

**COST MANAGEMENT AND IMPLEMENTATION OUTPUTS OF GREENHOUSE
PROJECTS IN TRANS-NZOIA COUNTY, KENYA**

BY

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**A RESEARCH THESIS SUBMITTED TO THE SCHOOL OF BUSINESS AND
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DECLARATION

I declare that this research thesis is my original work and has never been submitted in any other institution of higher learning.

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DEDICATION

I dedicate this research thesis to my Husband Peter Karunyu, Children Caroline Karunyu, James Karunyu, Esther Karunyu ,Joseph Karunyu, Grace Karunyu and extended relatives for their sacrifice and support throughout the entire time of my research. May Almighty God bless you abundantly

ABSTRACT

Implementation of greenhouse projects has recently, attracted the attention of government agents. The concern is attributed to the failure rate among investors in the greenhouse projects. The common cause of project failure are embodied in time, cost, quality and content constrains. The positivism philosophical orientation guided the study. This study addressed the influence of cost management dimension in project implementation of greenhouse projects in Trans-Nzoia County, Kenya. The specific objectives of the study were to determine; the influence of cost resource planning on implementation, cost estimates influence on implementation, cost budget influence implementation and the influence of cost control in the implementation of greenhouse projects in five sub counties in Trans-Nzoia County. This study was guided by Control Theory. A descriptive survey design was used and target population of 394 was sample to give a sample size of 118 respondents which consisted of 100 greenhouse farmers and 18 agricultural professionals from the Ministry of Agriculture using Kothari formulae (30% of population). Random sampling technique was used to select greenhouse farmers while the agricultural extension officers were purposively selected on account of their knowledge and experience. Data was collected using questionnaires and interview schedules. Data was analyzed using descriptive and inferential statistics and presented using tables and graphs. The assumption of normality was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests, with p-values for each study variable exceeding the threshold of 0.05 (Cost resource planning, $p = 0.293$; Cost estimates, $p = 0.370$; Cost budgets, $p = 0.235$; Cost control, $p = 0.254$). This suggests that all study variables were normally distributed. Additionally, the analysis of variance showed that the effect on the dependent variable was statistically significant ($F = 39.558$; $p < 0.05$), indicating that the multiple regression model was appropriate for the data and confirming the overall validity of the regression model across all variables. The findings on the influence of cost resource planning indicated that the availability of labour force needed to work in the greenhouse was not a challenge. Cost resource planning positively and significantly impacted the implementation outcomes of greenhouse projects ($\beta=0.213$; $p<0.05$). Similarly, cost estimates also demonstrated a positive and statistically significant effect on the implementation of greenhouse projects ($\beta=0.185$; $p<0.05$). These estimates were closely linked to project cost management and played a substantial role in the successful implementation of greenhouse projects. Additionally, cost budgets were found to have a positive and statistically significant impact on the implementation outcomes of greenhouse projects ($\beta=0.229$; $p<0.05$). The cost estimates had a relationship to the project cost management and had great influence on the implementation and success of greenhouse projects. The cost budgets had a positive and statistically significant influence on implementation outputs of greenhouse projects with ($\beta=0.229$; $p<0.05$). The cost control had a positive and statistically significant influence on implementation outputs of greenhouse projects with ($\beta=0.145$; $p<0.05$). Cost controls are important to the implementation of greenhouse projects and have great effect on its success. Interview schedule results show that cost resource planning assisted greenhouse farmers to allocate resources to the projects at the time, cost estimation strategies help project managers forecast the resource necessary for each step of the project, cost budgeting allowed the project manager to determine the amount to spend on any given aspect of the project. A cost budget assisted in financial stability and cost control allowed the business to predict future expenses to reduce the chances of budget overrun. The study concludes the cost

management is a critical component in greenhouse project implementation. The study suggests that the Ministry of Agriculture should ensure the provision of sufficient extension officers to support greenhouse projects, focusing on effective project cost management practices for their successful implementation.

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LIST OF ABBREVIATIONS

CB	Cost Budgeting
CC	Cost Control
CE	Cost Estimates
PI	Project Implementation
PCM	cost management
PMBOK	Project Manual Book of Knowledge
PRP	Project Resource Planning

DEFINITION OF TERMS

Project: This term denotes an activity characterized by a defined start date, specific goals and conditions, allocated responsibilities, a budget, a plan, a set end date, and the involvement of multiple parties (as per PMBOK3).

Cost management: This concept involves applying procedures to track expenses and assess progress in projects or operations. It includes comparing actual spending against approved budgets and taking necessary actions to minimize costs (Augsburg, 2012).

Project implementation: This term describes the application of procedures to oversee expenses and progress in projects or operations, measure deviations from approved budgets, and take corrective actions to maintain costs within acceptable limits (Augsburg, 2012).

Resource planning: This refers to a business management technique often known as Enterprise Resource Planning (ERP). The Project Resource Management Plan is essential for identifying the necessary resources to successfully complete a project (Kent, 2007).

Cost estimate: This is an estimation of the total cost of a program, operation, or project, including distinct components that contribute to the overall value (Lewis, 2000).

Cost budget: This term refers to the projected expenditure as outlined in the budget. It serves as a benchmark for comparing actual spending and forecasting the final cost of a task (as per PMBOK3).

Cost control: This phase of cost management involves reviewing the assigned budget and monitoring expenditures to ensure they stay within the planned limits (Schwalbe, 2014).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter provides an introduction to cost management and the implementation outcomes of greenhouse projects. It starts with an overview, then covers the study's background, the statement of the research problem, the general and specific objectives, the research hypotheses, the study's justification, and its scope.

1.1 Background to the Study

Successfully implementing greenhouse projects in the horticultural sector is crucial for their success. Various factors, such as organizational culture, effective leadership, cross-functional integration, training, communication, and technology, can impact the implementation outcomes (Moons, Daems, & Van de Velde, 2021). The process of project implementation is complex, involving numerous variables such as resource management, operational systems, organizational culture, and leadership (Moons, De Pelsmacker, Pijnenburg, Daems, & Van de Velde, 2022). Globally, many projects have experienced significant delays and cost overruns, reflecting challenges across various fields and levels (Pijnenburg, Daems, & Van de Velde, 2022). These high rates of project failures highlight the need for enhanced cost management and project controls during the implementation phase.

The failure of many projects can be traced back to various factors, including delays and cost overruns (Simanjuntak & Agung, 2018). Other empirical studies have also identified and documented factors that influence project implementation outcomes. Cost management is a discipline that focuses on making decisions and implementing strategies to ensure project success. Key challenges in project implementation can stem from the complexity and the involvement of multiple parties in execution. Delays in projects have been linked to issues such as poor design, negligence, change orders, weather conditions, site conditions, delivery timelines, economic factors, and increases in quantities, among others (Morakinyo, Okunola, Ogunrayewa, & Dada, 2015). Overall, delays can have a disruptive effect on project implementation, leading to cost overruns.

The demand for large-scale projects has surged due to factors like a growing global population, aging infrastructure, increasing urbanization, and the continuous development of emerging markets. This heightened demand creates challenges for owners, investors, and other stakeholders in effectively delivering essential infrastructure projects (Oyewobi, Jimoh, Ganiyu, & Shittu, 2016). As highlighted by Asiedu and Adaku (2019), capital projects have grown more complex and challenging, mirroring the complexity of global markets. The strategies that worked in the past are no longer sufficient for today's needs and will likely be inadequate in the future, emphasizing the necessity for innovative approaches in project execution. Project success can be viewed from various perspectives, one of which is the behavior of the project leader, which can significantly influence the perceived and actual success of project teams (Williams Jr, Novicevic, & Ammeter, 2015).

In recent times, organizations have increasingly adopted a project-based approach, where work is divided into a series of projects aimed at achieving organizational strategies and adding value (Simanjuntak, 2018). Effective management practices are crucial for successful project implementation, and understanding the factors that lead to project cost overruns is vital. Key indicators of cost overruns include cost estimation, implementation processes, employment relationships, project documentation, materials, labor, equipment, project financing, implementation timelines, economic feasibility, and the natural environment (Simanjuntak, 2018).

