on manufacturing firms – both scope and contextual gaps. This study was based in Kenya and focused on TVET institutions.

Elsewhere in Nigeria, Ibrahim and Cross (2020) examined the processes of planning practices and their effect on construction project effectiveness. In particular, the study focused on 19 processes of project planning to determine the most critical ones. A sample of 60 respondents from three construction firms in the Federal Capital Territory was recruited, and data was collected using questionnaires. Primary data was collected and analyzed via correlational and multiple regression statistics. Findings suggest that planning is a significant predictor of success in completing construction projects. However, out of the 19 processes, creating a WBS, PERT, or Gantt Chart, Project Schedule, Budget, and Quality Management Plan had the most impact.

In Kenya, Wafula et al. (2019) investigated how planning affects construction projects' successful completion. The inquiry was based on the construction of health facilities in Trans-Nzoia County's CDF program. Resource-based, complexity, constraints, and utility theories were adopted, and a descriptive design adopted. 81 respondents were recruited, and data was collected via structured questionnaires. Thematic, correlation statistics, and multiple regression methods were used for analysis. A significantly positive correlation was discovered between planning practices and project outcomes. The study focused on construction projects for health facilities in Trans-Nzoia. Therefore, findings cannot be generalized to project implementation in public TVET institutions in Nairobi County, which was the focus of this study.

2.2.2 Project Team Competence and Project Implementation in Public TVET Institutions

The competencies of project team members are essential in ensuring effective project management. A project, according to ISO21500, is a set of coordinated and controlled processes and activities undertaken from start to finish to achieve a specific goal (Kerzner, 2019). Therefore, as technology continues to evolve and changes imminent in the project management environment, relying on the expertise of teams to achieve project goals has become more important than ever. These competencies refer to the knowledge, skills, attitudes, and mindset of everyone in the team, including the owner, manager, leader, members, and so on, which depend on the projects' size, scope, and complexity. Despite

the plethora of studies on the topic, researchers do not agree on the subject matter under investigation.

For instance, Oh and Choi (2020) observed that team members' competence is a significant success factor for project execution. To arrive at this outcome, the study sought to examine three competencies: intellectual, managerial, and emotional. A total of 164 participants, including professionals from different Korean industries, were involved in the completion of the study. Structured questionnaires were used as research instruments. The structural equation modeling technique was made for the data analysis method. Out of the three (intellectual, managerial, and emotional competencies) variables, the intellectual dimension had the most impact. However, the study was conducted in Korea, meaning the findings cannot be inferred for projects in public TVET institutions in Kenya.

Sharing Oh and Choi's (2020) sentiments, Dumrak et al. (2020) sought to examine how project team members' personal competencies contribute to successful outputs of development projects in Australia. Nineteen attributes within areas of personal competencies, including communication, leading, managing, cognitive ability, effectiveness, and professionalism, were examined. The study surveyed 75 respondents and adopted correlation coefficient analyses for data analysis. Even though all the competence areas positively predicted sustainable outcomes of projects, the impacts of communication, effectiveness, and cognitive ability had the most impact. Therefore, the study recommends strengthening teams' communication, cognitive, and effectiveness abilities to improve the success of projects.

In Somalia, Duale and Kaumbulu (2023) investigated the project team's competence and its effect on the effectiveness of local non-governmental organizations (LNGOs) in the Borama District. In particular, three core competencies were examined: communication, leadership, and conflict resolution skills. Competency theory made for the study's theoretical framework and descriptive design for the research design. A sample of 60 project managers and other staff were surveyed using questionnaires, and data was analyzed using inferential statistics. It was discovered that leadership and conflict resolution skills significantly impacted project success. However, the effect of

communication skills was not significant. However, the study focused on LNGOs and not projects in public TVET institutions, which was the focus of this study.

Here in Kenya, Muriuki and Severina (2021) examined the degree to which the competence of the project staff affects the execution of public sector projects in Nairobi County. The research focused on water sanitation and hygiene programs. Staff competence was represented by technical skills in project design and planning, management, and leadership. It was grounded on competency theory and adopted a descriptive research design. A sample of 208 participants was used. Multiple regression analysis showed that staff competence is a significant determinant of the effectiveness of public projects. However, correlation statistics revealed that leadership skills had the strongest impact. This study focused on water sanitation and hygiene programs, and hence, its findings cannot be generalized to projects of public TVET institutions.

2.2.3 Communication and Project Implementation in Public TVET Institutions

Communication is a critical component of project management. Cervone (2014) says that the lack of effective communication is often a recurring theme when analyzing the causes of project failures. The scholar further points out that good communication sets the foundation for coordination, collaboration, conflict resolution, and accomplishment of project objectives. The role of good communication practices in project management has long been examined in the empirical literature community. However, its effectiveness in ensuring successful project performance remains intensely debatable. While some researchers may consider communication as a requisite for project success and its ineffectualness resulting in project failure, others view it as a mere success factor.

For instance, Majeed (2020) sought to explore project communication and the effect it has on project success. Still on the topic, leadership and trust were tested for moderating and mediating roles, respectively. The study focused on the construction industry in Pakistan. 350 participants were selected and surveyed through the questionnaire as a data collection tool. Correlational statistics were used to analyze the data gathered. Results indicated project communication significantly impacts project outcomes. It was also revealed that

trust and authentic leadership play mediating and moderating roles, respectively, between communication and the success of project outcomes. The drawback associated with the study is that it was contextualized to the construction projects in Pakistan. The current investigation aimed to focus on public TVET institution projects in Nairobi County.

In a similar investigation, Mehari's (2022) study on the topic took a different approach. His study focused on poor communication and the effect it has on project performance. The design adopted was qualitative, where the researchers gathered primary data through semi-structured interviews. 19 common issues associated with poor communication in Norwegian firms were identified, some of them including language barrier, personality, physical barrier, cultural and social issues, personal conflict, dishonesty, and work pressure. The impact of these issues on project performance included low productivity, time wastage, demotivated teams, poor collaboration, conflicts within teams, overlapping information, misinterpretations, mistakes, cost overruns, and project failure.

Adding to the positive correlation notion, Nyandongo and Davids (2020) produced empirical evidence suggesting the role of communication in project performance in South Africa. The researcher chose a quantitative design. A sample selected from organizations in the ICT sector was surveyed. Nyandongo and Davids's (2020) study was based on primary data gathered via a questionnaire. Correlational statistics was chosen for data analysis. Nyandongo and Davids (2020) discovered a strong positive correlation between effective communication and project outcomes. Therefore, communication was found to be essential in project management. However, there was a need to focus on the study in Kenya to determine whether the impact would be similar in projects in public TVET institutions.

The impact of communication practice on project success is also demonstrated by Nsefu et al. (2021), who sought to test the association between good communication and project delivery in Zambia's banking sector. The research adopted a sequential explanatory research design and was based on primary and secondary data. Regression analysis revealed that the association of effective communication practices with project outcomes is strong and positive. Nsefu et al. (2021) further proposed developing a model for effective

communication for large and complex projects. While the study contributes to project communication literature, it is worth noting that it was contextualized to Zambia's banking sector and not projects in public TVET institutions in Nairobi County, which was the focus of this study.

In a similar investigation, Nzuki and Mutuku (2023) sought to examine how communication influences road construction projects by KURA in Nairobi. The type of research design was descriptive design, and a population of five projects between 2018 and 2022 was targeted. A sample of 75 project managers and team members was selected and surveyed using questionnaires. Inferential statistics was used for data analysis. It was discovered that effective communication practices positively but moderately impacted KURA road projects in Nairobi County. The study contributes immensely to the topic under investigation. However, it is worth noting that it focused on road construction projects, implying findings cannot be inferred from public TVET institution projects, which are in the education sector.

2.2.4 Risk Management and Project Implementation in Public TVET Institutions

The role of risk management centers around identifying, assessing, and managing potential risks that could impact the success of a project, making it a crucial element of managing any project. The inevitability of risks, more so in public projects, necessitates a robust risk management framework. These risks can include subcontractor default, contractual issues, changes in regulatory frameworks, financial issues, scope creep, natural disasters, design flaws, operational issues, and conflict of interests. Risk management helps anticipate and prepare for these risks and ensure the project runs smoothly. All researchers agree that managing risks is crucial in project management. However, the degree of its significance varies between researchers.

A classic example of research demonstrating the impact risk management has on the performance of public sector projects was a study conducted by Sabir et al. (2020), who sought to determine the “impact of risk management on project success and the moderating role of managerial competency” in Pakistan. To achieve this, the study adopted a

quantitative and deductive research design and a sample size of 227 respondents, including workers from IT firms in Pakistan. Inferential statistics made for data analysis and findings suggest a positive correlation between risk management and project performance. Managerial competence was found to moderate the relationship between the two variables. However, it is worth noting that the study was based in Pakistan, and the context was IT firms. Therefore, due to these scope and contextual limitations, its findings may not be generalizable to Kenya's TVET sector, hence the need for this research.

Ahmadabadi and Heravi (2019) sought to determine the critical success factors (CSFs) for highway PPP projects in Iran. The researchers used the PLS-SEM model to evaluate the effects of CSFs on the success of PPP construction projects. They looked into 10 CSFs, one of them being risk management, and how they influenced two highways that made for the case study. Among those CSFs, risk management, project preparation, and feasibility study had the strongest impact. Therefore, Ahmadabadi and Heravi (2019) recommend formulating and adapting a robust risk management framework as a component of a reliable private consortium because of its role in PPP projects. However, it is worth noting that the context of the study was highway PPP projects, with the scope being Iran. Therefore, a study focusing on TVET institutions projects in Kenya was warranted.