Dwivedi et al. (2015) noted that when parallel teams fail to anticipate potential issues, the lack of alignment can result in project failure. Moreover, neglecting to accurately document the costs associated with various project activities can negatively impact implementation outcomes (Miri & Khaksefidi, 2015). Core cost management activities such as forecasting, planning, control, cost analysis, and assessment are essential. Additionally, attention must be given to investment decisions, project selection, implementation, and evaluation, as these are fundamental to project success (Johnson & Babu, 2020).

Many projects are currently taking longer than initially planned, which has become a growing concern among stakeholders. This situation leads to stress due to factors such as accumulating interest rates from commercial banks, cost overruns, inflation, pressure from

clients (sponsors), and the potential for disputes and claims, which may result in litigation or arbitration (Osazuwad, 2010). Smith (2011) notes that large greenhouse projects are inherently complex, requiring proper planning, effective communication with clients, and accurate assessment of their needs and requirements. The briefing process is crucial for the successful implementation and delivery of greenhouse projects, but various limitations can hinder the effectiveness of these undertakings, often leading to significant delays (Piggott-McKellar, McNamara, Nunn, & Watson, 2019). Delays can cause project funds to fall short, resulting in cost and time overruns. Arogo (2015) observed that some projects were abandoned before implementation due to challenges related to cost, time, poor planning, and safety. These issues, among others, have motivated this study, which evaluates the influence of cost management on the implementation outcomes of greenhouse projects.

1.2 Statement of the problem

The process of implementing project outputs is intricate and often necessitates project managers to facilitate planned organizational changes by fostering environments where these changes can thrive and take root (Martinsuo & Hoverfält, 2018). Several factors influence the success of project implementation outputs, including comprehensive and collective attention to various aspects, such as human resources, budgetary considerations, and technical elements. Effective project scheduling, stakeholder consultation, and a focus on organizational structures through strong management and leadership are essential to ensure that the project's critical success factors are achieved (Kerzner, 2017). However, without strict adherence to these factors, many projects fail to reach full implementation.

The implementation of greenhouse projects has recently become a significant concern for both communities and farmers due to various challenges (Rahman, Khan, Field, Techato, & Alameh, 2022). Key factors contributing to project failure can be categorized into four main dimensions: time, cost, quality, and content. The success or failure of greenhouse projects is also heavily influenced by the involvement of end users and stakeholders. Project failures can lead to significant repercussions, impacting individuals, communities, and organizations. More specifically, time delays and cost overruns are frequently seen as clear signs of greenhouse project failures (Jong, Vignetti, & Pancotti, 2019).

Regardless of the sector, project failures—whether in the public or private sphere—lead to substantial losses for the community and the economy at large. Delays and deviations from initial cost plans are prevalent, yet efforts to mitigate these failures in greenhouse projects have been minimal (Wendt, 2019). This study aims to address this gap by examining the relationship between cost management and implementation outcomes in greenhouse projects in Trans-Nzoia County, Kenya.

1.3 Purpose of the Study

The purpose of this study was to assess how cost management influences implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:

- i. To assess the influence of cost resource planning on implementation outputs of greenhouse projects.
- ii. To evaluate the influence of cost estimates on implementation outputs of greenhouse projects.
- iii. To determine the influence of cost budget on implementation outputs of greenhouse projects.
- iv. To examine the influence of cost control on implementation outputs of greenhouse projects.

1.5 Hypotheses

H₀₁: There is no statistical significant relationship between cost resource planning influence and implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya.

H₀₂: There is no statistical significant relationship between the cost estimates influence and implementation output of greenhouse projects in Trans-Nzoia County, Kenya.

H₀₃: There is no statistical significant relationship between cost budgets influence and implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya

H₀₄: There is no statistically significant relationship between cost control influence and implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya.

1.6 Significance and Justification of the Study

The successful implementation of greenhouse projects within the horticultural sector is crucial for achieving desired outcomes. Various factors, such as organizational culture, supportive leadership, cross-functional collaboration, training, communication, and technology, can significantly influence the outcomes of project implementation (Moons, Daems, & Van de Velde, 2021). The process of implementing a project is complex and involves managing multiple variables, including resource allocation, operational systems, organizational culture, and leadership (Moons, De Pelsmacker, Pijnenburg, Daems, & Van de Velde, 2022). Numerous examples worldwide illustrate how projects in various sectors have encountered significant time and budget overruns, highlighting the challenges in project execution (Pijnenburg, Daems, & Van de Velde, 2022). The high rate of project failures underscores the importance of enhancing cost management and project controls during the implementation phase.

1.7 Scope of the Study

The research centered on cost management and the outcomes of greenhouse project implementation in Trans-Nzoia County, Kenya. Primary data was gathered through questionnaires distributed to farmers and interviews conducted with agricultural officers. The analysis focused on horticultural greenhouse farmers and agricultural officers who offer technical support to the farmers. The study was conducted in Trans-Nzoia County, Kenya, during the period from January to March 2021.

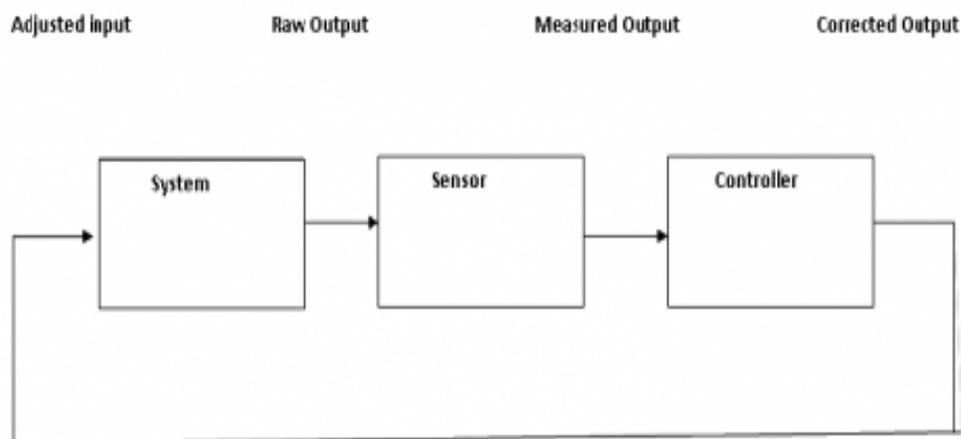
1.8 Limitation and Delimitations of the Study

One of the limitations was vast nature of the area, data collection took longer than the expected time. This was overcome by rescheduling the process to reach all the respondents (Baimyrzaeva, 2018). Another limitation was that respondents were busy and had limited time in responding to research tools. The researcher addressed the limitation by allowing respondents additional time to answer the research questions.

1.9 Theoretical Framework

This study is underpinned by Control Theory, a framework developed by Ouchi (1979) and Eisenhardt (1985). Control Theory focuses on various methods of cost management to ensure that organizational members' actions align with the organization's goals and objectives (Bell, 2019). The theory is based on the idea that controllers and controlees often have different interests, and these differences are managed through the controller's control mechanisms (Widl et al., 2018). Control mechanisms can be categorized into formal and informal types. Formal control includes behavior control, which involves established roles, procedures, and associated rewards, and outcome control, which links rewards to specific goals and results. Informal control encompasses clan control, which relies on shared values, beliefs, and practices within a group (e.g., hiring, training, and socialization), and self-control, which is driven by individual goals and is facilitated through empowerment, self-management, and personal goal-setting (Luthaus, 2012).

A cybernetic model of control theory



Sources: (Barrows & Neely, 2012)

The theory highlights the importance of having a well-defined cost framework, clear task division, and appropriate delegation of authority to administrators based on their roles (Gersup, 2010). Alongside scientific management, Scott notes that administrative theory concentrated on management functions and sought to establish overarching principles to

streamline organizational activities (Talukhaba, 2011). Administrative theorists aimed at enhancing productivity from a top-down approach.

In contrast, control theory is based on the notion that an organization must adapt to environmental changes rather than adhering to a rigid bureaucratic structure. The systems approach views an organization as a network of interconnected and interdependent subsystems (Pinto & Covin, 2013). It sees organizations as systems comprising distinct components, linking processes, and goals, where integration depends on shared norms, values, and beliefs. Oguulana and Bach (2012) and Yu and Chan (2010) emphasize that organizations, as systems, consist of these key elements and recognize the dynamic nature of the organizational environment.

In the context of cost management for greenhouse project implementation, the project manager or farmer, along with the project teams, may have different interests. To effectively manage costs and schedules during project execution, the project manager must adopt various strategies to ensure team adherence. Successful implementation of greenhouse projects requires thorough planning of cost resources, accurate cost estimation, budgeting, and control practices. Moreover, control mechanisms and regulations should align with both the overarching construction objectives and the specific goals of individual teams.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides a comprehensive review of the literature on cost management and project implementation. It begins with an introduction, followed by a discussion of key concepts relevant to the study. The chapter also delves into various viewpoints on the elements influencing the effective execution of greenhouse projects, analyzes the connection between independent and dependent variables, outlines the conceptual framework, and wraps up with a summary and identification of research gaps.

2.1 Concept of Project Implementation

Nutt (1996) defines implementation as a series of actions carried out by organizational members to plan and oversee change processes, ensuring that compliance is achieved for the successful adoption of changes. Project managers utilize Nutt's (1996) project implementation theory to facilitate planned organizational changes by creating environments conducive to sustaining and embedding these changes. However, defining the procedural steps for project implementation remains challenging due to its pervasive nature. According to Slevin and Pinto (1987), implementing a project successfully is often difficult and complex.

Within the framework of project implementation theory, various factors are recognized as crucial to the success of project implementation, which also apply to CDF-funded projects. These factors include escalating project costs, bureaucratic delays in contractor payments, and frequent leadership changes within both the legislative body and CDF Committees (Atieno, Mutui, & Wabwire, 2019). In line with project implementation theory, critical success factors must be addressed for the effective execution of CDF-funded projects. Key recommendations include securing support from the legislator, establishing a detailed project schedule, engaging the community as key stakeholders, and ensuring that CDF-funded project committees comprise professionals with the necessary skills and resources to address challenges during project implementation.

2.2 Concepts of Cost management and implementation outputs

2.2.1 Implementation outputs

Implementation outputs are the direct and immediate results of a project. Slevin and Pinto (1987) developed a ten-factor model that outlines the key elements for successful project implementation. These ten factors form the foundation of a diagnostic tool used to measure the relative strength of each aspect within the project implementation profile (Alphonse, 2020). The first factor is the Project Mission, which involves the fundamental purpose of the project. It's crucial that the goals are clearly defined from the outset, as their clarity and feasibility are essential for success. A well-understood project mission ensures that the objectives are both found and understood (Alphonse, 2020).

The second factor is Top Management Support, which is critical in distinguishing between a project's success or failure. Thesing, Feldmann, and Burchardt (2021) emphasize that project management relies heavily on top management for authority, direction, and support, serving as the channel through which organizational goals are implemented. The third element is the Project Schedule Plan, which entails developing a comprehensive plan detailing the necessary stages of the implementation process. Pinto and Slevin (1989) describe this plan as specifying timeframes, milestones, labor, and equipment needs.

The fourth factor is Client Consultation, which has gained prominence in ensuring successful project execution. Anyanwu (2003) discovered that the extent of client engagement during the implementation phase notably affects their level of support for the project. Client consultation is necessary throughout the project life cycle, and neglecting it at any stage can be detrimental (Schultz, Pinto, & Slevin, 1987).

The fifth factor is Personnel, highlighting the importance of effectively utilizing human resources in both private and public organizations (Dike & Onyekwelu, 2020). However, a common issue arises when project team members are selected without adequate consideration of their skills, which can hinder successful implementation. The sixth factor is Technical Tasks, which involves the need for staff with the necessary technical expertise and suitable technology to perform their duties effectively (Kokina & Blanchette, 2019).

The seventh factor is Client Acceptance, which must be actively managed like any other aspect of project implementation. Kerzner (2017) stresses the importance of involving users early in system development to enhance the chances of acceptance. However, Jordan et al. (2023) argue against using intermediaries between the implementation team and potential users, suggesting that this approach can hinder client acceptance.

The eighth factor is Monitoring and Feedback, encompassing the process of project control. This process guarantees that essential team members receive ongoing updates about the project's progress in relation to initial forecasts, enabling necessary adjustments. The ninth factor is Communication, which plays a crucial role in fostering an environment that supports successful project execution. According to Ika and Pinto (2022), effective communication is crucial not just within the project team but also between the team and the wider organization, as well as with clients. This ensures that feedback and technical assessments are effectively communicated to all relevant stakeholders.

The final factor is Troubleshooting, which acknowledges that not all problems can be anticipated during the initial planning stages. Jean-Jules and Vicente (2021) recommend that teams include technically competent individuals tasked with addressing issues as they arise and anticipating potential challenges in the implementation process.

2.2.2 Cost management

Cost management involves the processes required to complete a project within its allocated budget. These processes include resource planning, which identifies the necessary resources (such as personnel, equipment, and materials) and their quantities for project tasks. Cost estimating involves approximating the costs associated with these resources, while cost budgeting allocates the total estimated costs to specific work items. Cost control is focused on managing any changes to the project budget (Subramani & Karthick, 2018).

These processes interact with each other and other areas of knowledge. Depending on the project, different individuals or groups may be responsible for each process, which typically occurs at least once in every project phase. Although cost management mainly concerns the costs of resources needed for project tasks, it should also consider how project decisions impact the cost of the project's final product. For example, reducing the

number of design reviews might lower the initial project cost but could increase the long-term operating costs for the customer. This comprehensive approach is known as life-cycle costing (PMBOK, 2011).

In many industries, forecasting and analyzing the potential financial performance of the project's product are handled separately from the project management itself. However, in certain cases, such as capital facilities projects, these tasks are integrated into cost management. When included, cost management expands to incorporate additional processes and techniques, such as return on investment, discounted cash flow, and payback analysis (Nicholas & Steyn, 2017).

Cost management must also address the information needs of different stakeholders, as they may assess project costs in various ways and at different stages. For example, the cost of a procurement item might be recorded when it is committed, ordered, delivered, incurred, or documented for accounting purposes (PMBOK, 2011).

Cost is a crucial key performance indicator (KPI) in project management. Effective planning, estimating, budgeting, controlling, and managing of funds are essential for monitoring costs and ensuring that the project stays within its approved budget (Kivila, Martinsuo, & Vuorinen, 2017). Project cost management (PCM) plays a vital role in project planning, involving tasks such as appraisals, job and work controls, field data collection, accounting, and design (Shinozaki, Tsukahara, Yokota, & Sakai, 2016). As the project advances, job control uses data from estimates and field information to assess cost and productivity within PCM.



Figure 2.1: cost managementon implementation outputs of greenhouse projects.
Source: Cost Engineering Consultancy, 2017

When initiating a project, prioritizing cost management can help avoid common pitfalls. Cost overruns are likely if project expectations are not clearly defined from the outset or are altered during implementation. Inaccurate cost estimations may occur if thorough research is not conducted, leading to a misleading sense of the project’s sustainability and success, particularly in road construction (Schwalbe, 2014).

Research has shown that managing people effectively is more critical to project success than addressing technical issues (Gulati, Reaiche, Baroudi, & Gunawan, 2020). Despite this insight, limited research focuses on the softer aspects of project management, such as managing the human element (Gulati et al., 2020).

Project managers often have no control over who their project sponsor is. Sponsors typically either select themselves or are chosen based on their position within the organization. If a project manager recognizes that a sponsor lacks enthusiasm for the project or is reluctant to say no to scope expansions, they should compensate by engaging more assertive or invested steering group members to ensure project objectives are met. Governance in this context refers to the leadership and direction provided by the group. Effective project leadership entails articulating and maintaining a shared vision and mission among all group members across the organization's activities. This is achieved when the group collaborates closely with management to drive project success (Bryson, 2018).

Management systems encompass the mechanisms used to coordinate activities and facilitate processes within an organization. These systems include organizational structure, culture, planning, personnel management, administrative procedures, risk management, conflict resolution, and reporting. Management is the process of achieving organizational goals through the coordinated execution of five key functions: planning, organizing, staffing, directing, and controlling. This framework aligns with governance principles, which significantly influence project outcomes (Kovács & Falagara Sigala, 2021).