The consistency of the findings, as highlighted above, was also observed in Libya by Algremazy et al. (2023), whose investigation focused on the topic but on the Libyan construction industry. More than 300 construction companies in Benghazi and Tripoli were involved, and subjects were recruited using a cluster sampling technique. SEM technique via the Smart-PLS program was used for data analysis. Algremazy et al. (2023) found that adopting risk management practices increased the success of construction projects by up to 83%. However, out of risk identification, assessment, and monitoring, the latter had the most impact at 51.7%. Like the previous studies, this research was not without limitations as far as the contexts of the proposed study are concerned.

Rodríguez-Rivero et al. (2020) looked into the link between risk management and project success in five Cauca projects in Colombia. A fuzzy-set qualitative comparative analysis (fsQCA) program was used to achieve this goal, and the findings suggest that the most

important risks correspond to cultural, economic, and political factors. The results further demonstrate a direct relationship between risk management and project success. However, it is worth noting that the project was based in Colombia and used secondary data. It also failed to statistically quantify the impact of risk management on project success. Therefore, methodological, contextual, and scope limitations were identified, which is why the present study focused on risk management and its effect on public project implementation in Kenya's TVET institutions.

Another empirical investigation by Ferreira de Araújo Lima et al. (2019) sought to examine the implementation of project risk management (PRM) in SMEs. The study adopted an exploratory and explanatory research design where multiple case studies involving 10 projects performed in Spanish and Italian SMEs were analyzed. Results show that project features (commitment type, innovativeness, strategic relevance, and managerial complexity) and firms' characteristics (sector of activity, production system, and access to public incentives) influence PRM adoption, leading to different levels and types of benefits. The study contributes to the discussion by highlighting the importance of risk management. However, because of methodological, conceptual, and contextual limitations, it failed to quantify the impact risk management has on project success.

From Kenya's perspective, Ebole and Paul (2021) provide a more comprehensive insight into the topic. Studied risk management practices and their effect on infrastructure project performance in Kiambu County. Risk identification, mitigation, monitoring, and assessment formed the independent variables. The researchers employed a descriptive research design and recruited a sample of 145 respondents. Questionnaires were utilized to collect primary and quantitative data. Multiple regression analysis was used for data analysis. It was discovered that overall, risk management practice significantly impacts project success in a positive manner. Also observed was that risk identification had the strongest impact, followed by risk mitigation. Their study focused on infrastructure project performance, and therefore, their findings cannot be generalized to projects in public TVET institutions.

2.3 Summary of Review of Literature and Knowledge Gaps

The empirical literature on the topic, according to the specific objectives of the study, has been reviewed and analyzed. A common theme emerging from the existing studies is that project management practices, in this case, project planning, project team competence, communication, and risk management practices, positively influence the success of project implementation. However, it is worth noting that the degree of impact and dynamics of the correlation of the specific aspects of the practices varies between researchers. In addition, methodological, scope, contextual and conceptual gaps have been identified, as shown in Table 2.1. This study sought to address these gaps.

Table 2.1: Summary of Knowledge Gaps

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
Mohsin (2021)	The impact of a project plan on project success in Pakistan	Project planning is a significant predictor of project success	Based on IT projects in Pakistan	Contextual, conceptual, and scope	The current study was focused on project implementation in public TVET institutions in Nairobi County.
Irfan et al. (2021)	The significance of planning and the competence of project managers in public sector project success	Both planning and project manager competence contribute significantly to project success.	The project was based in Balochistan, Pakistan.	Scope	The present study focused on public projects in TVET institutions in Nairobi, Kenya.
Chow et al. (2021)	The impact of sustainable project management on project plan and project success of manufacturing firms.	Sustainable project management impacts on sustainable project success and sustainable project planning; sustainable project planning is positively impacts project success. Also, project planning	Limitations was noticed in the study; it was based in Malaysia and focused on manufacturing firms	Scope, conceptual, and contextual	This study was based in Kenya and focused on project implementation in TVET institutions.

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
		mediates the relationship between sustainable project management and project success.			
Ibrahim & Cross (2020)	Processes planning practices and their effect on construction project effectiveness.	Planning is a significant predictor of the success in completing construction projects.	The study was based on construction firms in the Federal Capital Territory, Nigeria.	Contextual and Scope	The present study was based on projects in TVET institutions in Nairobi.
Wafula et al. (2019)	How planning affects construction projects' successful completion.	A significantly positive correlation was discovered between planning practices and project outcomes.	The inquiry was based on the construction of health facilities in Trans-Nzoia County's CDF program.	Contextual and scope	The present study was based on public TVET institutions projects in Nairobi County.
Oh & Choi (2020)	The study sought to examine three competencies: intellectual, managerial and emotional and their	Out of the three variables, the intellectual dimension had the most impact.	The study was based on different Korean industries.	Scope and contextual	The present study was based on public TVET institutions projects in Nairobi County.

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
	impact on project execution.				
Duale and Kaumbulu (2023)	project team's competence and its effect on the effectiveness of local non-governmental organizations (LNGOs) in the Borama District.	It was discovered that leadership and conflict resolution skills significantly impacted project success. However, the effect of communication skills was not significant.	The study focused on LNGOs in Somalia and not public projects.	Scope and contextual	The present study was based on TVET institutions projects in Nairobi County.
Dumrak et al. (2020)	Project team members' personal competencies contribute to successful outputs of development projects in Australia.	Even though all the competence areas positively predicted sustainable outcomes of projects, the impacts of communication, effectiveness, and cognitive ability had the most impact.	The study was based in Australia.	Scope and conceptual	The present study was based on TVET institutions' projects in Nairobi County.
Muriuki & Severina (2021)	The competence of the project staff affects the execution of public	Staff competence to be a significant determinant of the effectiveness of public projects.	The study was not based on TVET institutions projects.	Scope	This study was based on TVET institutions' projects.

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
	sector projects in Nairobi County.				
Majeed (2020)	Project communication and the effect it has on project success.	Results indicated project communication significantly impacts project outcomes. It was also revealed that trust and authentic leadership play mediating and moderating roles, respectively, between communication and the success of project outcomes.	The drawback associated with the study is that it was contextualized to the construction projects in Pakistan.	Scope	This investigation focused on projects in public TVET institutions in Nairobi County.
Mehari (2022)	Poor communication and the effect it has on project performance.	The impact of these issues on project performance included low productivity, time wastage, demotivated teams, poor collaboration, conflicts within teams, overlapping information, misinterpretations, mistakes, cost overruns and project failure.	The study failed to quantify the correlation between project communication and project execution. It was also based in Norway.	Contextual, conceptual, scope, and methodological	This study used primary data and statistical tools to measure the correlation between the variables.
Nyandongo & Davids (2020)	Role of communication in project	A strong positive correlation between effective	The study was based in South	Scope and contextual	This study used primary data and statistical

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
	performance in South Africa.	communication and project outcomes was discovered.	Africa and focused on ICT projects.		tools to measure the correlation between the variables.
Nsefu et al. (2021)	The association between good communication and project delivery in Zambia's banking sector.	The association of effective communication practices with project outcomes is strong and positive.	The study was based on Zambia's banking sector.	Scope and contextual	The present study was based on TVET institutions' projects in Nairobi County.
Nzuki & Mutuku (2023)	How communication influences road construction projects by KURA in Nairobi.	It was discovered that effective communication practices positively but moderately impacted KURA road projects.	The project was based on KURA projects.	Scope and contextual	The present study was based on TVET institutions' projects in Nairobi County.
Sabir et al. (2020)	The impact of risk management on project success and the moderating role of managerial competency	Positive correlation between risk management and project performance. Managerial competence was found to	The study was based in Pakistan and context was IT firms. Therefore, due to these scope and contextual limitations, its	Scope and contextual	The present study was based on TVET institutions' projects in Nairobi County.

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
		moderate the relationship between the two variables.	findings may not be generalizable to Kenya's TVET sector		
Rodríguez-Rivero et al. (2020)	Finding the Links between Risk Management and Project Success: Evidence from International Development Projects in Colombia	The results further demonstrate a direct relationship between risk management and project success.	The project was based in Colombia and used secondary data. It also failed to statistically quantify the impact of risk management on project success.	methodological, contextual, and scope	The present study focused on risk management and its effect on public project implementation in Kenya's TVET institutions.
Ahmadabadi & Heravi (2019)	To determine the critical success factors (CSFs) for highway PPP projects in Iran.	Risk management, project preparation, and feasibility study had the strongest impact.	The context of the study was highway PPP projects with scope being Iran.	Scope and contextual	The present study was based on TVET institutions' projects in Nairobi County.
Ferreira de Araújo Lima et al. (2019)	Successful implementation of project risk management in	Project features and firms' characteristics influence PRM adoption, leading to	The study was based in Spain and Italy, focused on SMEs and failed to	Methodological, conceptual, and contextual	The present study was based in Kenya and focused on

Study	Focus of the study	Findings	Knowledge gaps	Nature of the gap	Focus of the current study
	small and medium enterprises: a cross-case analysis.	different levels and types of benefits.	quantify the relationship between risk management and project execution.		projects in TVET institutions.
Algremazy et al. (2023)	Risk management and project success in the Libyan construction industry.	Adopting risk management practices increased the success of construction projects by up to 83%.	The study was based on construction companies in Benghazi and Tripoli, Libya.	Scope and contextual	The present study was based on public TVET institutions' projects in Nairobi County.
Ebole & Paul (2021)	Risk management practices and their effect on infrastructure project performance in Kiambu County.	It was discovered that overall, risk management practice significantly impacts project success in a positive manner.	The study was based on infrastructure projects in Kiambu County.	Scope and contextual	The present study was based on public TVET institutions projects in Nairobi County.