A lack of management skills poses a significant challenge for many organizations, as the senior management team's size is inherently limited. Deficiencies in areas such as finance, human resources, and marketing can lead to problems if not adequately addressed. The solution is to identify these areas of weakness and develop a plan to address them, thereby enhancing governance. Effective governance increases the likelihood of project success, while poor governance raises the risk of failure (Alvarenga, Branco, Guedes, Soares, & Silva, 2019).

Accountability refers to the responsibility for the use of resources, decision-making, and the results of exercising authority and fulfilling official duties, including those delegated to subordinate units or individuals. In project management, managers must demonstrate to stakeholders that the project is effective and aligns with planned outcomes, legal requirements, and fiscal constraints. In learning-oriented organizations, accountability can also be assessed by how managers utilize monitoring and evaluation tools and findings. Accountability provides stakeholders with a clear picture of the project's performance, which can influence its trajectory either positively or negatively (Kahvandi et al., 2019).

To ensure successful project implementation, a project manager should possess several key skills and competencies, including flexibility, adaptability, a proactive leadership approach, and strong communication abilities. The manager should also be decisive, able to balance technical solutions with time, cost, and human factors, and dedicate most of their time to planning and controlling the project. Additionally, the ability to identify problems, make informed decisions, and manage time effectively is crucial (Alvarenga et al., 2019).

2.3.1 Resource Planning and implementation output of greenhouse Projects

Resource planning, often referred to as Enterprise Resource Planning (ERP), is a business management technique essential for identifying the resources needed to complete a project successfully (Chofreh, Goni, & Klemes, 2017). A well-executed resource plan enables individuals to determine the necessary labor, materials, and equipment required for project completion. This plan summarizes the resource levels needed and impacts project sustainability (Mellor, Hao, & Zhang, 2014). Additionally, a detailed resource plan facilitates obtaining approval from sponsors, aids in budgeting and forecasting, and supports project sustainability (Kahvandi, Saghatfroush, Mahoud, & Preece, 2019).

Funding, as defined by Cordova, Dolci, and Gianfrate (2015), refers to providing financial resources to support a need, program, or project. Generally, 'funding' is used when internal reserves are used, while 'financing' applies to external or borrowed funds. Financial shortages are a major challenge and can create a cycle of difficulties, especially when managing cash flow and raising additional funds becomes problematic. Raising substantial funds often requires significant effort, and many organizations struggle with fundraising.

Chan, Darko, Olanipekun, and Ameyaw (2018) note that financing issues, design changes, delays in contractor payments, and inadequate greenhouse management are key causes of delays in greenhouse projects. They argue that investments in facilities represent short-term costs that yield long-term benefits. Consequently, owners must secure capital to cover initial costs.

Project financing is crucial for progress, and its costs can be substantial. As such, project finance is a critical component of project management. It also affects other stakeholders, such as general contractors and material suppliers, who face their own financing challenges if not fully compensated by project owners (Javed, Thaheem, Bakhtawar, Nasir, Khan, & Gabriel, 2019).

Smith, Jaggar, and Love (2016) highlight the strong connection between cost and design. Managing a project's budget and ensuring it provides value for money requires attention to both capital and operational expenses. Incorporating whole-life costing into the design phase is crucial, as it helps to balance initial capital outlays with anticipated long-term

costs (Bosire, 2012). Bayguzina, Galimova, and Sukiasyan (2020) note that project finance is a subset of corporate finance. When evaluating multiple projects simultaneously, the overall cash flow requirements pose a significant financing challenge. Effective cost management is vital, as high costs can lead to increased caution, especially from clients (Ashworth, 2014). The primary issue in project finance is managing the gap between expenditures and revenue. Accurate cash flow estimates based on project plans and cost estimates are vital for addressing this challenge.

Economic crises can lead to project abandonment (Arogo, 2015). Other adverse economic conditions include rising raw material prices, unreliable financial systems, and high-interest rates, all of which can discourage investment and contribute to project failures due to poor management and credibility issues.

Constraints in the greenhouse value chain, such as infrastructure limitations, outdated practices, inadequate human resources, and financial access issues, are significant barriers to improving product quality and quantity (Verrier, Rose & Caillaud, 2016). Burchi et al. (2018) argue that integrating all project elements within the same organization improves planning and management, ensuring professionalism throughout the greenhouse project.

Effective resource planning, encompassing financial, human, and material resources, is crucial for successful greenhouse project implementation. Daud et al. (2018) stress that comprehensive resource planning ensures the availability and efficient use of all necessary components, reducing the risk of delays and cost overruns. Aligning resource planning with environmental sustainability goals is also important. Abid et al. (2019) note that incorporating sustainable practices, such as energy-efficient technologies and water conservation, enhances long-term project viability.

Technology plays a significant role in resource planning and greenhouse project implementation. According to Jones and Wainwright (2020), advanced technologies like automated climate control, precision irrigation, and data-driven decision tools improve operational efficiency and productivity. While adopting such technologies requires careful planning and investment, it ultimately leads to greater efficiency, sustainability, and profitability in greenhouse projects.

2.3.2 Cost estimation and implementation output of greenhouse Projects

Riahi, Van Vuuren, Kriegler, Edmonds, O'Neill, Fujimori, and Tavoni (2017) define cost estimation as the process of determining the cost associated with a program, operation, or project. Cost estimates possess an overall value and may include various specific components. These estimates can be derived from internal costs or historical data from similar projects, often using methods like three-point estimation—optimistic, pessimistic, and sometimes statistical analysis—to predict the overall project cost. Essentially, cost estimation involves assigning a value to project activities and assets, using diverse techniques to forecast their costs. This process is essential for forecasting the amount, expense, and pricing of the resources specified in the project's scope (Riahi et al., 2017). Cost estimation entails deconstructing a project into smaller, more manageable components, facilitating the allocation of resources and cost calculations. Methods like the Work Breakdown Structure (WBS) and Cost Breakdown Structure (CBS) are frequently used for this purpose. Additionally, a comprehensive Basis of Estimate (BOE) document provides a detailed report on the assumptions, inclusions, exclusions, and accuracy of the cost estimates, which is essential for maintaining project sustainability (Elghaish, Abrishami, Hosseini, & Abu-Samra, 2020).

Mubarak (2015) explains that project scheduling represents the plan to deliver the project scope over time, often illustrated by a chart of work elements and their associated dates. Pica (2015) highlights that accurate cost prediction is crucial for budget creation and resource allocation throughout a project's lifecycle. Kumar and Sharma (2021) noted that estimates for greenhouse activities have been revised from previous studies, with an emphasis on conservative design figures to ensure financial viability. Initial estimates for water use and growth projections were provided, with updates reflecting increased per capita water use by 2020.

Shen, Wei, and Xu (2018) found that greenhouse operators generally have reliable cost estimates for heating with natural gas. Estimating the time spent by operators and their families, along with costs for production materials and supplies, is also essential.

Cerezo-Narvaez, Pastor-Fernandez, Otero-Mateo, and Ballesteros-Perez (2020) argue that WBS guides project managers in planning and executing work more efficiently. The WBS

helps manage time-limited activities, fixed costs, and responsibilities, ensuring that the project meets stakeholder needs.

Chofreh, Goni, Shaharoun, Ismail, and Klemes (2014) define planning as the process of determining, analyzing, and organizing resources for a greenhouse project, while programming involves sequencing those resources. Accurate short-term planning is vital to maintaining progress and control, as improper planning can lead to frequent schedule adjustments.

Chofreh et al. (2014) also note that the greenhouse industry often struggles with delays and may resort to subjective delay analysis or adding contingencies. This can lead to failed projects due to missed deadlines, high interest rates, and commercial pressures.

Arogo (2015) identified several factors contributing to cost overruns on greenhouse projects, such as inadequate planning, investor inexperience, inflation, and fraudulent practices. Proper facility financing often involves various long- and short-term strategies, with limited borrowing options during construction.

Voulgaris (2017) points out that many projects fail due to uncertainties related to weather, materials, equipment, financial issues, and other factors. Addressing controllable issues and incorporating these considerations into project specifications can help prevent future failures. Overall, accurate cost estimation is crucial for successful greenhouse project implementation, influencing planning, budgeting, and management. Despite careful planning, unforeseen factors can cause cost overruns, highlighting the need for effective risk management strategies alongside precise cost estimation to ensure project success.