Source: (Researcher, 2024)

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The chapter highlights the approaches, techniques and methods that were employed to complete the study. Therefore, this section covers the research design, research site, target population, sampling, data collection instrument and procedures, data analysis and presentation, and legal and ethical standards that were observed in completing the study.

3.2 Research Design

A research design is a plan providing the overall data collection and analysis framework. It defines the processes for selecting research participants, identifying research sites, data collection tools and methods, and data analysis techniques (Asenahabi, 2019). In other words, a research design describes what is done precisely to achieve the study's objectives. This study adopted an explanatory research design as it sought to determine how project management practices affect project implementation. Under this design, a cross-sectional survey was adopted as a strategy for completing the investigation. This design, accompanied with the strategy, was instrumental in determining the nature and degree of effect that project planning, project team competence, communication, and risk management have on the implementation of projects in TVET institutions in Nairobi County.

3.3 Research Site

The study was conducted in nine TVET institutions located in five sub-counties in Nairobi. They are PC Kinyanjui Technical Training Institute, Nairobi Technical Training Institute, Kabete National Polytechnic, Kamukunji Technical and Vocational College, Karen Technical Training Institute for the Deaf, Kasarani Technical and Vocational College, Langata Technical and Vocational College, Kibra Technical and Vocational College and Kenya School of TVET. The research focused on Nairobi County because it has the highest concentration of TVET institutions among the 47 counties in Kenya. In addition, in Nairobi County there is a variety of TVET institutions offering Diploma programs are represented

with some having very good infrastructure, offers a wide variety of courses and have big number of trainers such as Kabete National Polytechnic, Kenya School of TVET and Nairobi Technical Training Institute. In terms of age, Kabete National Polytechnic and Nairobi Technical Training Institute are the oldest being there since the colonial times while Kibra and Langata Technical Colleges are the youngest having been established a few years ago. The variety of TVET institutions in Nairobi County provided rich data for the study related to project management practices and their influence on project implementation in public TVET institutions.

3.4 Target Population

A population in research, according to Bhardwaj (2019), refers to a group of individuals, items, or objects that share similar characteristics. The target population for this research constituted officials of the State Department of TVET - Ministry of Education, board members, and staff members of nine TVET institutions in Nairobi County. These actors are involved in different capacities in projects at TVET institutions. For instance, for large and complex projects, the Ministry officials are involved in formulating, planning, funding, and implementing the projects. They are further involved in overseeing the projects and making sure quality standards are observed. At the institutional level, the board members, who make up the top management of TVET institutions, are actively involved in institutional projects, including the allocation of resources, while the principal, procurement officer, and estate manager take the role of coordinating institutional-level projects.

The Ministry has 35 officers who take part in projects in TVET institutions, including an accountant, a procurement officer, a finance officer, a gender and environment officer, and 31 technical officers who are charged with overseeing government-funded projects in TVET institutions. According to TVET Act No. 29 of 2013, a public TVET institution board consists of between 7 and 9 members. This study involved board members, principals, procurement officers, and estate managers for each TVET institution.

Table 3.1: Target Population

Sub- County	Institutions	Ministry of Education officials	Board Members	Project Staff	Total	%
	Ministry of Education	35			35	26.515
Dagoretti South	PC Kinyanjui Technical Training Institute		9	3	12	9.09
Dagoretti South	Kabete National Polytechnic		8	3	11	8.333
Kamukunji	Kamukunji Technical and Vocational College		9	3	12	9.09
Kamukunji	Nairobi Technical Training Institute		9	3	12	9.09
Langata	Karen Technical Training Institute for the Deaf		9	3	12	9.09
Langata	Langata Technical and Vocational College		9	3	12	9.09
Langata	Kibra Technical and Vocational College		0	3	3	2.272
Kasarani	Kasarani Technical and Vocational College		9	3	12	9.09
Westlands	Kenya School of TVET		8	3	11	8.333

Total	**70**	**27**	**132**	**100**

Source: Ministry of Education; Directorate of Technical Education

3.5 Sampling Method

A sample is a smaller and more manageable unit of the population of interest that a researcher relies upon for data collection (Bhardwaj, 2019). This study utilized multi-stage sampling, which involves selecting a sample in two or more stages. The first stage involved cluster sampling, in which the TVET institutions were clustered on the basis of sub-counties and the Ministry of Education officials. Thereafter, stratified random sampling was applied, whereby the clustered population was organized into a stratum of Ministry officials, board members, and project staff, and then finally, a simple random technique was used by taking 60% from each stratum, giving a final sample of 79 respondents which comprised 59.84% of the target population. This is in accordance with the recommendation of Mugenda and Mugenda (2003) that a sample size of 10% of the target population is adequate for research study in social science.

3.5.1 Sample Size

The sample size consisted of 79 respondents of Ministry officials and TVET institutions board members and project staff, as shown in Table 3.2 below.

Table 3.2: Sample Size

Sub- County	Institutions	Ministry of Education Officials	Board Members	Project Staff	Sample Size	%
	Ministry of Education	35			21	26.582
Dagoretti South	PC Kinyanjui Technical Training Institute		5	2	7	8.86

Sub- County	Institutions	Ministry of Education Officials	Board Members	Project Staff	Sample Size	%
Dagoretti South	Kabete National Polytechnic		5	2	7	8.86
Kamukunji	Kamukunji Technical and Vocational College		5	2	7	8.86
Kamukunji	Nairobi Technical Training Institute		5	2	7	8.86
Langata	Karen Technical Training Institute for the Deaf		5	2	7	8.86
Langata	Langata Technical and Vocational College		5	2	7	8.86
Langata	Kibra Technical and Vocational College		0	2	2	2.531
Kasarani	Kasarani Technical and Vocational College		5	2	7	8.86
Westlands	Kenya School of TVET		5	2	7	8.86
	Total		**40**	**18**	**79**	**100**

Source: (Researcher, 2024)

3.6 Data Collection

Data collection is a crucial part of conducting a scientific inquiry. It provides the necessary information to respond to research questions and fulfill what the project aims to achieve (Stockemer et al., 2019). Therefore, data collection must be effective and provide quality data. This is because quality data is indispensable in generating indisputable evidence and enhancing the credibility of the entire study (Stockemer et al., 2019). On the other hand, when data collected is of low quality, the credibility of the study and the validity of the conclusions drawn become questionable. With that said, the proposed study emphasized collecting accurate and quality data. The data collection method was informed by the selected research design. Because of its design, strategy, and target population, the study shall collect primary data.

3.6.1 Data Collection Instrument

The data collection tool for the study was semi-structured questionnaires. According to Sileyew (2019), this type of questionnaire consists of a list of standardized closed-ended questions, worded and asked in a systematic manner, and requires respondents to choose from a set of predefined answers. It also allows for the flexibility of asking open-ended questions, ensuring in-depth data collection and analysis. To ensure the questionnaires' validity, reliability, clarity, and conciseness, they will be designed based on the conceptual framework and scrutinized for relevance. The questionnaire featured five sections (Appendix 1). The first section gathered information on the demographical characteristics of the respondents, with the rest gathering data on each of the variables. Data was measured using Likert's five-point scale where 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

3.6.2 Pilot Testing the Research Instrument

Pilot studies help determine the feasibility of the study and identify its weaknesses. It is also useful in determining whether the research instrument is appropriate for the study and the target population. Coupled with the reasons above, the study also conducted a pilot test to determine if the questionnaire asks the right and intended questions, has an

understandable format, and is valid and reliable. The pilot study was instrumental in modifying the research instrument to ensure it is relevant, reliable, valid, and in the correct format before embarking on data collection.

3.6.3 Instrument Reliability

Reliability in research is how well a study can generate or replicate the same results under similar conditions (Quintão et al., 2019). Therefore, a survey with a high-reliability score yields consistent outcomes each time it is performed. Reliability speaks more to data collection, too, as it provides the same results over and over. The reliability of the questionnaire was ascertained by first performing pilot testing. The instrument was subjected to Cronbach's alpha test to check for and improve its internal consistency. The questionnaire was deemed reliable as the alpha values for each construct fell in the acceptable range of 0.7 and 1 as shown in Table 3.3.

Table 3.3: Reliability Tests

Constructs	Cronbach's Alpha	N of Items
Project implementation	.883	5
Project planning	.918	5
Project team competence	.902	5
Project communication	.895	5
Risk management	.933	5

Source: (Researcher, 2024)

3.6.4 Instrument Validity

Whereas reliability measures the consistency of results, validity is concerned with how well the results among research subjects represent the true findings among similar individuals outside the study (Quintão et al., 2019). In simpler terms, while reliability focuses on consistency, validity is about the accuracy of the results. Proper planning, sufficient quality control, and a strategic implementation process were ensured to enhance

the inquiry's internal validity. The project generally ensured a quality subject selection strategy, data collection, data analysis, and sample size. As far as the research instrument is concerned, validity was improved by ensuring the relevance of the questions. The questions on the instrument were derived from the overall research question and based on the conceptual framework.

3.6.5 Data Collection Procedure

The questionnaires were distributed via electronic and physical means. The study participants were issued with letters of introduction and consent forms. Those willing to participate in the survey were required to sign the consent forms. They were then asked to choose the preferred survey method (in-person or online). Those who selected the in-person option were issued with physical copies of the questionnaires. Those who preferred the online option had the questionnaires, in the form of Google Forms, sent to them. The participants were accorded a span of five days to complete the survey.

3.7 Data Processing and Analysis

The completed research instruments were collected, sorted, and organized. Then, they were processed to check for completeness, errors, and omissions. This procedure was done to ensure data collected by the questionnaires is eligible for analysis. Those found with missing answers were cleaned using measures of central tendencies (mean, mode, and median). However, those with errors beyond cleaning were ruled out for analysis. The data questionnaires ascertained to be eligible for analysis were coded and inputted into the SPSS software package. The study employed descriptive and inferential statistics for data analysis.

3.7.1 Descriptive Statistics

Descriptive statistics is an analytical tool used to summarize and describe the main qualities of a dataset. Descriptive statistics was used to summarize, communicate, and describe the main characteristics of this dataset. This helped users to know the patterns and trends in the dataset. These included measures such as central tendency, dispersion, and shape of distribution.

3.7.2 Inferential Statistics

Inferential statistics helped decide if the results support or refute the established hypothesis. Also, the statistics guide the decision on whether to draw conclusions or generalize the findings to a larger population (Amrhein et al. 2019). In particular, the research used correlational analysis, diagnostic tests, and regression analysis.

3.7.2.1 Correlation Analysis

Correlation analysis was used to test if and to what degree and direction the variables correlate. Coefficient values can be between -1 and +l. A negative coefficient denotes a negative correlation, a positive one denotes a positive correlation, and zero implies there is no correlation. Therefore, correlational statistics were instrumental in testing the hypothesis of the study. The coefficient values played a crucial role in determining whether the findings support or reject the operational hypothesis of this study, as established in section 1.6.

3.7.2.2 Regression Analysis

Lastly, regression analysis was applied to check for the collective influence of the independent variables (project planning, project team competence, communication, and risk management practices) on implementing public projects successfully. The following were performed: model summary, analysis of variance (ANOVA), and regression coefficients. The following constituted the regression model for the analysis:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where;

Y = Project implementation

α = Constant

β= Beta coefficients

X_1= Project planning

X_2= Project team competence

X_3= Communication

X_4= Risk management

The findings of the data analysis process were presented in tables and figures.

3.8 Testing of Assumptions of Multiple Regression

Regression analysis was preceded by diagnostic tests. These include tests for heteroscedasticity, normality, autocorrelation, and multicollinearity. Diagnostics evaluates the goodness fit of the regression model (Amrhein et al., 2019). They were carried out to assess the underlying assumptions of the regression model. In other words, these tests were performed to determine whether the following assumptions of multiple regression hold: homoskedasticity of the dataset, normal distribution, absence of autocorrelation between independent variables, and absence of multicollinearity.

Durbin-Watson (D-W) test was performed to check whether the independent variables are correlated with each other. The D-W statistical test ranges from zero to four. 2.0 indicates a lack of correlation between the independent variables. On the other hand, a value below 2.0 denotes a positive correlation, and a value above 2.0 denotes a positive correlation. Therefore, the absence of correlation between the independent variables was ascertained by a D-W value of 2.0. The Shapiro-Wilk (S-W) test, along with the histogram plot of the residuals, was applied to check whether residuals follow normal distribution. This assumption was ascertained when the S-W value was below 0.05. A histogram was drawn to have a visual representation of the residuals. The normal distribution assumption was confirmed when the histogram was fully covered by the normality curve. The variance Inflation Factor (VIF) test was performed to check whether residuals have a constant variance at every point in the linear model. A VIF<10 confirmed that there is a constant variance at every point. The test for heteroscedasticity was applied by generating A Q-Q (quantile-quantile) plot to have a visual representation of the spread of residuals and check the patterns in the residual versus fitted values plot.

3.9 Hypothesis Testing

Hypothesis testing is a method in statistics used to determine if there is adequate evidence in sample data to draw conclusions about a population. It involves formulating two

competing hypotheses, the null hypothesis (H_0) and the alternative hypothesis (H_1), and then collecting data to assess the evidence. Then, a decision is made on whether to reject or not the null hypothesis.

3.10 Legal and Ethical Considerations

The study abided by the University's ethical standards for carrying out scientific inquiry. A research license from the National Commission for Science, Technology and Innovation (NACOSTI) was obtained. Approval was obtained to maintain the credibility of this investigation. Additionally, the project adhered to autonomy and informed consent principles to protect the subjects, their rights, and interests. Consent forms were issued to the willing respondents, and they were assured of their willingness to take part in the survey. The subjects were also free to withdraw when they felt necessary. The study also refrained from collecting personally identifiable information to ensure the participants remained anonymous.

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This section presents the findings of the study on the effect of project management practices on project implementation in public TVET institutions in Nairobi County. The discussions focus on descriptive statistics, inferential statistics and visual presentations of the findings.

4.2 Response Rate

Table 4.1 portrays the frequency distribution, illustrating the number of participants who completed and those who did not complete the questionnaires.

Table 4.1: Response Rate

Category	Frequency	Percentage
Returned questionnaires	72	91.14%
Un-returned questionnaires	7	8.86%
Total	**79**	**100.00%**

Source: (Researcher, 2024)

The results in table 4.1 above show that 72 out of 79 targeted respondents participated in the survey in its entirety, producing a response rate of 91.14%. Therefore, a more than sufficient response rate was achieved according to Ali et al.'s (2021) standards for a sufficient response rate. This can be attributed to a number of factors; for instance, the study used survey distribution methods the target audience preferred, respondents were given ample time to fill out the questionnaires, and those taking part in the survey were assured of data privacy.

4.3 Demographic Characteristics of Respondents

The demographic characteristics of the respondents were analyzed as shown in table 4.2.

Table 4.2: Demographic Characteristics of Respondents

Characteristic	Distribution	Frequency	Percentage
Gender	Male	43	59.72%
	Female	29	40.28%
Level of education	Certificate	1	1.39
	Diploma	12	16.67
	Undergraduate Degree	25	34.72
	Postgraduate Degree	34	47.22
Experience in projects	Less than 1 year	15	20.83%
	1 – 5 years	24	33.33%
	6 – 10 years	18	25.00%
	Over 10 years	15	20.83%

Source: (Researcher, 2024)

The findings displayed in table 4.2 above indicate demographic characteristics of the respondents. In terms of gender distribution, 43 males participated, representing 59.7% of the respondents while 29 females participated, accounting for 40.28%. This indicates a balanced representation of gender in the study. The bulk of the respondents held postgraduate degrees (47.22%) and undergraduate degrees (34.72). Majority of the respondents (33.33%) had experience of 1-5 years in projects followed by those with 6-10 years at 25.00%. This distribution shows that the respondent pool was well educated and had a number of years' experience in projects, hence was likely to possess diverse knowledge and skills relevant to the study.

4.4 Descriptive and Qualitative Analysis of Study Variables

The study performed descriptive statistics, measures of central tendency, measures of frequency, and measures of variability on the variables featured in the study.

4.4.1 Project Management Practices and Project Implementation

The study sought to analyze the effect of project management practices on project implementation in public TVET institutions.

4.4.1.1 Descriptive Analysis

Respondents were asked to indicate the extent to which they agreed with several statements regarding project management practices in public TVET institutions on a five-point Likert scale where 1 indicated strong disagreement and 5 indicated strong agreement. Table 4.3 summarizes the findings.

Table 4.3: Project Management Practices and Project Implementation

Statement	N	Mean	SD
In the institution, projects are delivered within the established timelines.	72	3.8056	1.0433
In the institution, project implementation is done per established quality standards.	72	4.0139	.7598
In the institution, project stakeholders have been satisfied with the implementation outcomes.	72	3.9722	.8387
In the institution, project implementation has been completed on cost.	72	3.7778	.8916
In the institution, project implementation goals have been achieved.	72	3.9861	.7781
Composite	**72**	**3.9111**	**.8623**

Source: (Researcher, 2024)

The overall mean score for the project implementation variable was 3.9111 at a 0.8623 standard deviation. This shows that, on average, respondents tended towards agreement that project management practices affected project implementation in their institutions. In other words, regarding the specific aspects of project implementation, most respondents felt that projects were delivered on time (M=3.8056, SD=1.0433), project delivery was in

accordance with quality standards (M=4.0139, SD=.7598), stakeholders were satisfied with project outcomes (M=3.9722, SD=.8387), projects were completed on cost (M=3.7778, SD=.8916), and project goals were accomplished (M=3.9861, SD=.7781).