2.3.3 Cost Budgeting and implementation output of greenhouse Projects

Cost budgeting in project management involves estimating and allocating anticipated expenditures to various project tasks. This process sets a financial baseline that helps track and compare actual spending against projected costs. Essentially, cost budgeting is the process of compiling anticipated costs for different tasks or work packages to create a cost baseline, which serves as a reference point for evaluating actual expenses and managing the project's financial health (Mburu, 2017).

Budgets can be created for different types of expenses, including project costs or product enhancement costs. Initial cost assessments may use comparative or parametric methods, which are refined as more information about the project's scope, schedule, and resources becomes available. Approved estimates then establish a standard cost baseline, which is used to monitor financial progress and ensure project sustainability. Hansen, Mowen, and Heitger (2021) describe budget variance analysis as a key tool in this process, as it measures discrepancies between budgeted and actual costs. Positive variances, where actual costs are below the budget, are seen as favorable, whereas negative variances, where actual costs exceed the budget, signal potential financial problems that need addressing.

Ballantyne et al. (2015) note that predicting future costs with complete accuracy can be challenging due to budget variances caused by errors, changing business conditions, and unmet expectations. Errors may arise from incorrect calculations, faulty assumptions, or unreliable data. Business conditions such as shifts in the economy, fluctuations in raw material costs, or new competitors can also affect budgets. Additionally, political changes and regulatory developments that are not accurately forecasted can impact budget accuracy. Effective cost budgeting also includes estimating costs, establishing a fixed budget, and monitoring actual expenditures throughout the project.

Predicting future costs with absolute precision is inherently difficult, and budget deviations frequently occur due to various factors. Ballantyne et al. (2015) point out that such variances can arise from mistakes, shifts in business conditions, and unmet expectations. Errors might be due to inaccuracies in the budgeting process, such as calculation mistakes or flawed assumptions. Furthermore, external factors like economic changes, fluctuations in raw material prices, or the emergence of new market competitors can contribute to budget deviations. Political changes and government regulations, if not accurately anticipated, can also add complexity to the budgeting process. Thus, it is crucial for project managers to continuously oversee and adjust the budget as needed, addressing these potential variances to maintain the project's financial health and alignment with its goals.

2.3.4 Cost Control and implementation output of greenhouse Projects

Cost control encompasses the examination of methods used to identify discrepancies between actual and planned expenses, the analytical procedures employed to determine the causes of these variances, and the corrective actions implemented to address discrepancies between actual and budgeted costs (Goh & Hall, 2013). Essentially, cost control involves processes aimed at identifying and reducing business expenses to enhance profitability. Fleming and Koppelman (2016) define cost control as a segment of the cost management process that involves adjusting the budget and monitoring expenditures. The project manager plays a crucial role in managing expenses, ensuring that the budget is appropriately allocated and used efficiently within the established financial boundaries. This responsibility starts with the estimation of costs. Business owners compare actual results to planned expectations and take corrective action if actual expenses exceed forecasts. Conversely, cost variance represents the gap between planned and actual costs, and managers use variance analysis to pinpoint areas needing adjustment (Schwalbe, 2014).

Organizations are required to perform variance analysis monthly for all revenue and expense accounts. Cost control focuses on implementing procedures to track expenses and performance in road construction or manufacturing projects. This process includes measuring discrepancies from the approved budget and taking corrective actions to reduce costs. Effective cost control plays a crucial role in a company's cash flow and profitability, enhancing the sustainability of projects (Augsburg, 2012).

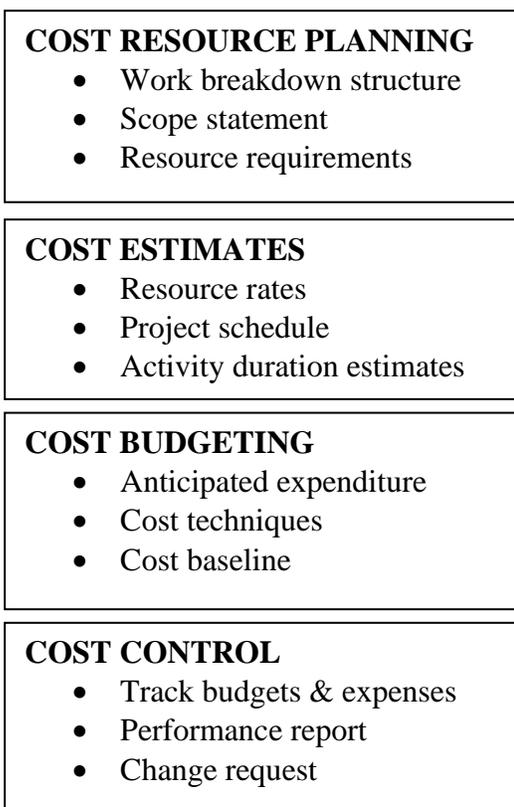
Arogo (2015) highlighted that effective cost control involves comparing cost performance, progress, and material quality with the project plan. A robust cost control system should enable managers to monitor current cost levels, compare them with established standards, and implement corrective actions to keep costs within acceptable limits. Progress control involves regular monitoring, charting, evaluating, and reviewing to ensure project milestones are met. Problems with managing time and costs can result in delays and budget overruns (Shehu et al., 2014).

2.4 Conceptual Framework

The conceptual framework for the study, illustrated in Figure 2.1, demonstrates the relationships between variables. Drawing from the literature review, the framework suggests that changes in the independent variables—such as resource planning, cost estimation, cost budgeting, and cost control—affect the results of greenhouse project implementations. Furthermore, it includes indicators for the dependent variables, which will be used to evaluate how these independent variables influence the greenhouse project implementation process.

INDEPENDENT VARIABLES

Cost Management



DEPENDENT VARIABLE

Implementation outputs

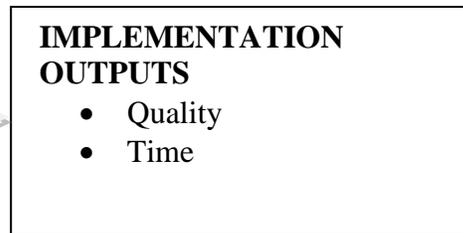


Figure 2.2: Conceptual Framework

Source: Author: (2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in the study. It starts with an overview, followed by a discussion of the research design, target population, sample size and selection procedures, data collection techniques and instruments, and the validity and reliability of the data collection tools. Additionally, the chapter addresses the data analysis methods and the ethical considerations involved in the research.

3.2 Research Design

A descriptive survey design was chosen for this study because it allows for the collection of data from a broad population, which makes it impractical to directly observe the characteristics of each individual. Descriptive research focuses on identifying and detailing the current state of phenomena and aims to outline behaviors, attitudes, values, and characteristics (Creswell & Creswell, 2017). Queiros et al. (2017) highlight that this design is an effective approach for collecting descriptive data about population characteristics, which helps in understanding existing conditions and practices. Masengeli (2020) highlights that the descriptive design was selected because it supports the collection of both quantitative and qualitative data, making it possible to explore the relationships between variables. This method allowed the researcher to derive statistical insights into the factors influencing the outcomes of greenhouse projects.

3.3 Target Population

The study aimed to include all greenhouse farmers and agricultural officers working for the Ministry of Agriculture. Specifically, the researcher focused on 334 greenhouse farmers and 60 agricultural extension officers from the Ministry of Agriculture in Trans-Nzoia County.

Table 3.1 Target population

Category	Target population
Agricultural extension officers	60

Farmers	334
Total	394

Source: Ministry of Agriculture

3.4 Sampling Technique and Sample Size

Guetterman (2015) defines a sample size as a subset of the target population selected through specific procedures to represent the entire group. Sampling aims to understand the overall characteristics of the population by examining observable traits in the sample. In this study, data were collected from farmers using a stratified simple random sampling technique and from agricultural extension officers using purposive sampling across the five sub-counties of Trans Nzoia County: Cherengany, Kwanza, Saboti, Endebess, and Kiminini.

Cooper and Schindler (2003) suggest that for statistical generalization, a sample should include at least 30 elements. Similarly, Kothari (2004) notes that a sample comprising about 10% of the population can provide reliable data if chosen correctly. Given the high homogeneity within the different strata, the study included 30% of the target projects.