4.4.1.2 Qualitative Analysis

From the analysis of the qualitative data arising from the responses to open ended questions, it was evident that project management practices affected the implementation of projects as majority of the respondents (80.6%) were in agreement. Majority of the respondents indicated that project management practices enhance project team competence; facilitate communication, planning, organization, coordination, execution, and monitoring; involve key stakeholders and get them on the same page; improve the management of resources, time, cost, and schedules; and translate to better project outcomes. The qualitative data reinforce the quantitative findings, indicating that project management practices affect implementation of projects in public TVET institutions in Nairobi County.

4.4.2 Project Planning and Project Implementation

The study sought to analyze the effect of project planning on project implementation in public TVET Institutions in Nairobi County**.**

4.4.2.1 Descriptive Analysis

Respondents were asked to indicate the extent to which they agreed with several statements regarding project planning in their TVET institution on a five-point Likert scale where 1 indicated strong disagreement and 5 indicated strong agreement. Table 4.4 summarizes the findings.

Table 4.4: Project Planning and Project Implementation

Statement	N	Mean	SD
In the institution, necessary steps are taken to determine and document project goals.	72	4.1528	.7811

Statement	N	Mean	SD
In the institution, necessary measures are taken to ensure projects are adopted within the budgets.	72	4.1944	.8331
In the institution, project tasks and assigned resources are well-defined before project execution.	72	4.2083	.8381
In the institution, resources are allocated effectively to facilitate project execution.	72	4.1389	.7927
In the institution, the roles and responsibilities of the project team are well defined.	72	4.0833	.8841
Composite	**72**	**4.1556**	**.8258**

Source: (Researcher, 2024)

The overall mean for the project planning variable was 4.1556 at a 0.8258 standard deviation. The result suggests that respondents generally agreed that project planning practices were adopted for project implementation in public TVET institutions in Nairobi County. This notion is further confirmed when the individual aspects of project planning are analyzed in the sense that respondents felt that necessary steps are taken to determine and document project goals (M=4.1528, SD=.7811), steps are taken to ensure projects are executed on a budget (M=4.1944, SD=.8331), tasks and resources are well-defined prior to implementation (M=4.2083, SD=.8381), resources are allocated effectively (M=4.1389, SD=.7927), and project roles and responsibilities are well-defined (M=4.0833, SD=.8841).

4.4.2.2 Qualitative Analysis

From the analysis of the qualitative data arising from the responses to open ended questions, it was evident that project planning practices affected the implementation of projects as majority of the respondents (84.72 %) were in agreement. Many respondents highlighted that project objectives, cost, timeline, tasks, resources, and schedules are well-defined during planning; plans ensure resources are prioritized and allocated appropriately thereby minimizing wastage; planning helps determine if available budget can accommodate project needs; plans enhance good project management and guides

implementation process; and planning goes a long way in identifying and mitigating potential risks and roadblocks that can affect project success. From the findings of the study, it can be concluded that project planning is a critical project management practice.

4.4.3 Project Team Competence and Project Implementation

The study sought to analyze the effect of project team competence on project implementation in public TVET Institutions in Nairobi County**.**

4.4.3.1 Descriptive Statistics

Respondents were asked to rate their agreement with several statements regarding project team competence in their TVET institution on a five-point Likert scale where 1 indicated strong disagreement and 5 indicated strong agreement. Table 4.5 summarizes the findings.

Table 4.5: Project Team Competence and Project Implementation

Statement	N	Mean	SD
In the institution, project leaders possess essential skills needed to lead team members.	72	4.0833	.8681
In the institution, project team members exhibit interpersonal skills needed to implement projects.	72	4.1111	.7971
In the institution, project team members have the soft skills needed for successful implementation of projects.	72	3.9861	.8306
In the institution, project team members have the skills, abilities, and experience needed for successful project implementation.	72	4.0417	.7588
In the institution, project team members have personal attributes that contribute to project execution.	72	4.0278	.6914
Composite	**72**	**4.0500**	**.7892**

Source: (Researcher, 2024)

The overall mean score for the project team competence construct was 4.0500 at a 0.7892 standard deviation, implying that respondents, in general, were in agreement that project team competence affected project implementation in public TVET institutions. Further analysis shows that most respondents felt that project leaders possessed essential leadership skills (M=4.0833, SD=.8681), team members displayed necessary interpersonal skills (M=4.1111, SD=.7971), members had soft skills for project implementation (M=3.9861, SD=.8306), members had abilities and experience for project implementation (M=4.0417, SD=.7588), and members had personal attributes that contributed to project execution (M=4.0278, SD=.6914).

4.4.3.2 Qualitative Analysis

From the analysis of the qualitative data arising from the responses to open ended questions, it was evident that project team competence affected the implementation of projects as indicated by majority of the respondents (81.94 %). Majority of the respondents were of the view that competent project teams have the technical know-how of project implementation; they provide the necessary skills, knowledge, experience, and expertise for implementation; then ensure order, flexibility, and proper orientation in project management; due to their competence, they deliver projects as envisioned; they have the ability to identify and solve problems; and drive efficiency, productivity, and effectiveness.

4.4.4 Communication and Project Implementation

The study sought to analyze the effect of communication on project implementation in public TVET Institutions in Nairobi County**.**

4.4.4.1 Descriptive Analysis

Respondents were asked to rate their agreement with several statements regarding communication practices in their TVET institution on a five-point Likert scale where 1 indicated strong disagreement and 5 indicated strong agreement. Table 4.6 summarizes the findings.

Table 4.6: Communication and Project Implementation

Statement	N	Mean	SD
In the institution, valuable insights on progress are analyzed and shared to facilitate decision-making.	72	4.0278	.8553
In the institution, there are effective feedback practices for the purpose of improving performance and quality of deliverables.	72	3.8611	.8770
In the institution, a structured system that defines problems, identifies root causes, tests solutions, and monitors results exists.	72	3.9722	.8717
In the institution, conflict resolution mechanisms are in place to solve conflicts during project execution.	72	3.8194	.8774
In the institution, appropriate communication channels are established to ensure effective communication during project implementation.	72	4.0972	.8747
Composite	**72**	**3.9556**	**.8712**

Source: (Researcher, 2024)

The overall mean for communication practices variable was 3.9556 at a 0.8712 standard deviation. The result shows that respondents, in general, were of the view that communication practices affected project implementation in public TVET institutions. A similar observation was made on individual aspects of communication, such as effective feedback practices (M=3.8611, SD=.8770), structured systems that define problems, identify their causes, test solutions, and monitor results (M=3.9722, SD=.8717), and conflict resolution (M=3.8194, SD=.8774). In addition, they were in agreement on the analysis and sharing of valuable insights (M=4.0278, SD=.8553) and the use of appropriate communication channels (M=4.0972, SD=.8747).

4.4.4.2 Qualitative Analysis

From the analysis of the qualitative data arising from the responses to open ended questions, it was evident that communication practices affected the implementation of projects as majority of the respondents (80.56%) were in agreement. Majority of the respondents were of the view that proper communication ensures that project team and other stakeholders understand their roles and expectations; drives stakeholder engagement; helps identify and resolve conflicts and issues; allows monitoring and reporting progress; ensures proper planning; and encourages better risk management.

4.4.5 Risk Management and Project Implementation

The study sought to analyze the effect of risk management on project implementation in public TVET Institutions in Nairobi County**.**

4.4.5.1 Descriptive Analysis

Respondents were asked to rate their agreement with several statements regarding risk management in project implementation in their TVET institution on a five-point Likert scale where 1 indicated strong disagreement and 5 indicated strong agreement. Table 4.7 summarizes the findings.

Table 4.7: Risk Management and Project Implementation

Statement	N	Mean	SD
In the institution, mechanisms for detecting, describing, and cataloging project risks are adopted and used in project management.	72	3.8472	.9737
In the institution, risks are analyzed to determine the probability of occurrence and possible impact on projects.	72	3.7917	.9920
In the institution, plans are in place to prepare for, prevent, or lessen the effects of risks projects face.	72	3.9167	.9154

Statement	N	Mean	SD
In the institution, there are systems and procedures to monitor risks during project implementation.	72	3.8889	.8969
In the institution, policies and frameworks exist to ensure risks are effectively managed during project implementation.	72	3.8333	.8881
Composite	**72**	**3.8556**	**.9332**

Source: (Researcher, 2024)

The overall mean score for the risk management variable was 3.8556 at a 0.9332 standard deviation which suggests that, on average, respondents were in agreement that risk management affects implementation of projects in TVET institutions. A similar trend is observed in individual elements of risk management such as risk identification (M=3.8472, SD=.9737), risk assessment (M=3.7917, SD=.9920), risk mitigation (M=3.9167, SD=.9154), risk monitoring (M=3.8889, SD=.8969), and risk governance (M=3.8333, SD=.8881).

4.4.5.2 Qualitative Analysis

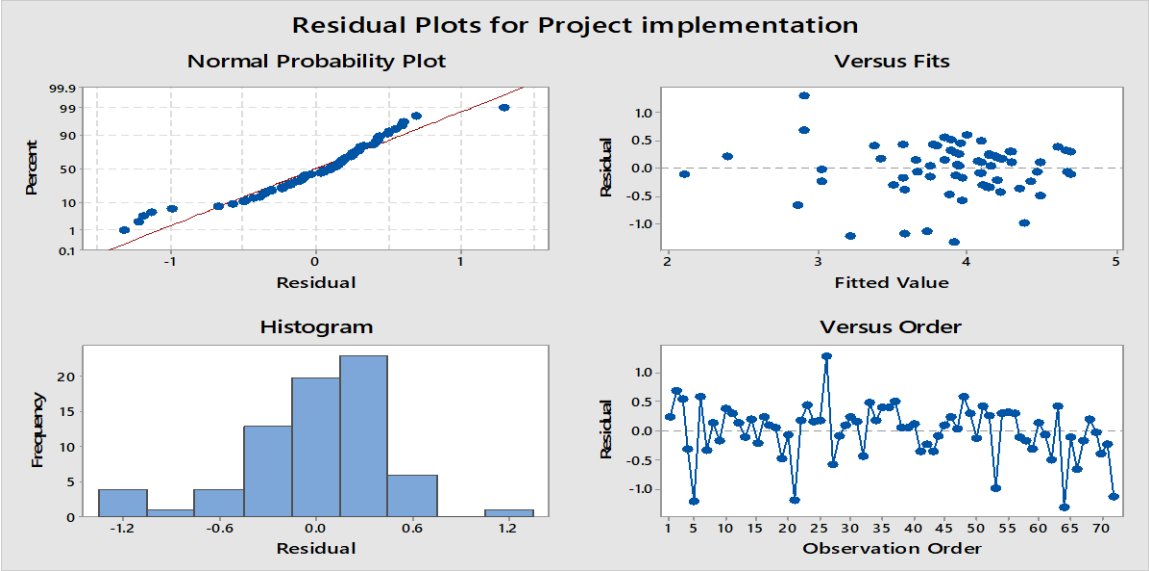
From the analysis of the qualitative data arising from the responses to open ended questions, it was evident that risk management practices affected the implementation of projects as majority of the respondents (79.17%) were in agreement. From the findings, it can be inferred that risk management improves project success in a variety of ways, including ensuring sufficient preparation for emergencies, effective risk identification and mitigation, adoption of risk preventive measures and reduction of exposure to risks.

4.5 Diagnostic Tests

Diagnostic tests were performed to verify that the assumptions of linear regression were satisfied. These diagnostic tests are important to ensure the reliability of the model and the validity of the study's conclusions. The tests conducted were heteroscedasticity test, normality test, autocorrelation test using the Durbin-Watson statistic and multi-collinearity test using the Variance Inflation Factor (VIF).

4.5.1 The Test for Heteroscedasticity

Residual plots were generated to detect heteroscedasticity or patterns indicating unequal spread of residuals. The findings of the test are shown in Figure 4.1.



Source: (Researcher, 2024)

Figure 4.1: Residual Plots for Project Implementation

The normal probability (Q-Q) plot from the figure 4.1 above shows that the points on the plot closely follow a straight line, confirming that the error terms follow normal distribution. Additionally, the residual versus fitted values plot, as shown in the top-right, produces a flat line, suggesting a uniform distribution of the residuals. Therefore, heteroscedasticity was not detected.

4.5.2 Normality Test

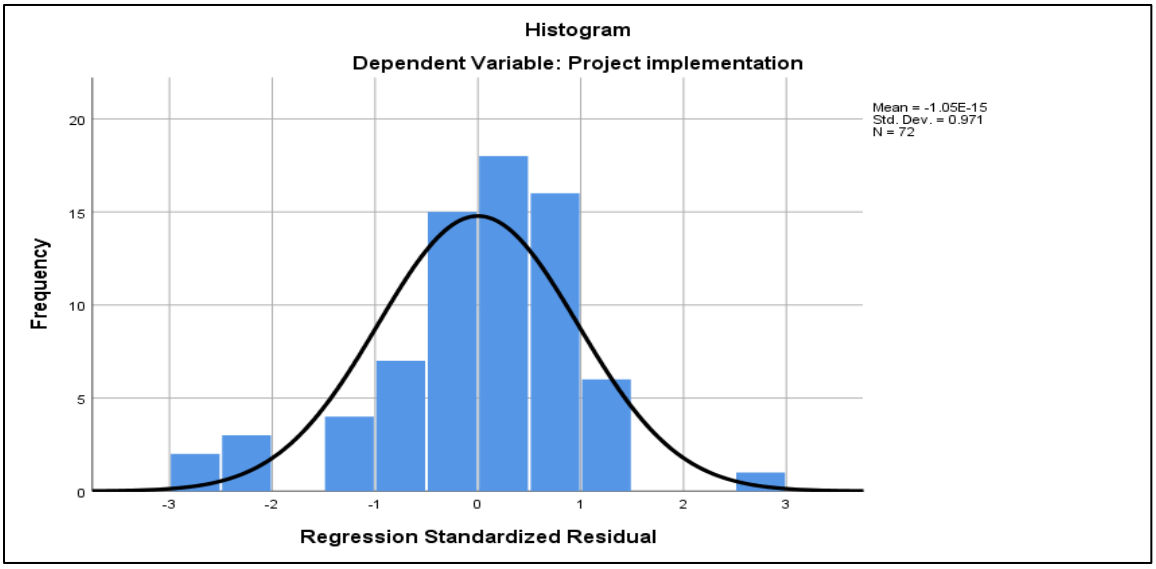
The Shapiro-Wilk test was used to assess the normality of the data distributions for various variables.

Table 4.8: Shapiro-Wilk Test

	N	Mean	Std. Deviation	Skewness	Kurtosis	S-W	Sig.
Project implementation	72	3.9111	.68701	-1.096	.938	.901	.000
Project planning	72	4.1556	.68974	-1.794	5.425	.859	.000
Team competence	72	4.0500	.63932	-1.077	1.363	.905	.000
Communication	72	3.9556	.70429	-.995	.963	.920	.000
Risk management	72	3.8556	.81481	-1.165	1.039	.873	.000

Source: (Researcher, 2024)

The findings shown in Table 4.8, confirm that none of the constructs was normally distributed, as proven by ($p<.05$). Further analysis shows that all five constructs lacked symmetry and that they were skewed to the left (negative skewness). A histogram (P-P) plot was generated to have a visual outlook of the distribution of the residuals, which aided in checking whether the assumption that residuals should be normally distributed was satisfied. Figure 4.2 showcases the findings for the test for normality.



Source: (Researcher, 2024)

Figure 4.2: Normality Test

The figure 4.2 above shows an almost symmetric bell-shaped histogram. As observed, the histogram is almost evenly distributed at around zero, suggesting that the normality assumption is likely to be true. Also, the absence of too many extreme positive or negative residuals confirms that the assumption was satisfied.

4.5.3 Test for Autocorrelation

Durbin-Watson (D-W) test was carried out to detect the presence of autocorrelation in the residuals. The test usually produces a value ranging from 0 to 4. Values below 1.5 signify positive serial correlation, and those above 2.5 signify negative serial correlation. A value of 2.0 indicates an ideal case of no autocorrelation. However, a value between 1.5 and 2.5 suggests autocorrelation is likely not a cause for concern.

Table 4. 9: Test for Autocorrelation

Alpha		.05
D-stat		1.960
D-lower		1.25495
D-upper		2.01756
Sig	**No autocorrelation**	

Source: (Researcher, 2024)

The D-W value of 1.974 confirms that autocorrelation was not a likely cause for concern, since it falls in the acceptable of 1.5-2.5 range. This is further proven true by $(4 – D) > D_U$, which confirms that the autocorrelation assumption was not violated.

4.5.4 Test for Multicollinearity

The variance inflation factor (VIF) test was performed to detect if one or more of the predictor variables are highly correlated. The purpose was to investigate whether there were strong correlations among the predictors, which could affect the accuracy of regression coefficients. As shown in Table 4.10, the assumption was satisfied since VIF<10 for all the constructs.

Table 4.10: Test for Multicollinearity

Model		Collinearity Statistics	
		Tolerance	**VIF**
1	(Constance)		
	Project planning	.467	2.140
	Project team competence	.446	2.243
	Project communication	.296	3.376
	Risk management	.387	2.582

Source:(Researcher, 2024)

Table 4.10 shows that the VIF values were below the threshold of 10; which is acceptable; in fact, they were all below 5 which show that the variables are not correlated.

4.6 Correlational Analysis

Correlation analysis was performed to test the association between the independent variables and the dependent variable. Since none of the constructs was normally distributed, this research performed Spearman's rank correlation analysis, a nonparametric test. Results are presented in Table 4.11.

Table 4.11: Correlation Analysis

			Project planning	**Project team competence**	**Communication**	**Risk management**
Spearman's rho	Project implementation	Correlation Coefficients	.583**	.660**	.572**	.629**
		Sig. (2-tailed)	.000	.000	.000	.000
		N	72	72	72	72

**. Correlation is significant at the 0.05 level (2-tailed).

Source: (Researcher, 2024)

The results of correlation analysis, as illustrated in Table 4.11 above show that a strong, significant positive correlation was observed between project planning and project implementation (r=.583, p<.05), a strong, significant positive correlation between project team competence and project implementation (r=.660, p<.05), a strong, significant positive correlation between communication and project implementation (r=.572, p<.05), and a strong, significant positive correlation between risk management and project implementation (r=.629, p<.05).

4.7 Regression Analysis

The study sought to establish the combined effect of project planning, project team competence, communication and risk management on project implementation in public TVET institutions.

4.7.1 Model Summary

The model summary was a representation of the coefficient of determination as obtained. The model summary demonstrates the R, R-Squared and adjusted R-Squared statistics.