Table 3.2 Sample Size

Category of respondents	Population	30% of population	Sample size
Green House Farmers	334	30% X 334 = 100	100
Agricultural extension officers	60	30% X 60 = 18	18
TOTAL	394	30% X 394 = 118	118

The study comprised a total of 118 participants. To gather data, a stratified simple random sampling method was employed to select 100 greenhouse farmers, while purposive sampling was used to choose 18 agricultural extension officers. This method ensured that every individual in the population had an equal chance of being selected. It guarantees that each person or item has the same probability of being chosen in each sampling round (Bhardwaj, 2019). Key informants were chosen from each of the five sub-counties in Trans-Nzoia County, with the 18 extension officers selected based on the extensive area of the sub-counties and their significant experience in the greenhouse sector.

3.5 Data collection instruments

Data was collected using questionnaires and interview schedules.

3.5.1 Questionnaires

Data collection from farmers was conducted using questionnaires. The data collected was quantitative, meaning it was measured numerically rather than described in natural language (Mwatha, Muema, & Munyoki, 2017). They are particularly suitable for this research because they facilitate the collection of data from a diverse group while maintaining confidentiality, saving time, and reducing bias due to their structured paper format (Ranney et al., 2015). The questions in the questionnaires were developed according to themes highlighted in the literature review and aligned with the research objectives. To allow respondents ample time to fill them out, the questionnaires were collected one week after being distributed.

3.5.2 Interview schedules

Data were gathered from agricultural extension officers using interview schedules. According to Mohajan (2018), individuals often prefer oral communication over written forms and are likely to offer more comprehensive and candid responses during interviews compared to questionnaires. This method allows researchers to engage deeply with subjects and explore issues thoroughly. Typically, interviews involve a direct exchange between a researcher (interviewer) and a participant, where the interviewer poses a series of questions. This approach facilitates the collection of extensive qualitative data, whether through structured interviews or informal discussions (Lune & Berg, 2017).

3.6.1 Validity of Instruments

Instrument validity pertains to how effectively an assessment tool measures the intended variable (Kothari, 2004). In quantitative research, the validity of an instrument can be assessed using the test-retest method, which involves administering the same test at two different times. This form of validity examines how accurately the data obtained with the instrument represents the specific domain or content of the concept being studied (Creswell & Creswell, 2017). Furthermore, the instrument's effectiveness in measuring and defining the targeted concept is also evaluated by a project management expert.

3.6.2 Reliability of Instruments

Reliability is defined as the degree to which measurement tools produce consistent outcomes (Kothari, 2004). To evaluate the reliability of a research instrument, a pre-test was conducted by administering the instrument to a comparable group of respondents prior to engaging the actual study participants. The researcher performed a pilot test with greenhouse farmers in Uasin Gishu County. The 'Cronbach's alpha coefficients was employed to determine the reliability of the research instruments, resulting in a coefficient of 0.7. According to Kothari (2004), a reliability score exceeding 0.7 is deemed acceptable. Additionally, Kothari (2004) noted that increasing the number of items in the instrument generally improves the reliability estimate of the data.

3.6.3 Reliability Test Results

The pilot data analysis indicated that all variables exhibited Cronbach's Alpha values exceeding 0.7, demonstrating the reliability of the research instruments (Voorhees et al., 2016). Specifically, the Cronbach's Alpha values for the variables were as follows: cost resource planning at 0.848, cost estimates at 0.824, cost budgets at 0.923, control cost at 0.798, and implementation output of greenhouse projects at 0.848. These values suggest that all research instruments used in the study were reliable. The reliability test results are detailed in Table 3.3.

Table 3.3 Reliability Test of the Research Questionnaire

Variables	Cronbach's Alpha	N of Items
Cost resource planning	0.848	8
Cost estimates	0.824	8
Cost budgets	0.923	8
Control cost	0.798	8
Implementation output of greenhouse projects	0.848	4

Source; (Survey data, 2023)

3.7 Data Collection methods

Before starting the fieldwork, the researcher secured a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI) and obtained an

authorization letter from Moi University as well as from the Trans-Nzoia County headquarters. Following these approvals, the researcher personally visited greenhouse farmers to distribute and collect completed questionnaires. Subsequently, interviews were conducted with County Agricultural Extension Officers from the Ministry of Agriculture. Once completed by the respondents, all research instruments, including the questionnaires and interview schedules, were collected.

3.8 Method of Data Analysis

The quantitative data collected from the questionnaires underwent initial processing, including validation, coding, and tabulation, to prepare it for analysis using the Statistical Package for the Social Sciences (SPSS). This software served as a tool for analyzing data related to the study's objectives. Both quantitative and qualitative analysis techniques were employed. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to analyze objectives 1 through 4. Additionally, inferential statistics were applied to these objectives in relation to the dependent variable. The Pearson Correlation Coefficient was utilized to explore the relationships between independent and dependent variables.

Qualitative data gathered from in-depth interviews with agricultural professionals were analyzed thematically. This involved transcribing the data, organizing it into categories and themes, and presenting it in prose form with direct quotes from participants, aligned with the study's themes and objectives. Narrative analysis was used to interpret these data. The results were presented through tables, figures, and graphs to provide a clear and systematic record of the findings.

In addition to descriptive statistics and thematic analysis, the study incorporated inferential statistics, including correlation and regression analyses. Following Mugenda and Mugenda's (2003) guidelines, correlation analysis was used to assess the relationships between variables. Multiple regression analysis was conducted to determine if a set of independent variables could predict the dependent variable and improve the accuracy of the estimates (Cox, 2018).

The multiple regression model for this study included the dependent variable (Y) as the implementation output of greenhouse projects, and the independent variables X_1 (cost resource planning), X_2 (cost estimates), X_3 (cost budgets), and X_4 (control cost). This model aimed to evaluate whether these independent variables significantly influence the implementation process:

Equation 1: Statistical Measurement Model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y= Implementation output of greenhouse projects

β_0 =Constant

β_i =is the coefficient for X_i (Where $i = 1,2,3,4$)

X_1 =Cost resource planning

X_2 =Cost estimates

X_3 =Cost budgets

X_4 =Control cost

ε =Error term

β_1 =Regression coefficient of variable X_1 , β_2 = Regression coefficient of variable X_2 ,

β_3 =Regression coefficient of variable X_3 , and β_4 =Regression coefficient of variable X_4 .

3.9 Assumptions of Multiple Regression Model

Assumptions were tested to examine the significance of data distribution, including Normality, Linearity, Multicollinearity, and Homoscedasticity.

3.9.1 Normality assumption

To test the assumption of normality in multiple regressions, it is essential to verify that the variables follow a normal distribution. This assumption is based on the characteristics of

the normal distribution curve, which helps researchers anticipate expected values. In this study, descriptive statistics were utilized to assess the normality of the data distribution. The Kolmogorov-Smirnov and Shapiro-Wilk tests were employed to evaluate this. According to the results of these tests, a significance value below 0.05 indicates that the data does not follow a normal distribution, while a significance value above 0.05 suggests that the data is normally distributed (Mooi, Sarstedt, Mooi-Reci, Mooi, Sarstedt, & Mooi-Reci, 2018).

3.9.2 Linearity assumption

Kumari and Yadav (2018) describe linearity in data as the situation where the outcome variable's values align in a straight line for each increase in a predictor variable. This model presumes a linear connection between the dependent and independent variables. Multiple linear regression can only reliably determine the relationship between these variables if it is inherently linear. A lack of such a linear relationship can cause regression analysis results to inaccurately reflect the true nature of the relationship.

3.9.3 Multicollinearity assumption

Multicollinearity arises when predictor variables are highly correlated with one another. To assess if strong correlations existed among the independent variables, the study employed the Variance Inflation Factor (VIF) and correlation coefficients. Calculating the correlation coefficients for all pairs of predictor variables facilitates the identification of multicollinearity. A correlation matrix was utilized to reveal any high correlations among the independent variables, as outlined by Hanafiah (2020).

3.9.4 Homoscedasticity assumption

The homoscedasticity assumption in multiple linear regression involves verifying that the scatter plot of residuals against predicted values does not display any distinct pattern. Ideally, the scatter should be random, with no discernible structure related to the independent variables (Del Vecchio, Fantinato, Silan, & Buffa, 2019). This assumption is satisfied when the error term in the linear regression model has a constant variance, irrespective of the values of the independent variables. To assess this, one can check if the

bivariate distributions are uniformly distributed around the line of best fit and also evaluate the normality of the residuals.

3.10 Ethical Consideration

The researcher secured informed consent from participants prior to data collection. This involved clearly outlining and explaining the research objectives to the respondents to ensure their informed consent (Creswell & Creswell, 2017). Confidentiality of the information shared by respondents through interviews or questionnaires was rigorously upheld, and no participants were subjected to intimidation.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

The primary aim of this research was to evaluate the impact of cost management on the execution outcomes of greenhouse projects in Trans-Nzoia County, Kenya. This section covers the response rate for the sample, provides background information about the respondents, and presents the descriptive and inferential statistical findings for each objective. Quantitative data were obtained using a Questionnaire Schedule designed for greenhouse farmers, while qualitative data were collected through interviews with agricultural extension officers. The analysis included computing percentages, frequencies, means, standard deviations, Pearson Correlation Coefficient, Multiple Regression Analysis, and ANOVA results. The chapter begins by outlining the response rate for the collected data.

4.2 Response Rate

The evaluation of the response rate was crucial to ensure that the proportion of responses accurately represented the targeted population and could effectively guide decisions about perceptions of cost management in greenhouse project implementation. The response rate was derived from the sample of greenhouse farmers. Out of 100 questionnaires distributed, 95 were fully completed and returned for analysis, resulting in a 95.0% response rate. Additionally, 18 interviews were scheduled with agricultural extension officers from the Ministry of Agriculture, and 15 were successfully completed, yielding an 83.3% response rate. According to Van Buuren (2018), a response rate of 70 percent or higher is deemed satisfactory for thorough data analysis. The details are presented in Table 4.1.

Table 4.1 Response Rate

Category	Frequency	Percentage
Administered questionnaires	100	100
Returned	95	95

Administered interviews	18	100
Successful interviews	15	83

Source; (Survey data, 2022)

4.3 Demographic information of the respondents

The research aimed to gather demographic data on the greenhouse farmers participating in the study. It focused on obtaining general information regarding the respondents' gender, age, educational qualifications, and work experience.

4.3.1 Gender characteristics of the respondents

The study's findings on the respondents' gender distribution revealed that 78.9% were male, while 21.1% were female. These results indicate that the majority of greenhouses and farming activities are predominantly owned by men. The detailed findings are presented in Table 4.2.

Table 4.2 Gender Characteristics of the Respondents

Respondents	Gender	Frequency	Percent
Greenhousefarmers	Male	75	78.9
	Female	20	21.1
	Total	95	100.0

4.3.2 Age bracket

The study's findings on the age distribution of respondents revealed that 9.5% were between 22 and 30 years old, 26.5% were aged 31 to 40 years, 43.2% fell within the 41 to 50-year range, and the remaining 21.1% were over 50 years old. All respondents were deemed capable of providing accurate information based on their experiences, as illustrated in Table 4.3.

Table 4.3 Age bracket

Respondents	Age bracket	Frequency	Percent
Greenhousefarmers	Between 22-30 years	9	9.5
	Between 31-40 years	25	26.5

Between 41-50 years	41	43.2
Over 50 years	20	21.1
Total	95	100.0

4.3.3 Level of Education

The study revealed that the majority of respondents, who were farmers, had attained a higher level of education, with 51.6% holding degrees or postgraduate qualifications. Additionally, 22.1% of the farmers had diplomas, 20.0% held certificates, and the remaining 6.3% had only completed primary or secondary education. This indicates that all respondents were educated and capable of providing reliable information. The study's findings are presented in Table 4.4.

Table 4.4 Level of Education

Respondents	Level of Education	Frequency	Percent
Greenhousefarmers	Others	6	6.3
	Certificate	19	20.0
	Diploma	21	22.1
	Degree/Postgraduate	49	51.6
	Total	95	100.0

4.3.5 Working Experience

The study's findings on farmers' work experience revealed that 21.1% had been involved with greenhouses for less than 5 years, while 44.2% had 6 to 10 years of experience. Additionally, 27.4% of respondents had worked in greenhouses for 11 to 15 years, and the remaining 7.4% had over 16 years of experience. This indicates that most respondents were well-versed in greenhouse operations, contributing to the reliability of the data provided. The detailed results are presented in Table 4.5.

Table 4.5 Working Experience of the Respondents

Respondents	Ownership/work experience	Frequency	Percent
Greenhousefarmers	0-5 years	20	21.1

6-10 years	42	44.2
11-15 years	26	27.4
Above 16 years	7	7.4
Total	95	100.0

4.3.6 Sector of operation

The study results on the respondents' sector of employment revealed that a majority, 70.5%, are employed in the private sector, specifically in greenhouse farming, while the remaining 29.5% work in the public sector. This suggests that local farmers have widely adopted greenhouse farming due to its consistent and profitable production year-round. The detailed findings are presented in Table 4.6.

Table 4.6 Sector of operation

Respondents	Sector of operation	Frequency	Percent
Greenhousefarmers	Public	28	29.5
	Private	67	70.5
	Total	95	100.0

4.4 Descriptive Findings and Discussions

The study presented a descriptive analysis of the research objectives; how cost resource planning influence implementation output of greenhouse projects, how cost estimates influence implementation output of greenhouse projects, how cost budgets influence implementation output of greenhouse projects and how control cost influences implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya. This section presents and discusses the findings related to these objectives. Participants were invited to provide their views by choosing from the options Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), or Strongly Agree (SA). The following key was utilized: F represents Frequency, % represents Percentage, Std Dev represents Standard Deviation. The data is presented in Tables 4.7, 4.8, 4.9, and 4.10.

4.4.1 Cost resource planning

The primary objective of this study was to determine how cost resource planning affects the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya. The results are detailed in Table 4.7.

Table 4.7Cost resource planning

		SD	D	UD	A	SA	Mean	Std. Dev
There is working breakdown structure on the greenhouse projects.	F	10	25	0	30	30	3.47	1.435
	%	10.5	26.3	0.0	31.6	31.6	69.4	
Delays exist when implementing annual work plan structure sometimes.	F	6	0	1	24	64	4.47	1.019
	%	6.3	0.0	1.1	25.3	67.4	89.5	
All the resources required in the greenhouse like water, pesticides are readily available.	F	5	16	9	20	45	3.88	1.312
	%	5.3	16.8	9.5	21.1	47.4	77.7	
Availability of labour force needed to work in the greenhouse is not a challenge.	F	0	1	2	36	56	4.55	.597
	%	0.0	1.1	2.1	37.9	58.9	90.9	
Ability to acquire desired planting seeds and seedlings is not a challenge.	F	3	1	2	42	47	4.36	.849
	%	3.2	1.1	2.1	44.2	49.5	87.2	
Resource mobilization for planting and harvesting is well planned for every season.	F	4	18	13	25	35	3.73	1.259
	%	4.2	18.9	13.7	26.3	36.8	74.5	
There are no major changes in resource planning since established structures are used for decades.	F	5	4	3	37	46	4.21	1.061
	%	5.3	4.2	3.2	38.9	48.4	84.2	
Cost resource planning is useful for implementing greenhouse projects.	F	3	0	9	33	50	4.34	.895
	%	3.2	0.0	9.5	34.7	52.6	86.7	

F · frequency, % · Percentage, *SD* · 1, *D* · 2, *U* · 3, *A* · 4, *SA* · 5, *StdDev* · Standard Deviation

Table 4.7 presents the descriptive statistics regarding the influence of cost resource planning on the implementation outcomes of greenhouse projects. The study found that 63.2% of the respondents agreed, while 36.8% disagreed, that there is an effective work breakdown structure in place for these projects. Additionally, 69.4% of respondents (mean=3.47, StdDev=1.453) believed that a functional work breakdown structure exists

for greenhouse projects, and a plan outlining procedures to guide farming activities was established.

Regarding delays in greenhouse projects, the majority of respondents (92.6%) agreed, 1.1% were undecided, and 6.3% disagreed that delays sometimes occur during the implementation of the annual work plan. The findings indicated that 89.5% of respondents (mean=4.47, StdDev=1.019) acknowledged the existence of project delays during the execution of annual work plans. These findings align with Smith (2011), who emphasized that large greenhouse projects are inherently complex and require thorough planning to mitigate frequent and severe delays.