Table 4. 12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801[a]	.642	.537	.47622

a. Predictors: (Constant), Project planning, Project team competence, communication, risk management

Source: (Researcher, 2024)

The results of the analysis, as presented in Table 4.12, indicate that a significant portion of variance (R Square=0.642) in the dependent variable is attributed to the independent variables. In other words, the four project management practices (i.e., project planning, team competence, project communication, and risk management) account for 64.2% of project implementation.

4.7.2 ANOVA

The Analysis of Variance was incorporated to help understand if there was a regression connection between the study's variables.

Table 4. 13: ANOVA Test Results

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.194	16	2.887	6.153	.000[b]
	Residual	25.806	55	.469		
	Total	72.000	71			

a. Dependent Variable: Project implementation

b. Predictors: (Constant), Project planning, Project team competence, Communication, Risk management

Source: (Researcher, 2024)

The results of the analysis, as presented in Table 4.13, indicate that the regression model is statistically significant (F (16, 55) = 6.153, p<.05). Therefore, it can be said that the four project management practices (i.e., project planning, project team competence, communication, and risk management) are reliable predictors of project implementation in public TVET institutions in Nairobi County.

4.7.3 Coefficients

The research ran a regression coefficient to assess how much change in the individual independent variables can predict the change in the dependent variables. The results of the analysis are unveiled in Table 4.14.

Table 4.14: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	(Constant)	.570	.393		1.452	.151
	Project planning	.371	.271	.382	1.872	.000
	Project team competence	.435	.247	.427	3.093	.023
	Communication	.519	.313	.523	2.751	.037
	Risk management	.436	.252	.476	2.988	.026

a. Dependent Variable: Project implementation

Source: (Researcher, 2024)

The regression coefficients presented in Table 4.14 above indicate that all the independent variables have a significant positive effect on the dependent variable. For instance, project planning has a significant positive effect (B=.371, p=.000) on project implementation, project team competence has a significant positive effect (B=.435, p=.023) on project implementation, communication has a significant positive effect (B=.519, p=.037) on project implementation, and risk management has a significant positive effect (B=.436, p=.026) on project implementation. This means that a unit increase in each of the four project management practices would result in increased levels of project implementation in public TVET institutions.

The findings above assert the relevance and importance of project management practices in the implementation of public projects. Therefore, this research proves that adopting strategic steps towards better project planning, building competent project teams, enhancing communication, and implementing effective risk management frameworks at TVET institutions all improve project success greatly.

The final regression equation for project implementation is as follows:

$$Project\ implementation\ =\ .570\ +\ .371X_1 + .435X_2 + .519X_3 + .436X_4$$

Where;

X_1= Project planning

X_2= Project team competence

X_3= Project communication

X_4 = Risk management

All the independent variables exhibit a significant positive impact on the dependent variable. Project management practices and their regression coefficients: project planning (0.371), project team competence (0.435), communication (0.519), and risk management (0.436) indicate the magnitude with which each translates positively on project implementation.

4.8 Hypothesis Testing

Statistical analyses were performed to test the plausibility of this study's hypotheses using the sample data.

$H_0$1: Project planning has no significant effect on project implementation in public TVET institutions in Nairobi County.

The findings from the regression analysis revealed that project planning has a relatively strong, significant positive effect on project implementation in public TVET institutions, as proven by (B=.371, p<.05). The null hypothesis that project planning has no significant effect on project implementation in public TVET institutions is rejected and the alternative hypothesis accepted. The default position of the study that correlation between project planning and project implementation does not exist was rejected because this research produced statistical evidence showing significant positive correlation between the variables. Therefore, this research is in agreement with (Mohsin, 2021; Chow et al., 2021; Ibrahim & Cross, 2020; Wafula et al., 2019) on the effect of project planning on project implementation.

$H_0$2: Project team competence has no significant effect on project implementation in public TVET institutions in Nairobi County.

The results of regression analysis indicate that project team competence has a relatively strong, significant positive effect on project implementation in public TVET institutions as proven by (B=.435, p<.05). The finding implies that the competence of a project team is associated with significant positive outcomes in project implementation. Therefore, this research rejects the null hypothesis that project team competence has no significant effect on project implementation in public TVET institutions in Nairobi County. This research provides sufficient statistical evidence that the null hypothesis, project team competence has no significant effect on project implementation in public TVET institutions, is not likely to be true. On the contrary, this research has produced evidence demonstrating that project team competence significantly improves project implementation. The effect of team competence is in agreement with (Oh & Choi, 2020; Dumrak et al., 2020; Duale & Kaumbulu, 2023; Muriuki & Severina, 2021).

$H_0$3: Communication has no significant effect on project implementation in public TVET institutions in Nairobi County.

Findings from regression analysis revealed that communication has a strong, significant positive effect on project implementation in public TVET institutions, as confirmed by (B=.519, p<.05). This shows that practicing and improving the effectiveness of communication would result in project success by up to 0.519 units. As such, this research rejects the null hypothesis that communication has no significant effect on project implementation in public TVET institutions in Nairobi County. Statistical analysis shows that the significance level is below the cut-off value that was set (p<.05), providing statistical ground to reject the proposition that communication has no significant effect on project implementation. Therefore, the effect of communication is consistent with (Majeed, 2020; Mehari, 2022; Nyandongo & Davids, 2020; Nsefu et al., 2021).

$H_0$4: Risk management has no significant effect on project implementation in public TVET institutions in Nairobi County.

Regression analysis on the two variables unveiled a relatively strong, significant positive effect of risk management on project implementation in public TVET institutions in Nairobi County as proven by ($B=.436$, $p<.05$). This means that robust risk management frameworks translate positively on project implementation, yielding significant project outcomes. Therefore, this research rejects the null hypothesis that risk management has no significant effect on project implementation in public TVET institutions in Nairobi County. On the contrary, it produces evidence suggesting that alternate hypothesis is more likely to be true. The correlation between risk management and project implementation is consistent with (Sabir et al., 2020; Ahmadabadi & Heravi, 2019; Algremazy et al., 2023; Rodríguez-Rivero et al., 2020; Ferreira de Araújo Lima et al., 2019; Ebole & Paul, 2021).

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section of the study provides a summary of the findings accompanied by a discussion of the findings. It also delves into the conclusion of the study, recommendations, and recommendations for further research.

5.2 Summary of Key Findings

The main objective of this research was to examine the effect of project management practices on project implementation in public TVET institutions in Nairobi County. The research focused on the effects of four project management practices, including project planning, project team competence, communication, and risk management, as outlined below:

5.2.1 Effect of Project Planning on Project Implementation in Public TVET Institutions

The overall composite mean for project planning was 4.1556 at 0.8258 standard deviation, implying that respondents were, in general, of the opinion that project planning practices are adopted in project implementation in public TVET institutions. Qualitative data further reinforced this opinion with majority of the respondents (84.72%) being in agreement that project planning affects project implementation. They explained that planning is the foundation of effective project execution. In addition, inferential statistics revealed that project planning has a significant positive effect (r=.583, p=.000) on project implementation. This means that project planning is a significant determinant of project success in public TVET institutions.

5.2.2 Effect of Project Team Competence on Project Implementation in Public TVET Institutions

Descriptive statistics revealed a mean of 4.0500 at 0.7892 standard deviation for project team competence. This suggests that, overall, respondents were of the view that project teams at TVET institutions were competent. 81.94% of them further indicated that team competence influences project implementation, their main reasoning being that competent teams have the knowledge, skills, expertise, and experience for project implementation. Findings from inferential statistics showed that project team competence has a significant positive effect (r=.660, p=.000) on project implementation. This finding confirms that project team competence is a major attributing factor of project success at TVET institutions in Nairobi County.

5.2.3 Effect of Communication on Project Implementation in Public TVET Institutions

Findings from descriptive statistics produced an overall mean of 3.9556 at 0.8712 standard deviation, a value that fell between "neutral" and "agree" on the 5-point Likert scale. This shows that respondents were neutral but generally leaned towards agreement. Also, 80.56% of the respondents believed communication affects project implementation, citing that communication is the means for driving stakeholder engagement. Inferential statistics indicate that communication has a significant positive effect (r=.572, p=.000) on project implementation. This confirms that effective communication practices are essential in delivering projects in Nairobi County's public TVET institutions.

5.2.4 Effect of Risk Management on Project Implementation Public TVET Institutions

The composite mean for risk management was 3.8556 at 0.9332 standard deviation, implying that respondents maintained a sense of neutrality, with a significant number of them leaning towards agreement but not strongly. In other words, they were unsure of the adoption of risk management practices in TVET institutions. 79.17% of them responded with a 'YES' when asked if risk management affects project implementations. The main

rationale for choice is that risk management helps identify, prepare for, and mitigate risks, increasing the chances of project success. Inferential statistics indicated that risk management has a significant positive effect (r=.629, p=.000) on project implementation. This is proof that adopting a robust risk management framework is key to improving project success in public TVET institutions.

5.2.5 Combined Effect of Project Management Practices on Project Implementation in Public TVET Institutions

The study found that project planning, project team competence, communication and risk management affect project implementation in public TVET institutions as evidenced by the regression coefficients of: project planning (B=.371, p=.000), project team competence (B=.435, p=.023), communication (B=.519, p=.037), and risk management (B=.436, p=.026). Collectively, the four project management practices explain 64.2% of project implementation. The finding underscores the importance of ensuring proper project planning, building competent project teams, effective communication, and adopting a robust risk management framework to ensure projects are delivered successful in public TVET institutions.

5.3 Discussion of the Study Findings

This sub-section focuses on providing an in-depth discussion of the findings according to the overall and specific research objectives and in the context of hypothesis, theoretical framework, and literature review.

5.3.1 Effect of Project Planning on Project Implementation in Public TVET Institutions

This research found that project planning has a significant positive effect on project implementation. This means that project planning practices contribute positively to project implementation. Therefore, this research rejected the null hypothesis. Based on the findings, this research supports Hoshin's model of strategic planning, which maintains that the practice of planning is designed to produce optimal results with minimal or no waste by providing a clear line of sight. In addition, this research corroborates findings from the

previous body of empirical work (Mohsin, 2021; Chow et al., 2021; Ibrahim & Cross, 2020; Wafula et al., 2019). Effective planning translates positively into project implementation because it provides clarity and direction, ensures proper allocation of resources, allows for risk identification and mitigation, and enables efficient implementation of projects. In essence, planning lays the foundation for successful project implementation.

5.3.2 Effect of Project Team Competence on Project Implementation in Public TVET Institutions

Project team competence was found to have a significant positive effect on project implementation, indicating that competent teams greatly enhance successful project execution. Therefore, this research rejected the null hypothesis. The findings are in support of the PMCF theory that holds that personal and professional competency is a fundamental characteristic that causally relates to performance. Also, the findings from this research are in agreement with those of Oh and Choi (2020), Dumrak et al. (2020), Duale and Kaumbulu (2023), and Muriuki and Severina (2021). Project team competence reflects positively and significantly on project execution because competent teams possess the skills and expertise needed to perform their tasks effectively, usually have strong leadership, and the quality of their work is usually higher. Therefore, team competence is a critical factor in project success.

5.3.3 Effect of Communication on Project Implementation in Public TVET Institutions

The study observed that communication has a significant positive effect on project implementation. Therefore, the idea that communication effectively enhances project execution means this research rejected the null hypothesis. Also, the study supports the functional theory of communication, which posits that in a group setting such as a project team, effective communication practices empower effective decision-making. In the context of the literature review, the outcome of this research is consistent with those of Majeed (2020), Mehari (2022), Nyandongo and Davids (2020), and Nsefu et al. (2021). Effective communication is a vital aspect of project implementation because it facilitates

coordination and collaboration, allows quicker problem-solving, leads to conflict resolution, ensures clarity of goals and expectations, and ensures everyone is on the same page.

5.3.4 Effect of Risk Management on Project Implementation in Public TVET Institutions

The study found a significant positive association between risk management and project implementation, thereby rejecting the null hypothesis. Therefore, this research supports the risk management theory, which proposes steps to take to mitigate risks and achieve goals. This research also corroborates the findings of Sabir et al. (2020), Ahmadabadi and Heravi (2019), Algremazy et al. (2023), Rodríguez-Rivero et al. (2020), Ferreira de Araújo Lima et al. (2019), and Ebole and Paul (2021). Robust risk management translates positively on project execution because it helps identify potential risks and issues, develop strategies to mitigate these risks, reduce uncertainty in a project, improve stakeholder confidence, and ensure smooth, uninterrupted project execution.

5.3.5 Combined Effect of Project Management Practices on Project Implementation in Public TVET Institutions

The research found a significant positive association between the four project management practices and project implementation. The four project management practices (i.e., project planning, project team competence, communication, and risk management) explain a significant portion of project implementation in public TVET institutions. Having these practices in place ensures high-quality project outcomes that are delivered within budgetary and time constraints, leading to stakeholder satisfaction.

5.4 Conclusion

From the results of the study, it can be concluded that project management practices, i.e., project planning, project team competence, communication, and risk management, have a significant effect on project implementation. This means that adopting strategic steps towards better project planning, assembling competent project teams, enhancing communication, and implementing effective risk management frameworks all improve

project success greatly. This research concludes that project planning, project team competence, communication, and risk management are significant predictors of project implementation in public TVET institutions in Nairobi County.

5.5 Recommendations

From the main findings, the study recommends the following:

5.5.1 Recommendations for Policy

By highlighting the importance of project planning, project team competence, communication, and risk management in project management, this research offers insights into the standards for successful implementation of public projects. As such, it is recommended that the Ministry of Education, particularly the state department in charge of TVET institutions should consider formulating policies around these project management practices to guide and improve the effectiveness of project execution in public TVET institutions.

5.5.2 Recommendations for Practice

The study stresses the significance of ensuring proper planning, creating competent teams, effective communication, and risk management in the execution of projects in public TVET institutions. Understanding the value of and leveraging the power of these project management practices ensures project implementation success. Therefore, critical decision-makers in public TVET institutions in Nairobi County success should work towards adopting mechanisms for effective project management by taking into consideration the effects of project planning, project team competence, communication, and risk management.

5.6 Recommendations for Further Research

This research focused on four project management practices, including project planning, project team competence, communication, and risk management, which account for 64.2% of project implementation. This could mean that the rest of the percentage (35.8%) could be attributed to other project management practices not covered in this study, for example,

resource management, stakeholder management, change management, and evaluation and control. This research urges future research to look into other types of project management practices and how they influence project implementation in public TVET institutions in Nairobi County.

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APPENDICES

Appendix 1: Questionnaire

This survey aims to collect data on project management practices and their effect on implementation of projects in public TVET institutions in Nairobi County. Therefore, this questionnaire seeks to gather your views on the topic. The study is purely for academic purposes, and your participation is entirely voluntary. Your participation will remain anonymous, and your responses will not be linked to you.

SECTION A: BACKGROUND INFORMATION

1. What is your gender?

☐ Male ☐ Female

2. What is your highest level of education?

☐ Certificate ☐ Diploma

☐ Undergraduate degree ☐ Postgraduate degree

☐ Other

3. For how long have you been involved in projects?

☐ Less than 1 year ☐ 1-5 years

☐ 6-10 years ☐ Over 10 years

SECTION B: PROJECT IMPLEMENTATION

This section relates to your response regarding project implementation practices in public TVET institutions. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Statement	1	2	3	4	5
In the institution, projects are delivered within the established timelines.					
In the institution, project implementation is as per established quality standards.					
In the institution, project stakeholders have been satisfied with the implementation outcomes.					
In the institution, project implementation has been completed on cost.					
In the institution, project implementation goals have been achieved.					

In your considered view, does project management practices affect implementation of projects in your TVET institution? Yes ☐ No ☐

Please explain your answer above.

_____

_____

SECTION C: PROJECT PLANNING

This section relates to your response regarding project planning practices in public TVET institutions. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Statement	**1**	**2**	**3**	**4**	**5**
In the institution, necessary steps are taken to determine and document project goals.					
In the institution, necessary measures are taken to ensure projects are adopted within the budgets.					
In the institution, project tasks and assigned resources are well-defined before project execution.					
In the institution, resources are allocated effectively to facilitate project execution.					
In the institution, roles and responsibilities of project team are well defined.					

In your considered view, does project planning practices affect implementation of projects in your TVET institution? Yes ☐ No ☐

Please explain your answer above.

_____

_____

SECTION D: PROJECT TEAM COMPETENCE

This section relates to your response regarding project team competence in public TVET institutions. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Statement	1	2	3	4	5
In the institution, project leaders possess essential skills needed to lead team members.					
In the institution, project team members exhibit interpersonal skills needed to implement projects.					
In the institution, project team members have soft skills needed for successful implementation of projects.					
In the institution, project team members have skills, abilities and experience needed for successful project implementation.					
In the institution, project team members have personal attributes that contribute to project execution.					

In your considered view, does project team competence affect implementation of projects in your TVET institution? Yes ☐ No ☐

Please explain your answer above.

_____

_____

SECTION E: COMMUNICATION

This section relates to your response regarding communication practices in public TVET institutions. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Statement	1	2	3	4	5
In the institution, valuable insights on progress are analyzed and shared to facilitate decision-making.					
In the institution, there are effective feedback practices for the purpose of improving performance and quality of deliverables.					
In the institution, structured system that defines problems, identifies root causes, tests solutions and monitors results exist.					
In the institution, conflict resolution mechanisms are in place for solving conflicts during project execution.					
In the institution, appropriate communication channels are established to ensure effective communication during project implementation.					

In your considered view, does communication practices affect implementation of projects in your TVET institution? Yes ☐ No ☐

Please explain your answer above.

_____

_____

SECTION F: RISK MANAGEMENT

This section relates to your response regarding project risk management practices in public TVET institutions. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Statement	**1**	**2**	**3**	**4**	**5**
In the institution, mechanisms for detecting, describing and cataloguing project risks are adopted and used in project management.					
In the institution, risks are analyzed to determine the probability of occurrence and possible impact on projects.					
In the institution, plans are in place to prepare for, prevent, or lessen the effects of risks projects faces.					
In the institution, there are systems and procedures to monitor risks during project implementation.					
In the institution, policies and frameworks exists to ensure risks are effectively managed during project implementation.					

In your considered view, does risk management practices affect implementation of projects in your TVET institution? Yes ☐ No ☐

Please explain your answer above.

_____

_____

Thank You for Your Time