In terms of resource availability, 68.5% of respondents agreed, 9.5% were undecided, and 22.1% disagreed that essential resources such as water and pesticides are readily available for greenhouse projects. The study revealed that 77.7% of respondents (mean=3.88, StdDev=1.312) agreed that these resources are accessible. The availability of resources is crucial, as the success of greenhouse projects depends on a steady supply of water to sustain plant life and pesticides to control diseases.

The respondents' views on the availability of labor force indicated that the majority, 97.8%, agreed, 2.1% were undecided, and 1.1% disagreed, suggesting that the availability of labor for greenhouse work is not a significant issue. The study's findings revealed that 90.9% of respondents concurred (mean = 4.55, Std Dev = 0.597) that labor force availability is not a challenge, likely due to the high unemployment rates in society. These findings align with the study by Shade and Jacobson (2015), which highlights that, despite the economic uncertainty of unpaid internships, young people express a strong desire for meaningful, stable, and paid employment.

Regarding the ability to acquire desired planting seeds and seedlings, 93.6% of respondents agreed, 2.1% were undecided, and 4.3% disagreed that obtaining these resources is not a challenge. The study found that 87.2% of respondents accepted this (mean = 4.36, Std Dev = 0.849), noting that seeds and seedlings are readily available in the market, though prices tend to fluctuate.

When asked about resource mobilization for planting and harvesting, 63.2% agreed, 13.7% were undecided, and 23.1% disagreed that resource mobilization is well-planned each season. The findings revealed that 74.5% of respondents (mean = 3.73, Std Dev = 1.259) believed resource mobilization is adequately planned. Additionally, when asked about changes in resource planning, 87.3% agreed, 3.2% were undecided, and 9.5% disagreed, indicating that there are minimal changes in resource planning due to the use of long-established structures. The study found that 84.2% of respondents (mean = 4.21, Std Dev = 1.061) agreed that resource planning remains consistent over time, a finding consistent with Burchi et al. (2018), who noted that greenhouse projects often follow a master plan that includes longstanding structures and configurations.

Regarding cost resource planning for greenhouse projects, 87.3% of respondents agreed, 9.5% were undecided, and 3.2% disagreed that it is a valuable tool for implementation. The study revealed that 86.7% of respondents (mean = 4.34, Std Dev = 0.895) supported the usefulness of cost resource planning. This aligns with Mellor, Hao, and Zhang (2014), who emphasized the importance of a cost resource management plan in identifying the necessary resources to successfully complete a project. Effective resource planning helps determine the required labor, materials, and equipment, contributing to the sustainability and successful completion of projects. If documented accurately, such plans specify the exact quantities needed for project implementation.

During interview schedules, respondents highlighted the significance of cost resource planning in the successful implementation of greenhouse projects. They noted that it assists farmers in allocating resources appropriately and helps identify available resources across different regions. One respondent mentioned that "Cost resource planning helps farmers/stakeholders identify the various resources present in different regions of the country." Additionally, it aids in conserving non-renewable resources and reducing waste. The main challenges affecting resource planning in projects include poor objectives, unrealistic expectations, limited resources, poor communication, scheduling delays, and lack of transparency in the planning process.

4.4.2 Cost estimates influence on implementation output of greenhouse projects

The second aim of this research was to assess the impact of cost estimates on the outcomes of greenhouse projects in Trans-Nzoia County, Kenya. The results, reflecting the respondents' perspectives, are detailed in Table 4.8.

Table 4.8 Cost estimates on implementation output of greenhouse projects

		SD	D	UD	A	SA	Mean	Std. Dev
Cost estimates are important when planning and implementing greenhouse projects.	F	2	0	19	55	19	3.94	.769
	%	2.1	0.0	20.0	57.9	20.0	78.7	
Resource rates are used to do estimate costs when implementing greenhouse projects.	F	5	4	21	34	31	3.86	1.088
	%	5.3	4.2	22.1	35.8	32.6	77.3	
Project schedule is factored when doing estimate costs since it helps when implementing greenhouse projects.	F	2	14	6	25	48	4.08	1.164
	%	2.1	14.7	6.3	26.3	50.5	81.7	
Activity duration is considered when doing estimate costs of the projects.	F	2	0	13	54	26	4.07	.775
	%	2.1	0.0	13.7	56.8	27.4	81.5	
Activity duration estimates help improve success of implementation output of greenhouse projects.	F	3	12	2	55	23	3.87	1.024
	%	3.2	12.6	2.1	57.9	24.2	77.5	
Cost of the resources predicts value of the greenhouses projects implemented.	F	2	0	2	49	42	4.36	.728
	%	2.1	0.0	2.1	51.6	44.2	87.2	
Scheduling of the project activities gives the management enough preparation time which increases success.	F	2	6	5	67	15	3.92	.808
	%	2.1	6.3	5.3	70.5	15.8	78.3	
Cost estimation is made possible by breaking down a project's total scope into convenient parts.	F	0	2	14	40	39	4.22	.774
	%	0.0	2.1	14.7	42.1	41.1	84.4	

F · frequency, % · Percentage, *SD* · 1, *D* · 2, *U* · 3, *A* · 4, *SA* · 5, *StdDev* · Standard Deviation

Descriptive statistics from Table 4.8 on the impact of cost estimates on greenhouse project outcomes reveal that 77.9% of respondents believe cost estimates are vital for effective

planning and execution of greenhouse projects, with 20.0% unsure and 2.1% disagreeing. This indicates that 78.7% (Mean=3.94, StdDev=0.769) recognize the crucial role of cost estimates in setting budgets, scheduling work, and managing resources. Accurate cost estimates are essential for creating realistic budgets and schedules, which are critical for ensuring the smooth execution and success of greenhouse projects. Failure to properly estimate costs could lead to budget overruns and delays.

Additionally, 68.4% of respondents agreed that resource rates are important for estimating costs in greenhouse projects, while 22.1% were undecided and 9.5% disagreed. The data showed that 77.3% (Mean=3.86, StdDev=1.088) view resource rates as essential for accurate cost estimation, underscoring their role in determining the overall project budget. Understanding and incorporating resource rates into cost estimates is vital for budgeting accurately, which helps in resource allocation and financial planning. Neglecting this factor could result in underestimating project costs and potential financial shortfalls.

Regarding project scheduling, 76.8% of respondents agreed that it is considered when estimating costs, which aids in project implementation. However, 6.3% were undecided and 16.8% disagreed. The findings demonstrated that 81.7% (Mean=4.08, StdDev=1.164) support the inclusion of project schedules in cost estimates as it helps achieve project goals by structuring the phases effectively. Integrating project schedules into cost estimates ensures that all phases are accounted for and managed effectively, contributing to the successful and timely completion of greenhouse projects. Ignoring scheduling could lead to poor project execution and missed deadlines.

When it comes to the consideration of activity duration, 84.2% of respondents affirmed its importance in cost estimation, while 13.7% were undecided and 2.1% disagreed. Study results revealed that 81.5% (Mean=4.07, StdDev=0.775) believe activity duration is crucial for creating accurate project schedules by prioritizing tasks and managing parallel activities. Including activity duration in cost estimates helps in organizing and prioritizing tasks, which enhances the accuracy of project schedules. This can prevent delays and improve overall project management efficiency.

In response to whether estimates of activity duration improve project success, 82.1% of respondents agreed, 2.1% were unsure, and 15.8% disagreed. The findings indicated that 77.5% (Mean=3.87, StdDev=1.024) agree that accurate activity duration estimates enhance project outcomes by providing a reference for tracking progress. Reliable estimates of activity duration are beneficial for monitoring progress and adjusting plans as needed, which can significantly impact project success by ensuring timely and effective execution.

Regarding the impact of resource costs on predicting project value, 95.8% of respondents agreed, with 2.1% undecided and 2.1% disagreeing. Results showed that 87.2% (Mean=4.36, StdDev=0.728) concur that resource costs are crucial for predicting the value of greenhouse projects, aligning with Pica (2015) on the importance of cost prediction for budgeting and resource allocation. Accurately predicting resource costs is fundamental for assessing the financial viability of projects and for making informed decisions about resource allocation and budget management.

On the matter of scheduling project activities to allow sufficient preparation time, 86.3% of respondents agreed, 5.3% were undecided, and 8.4% disagreed. The data revealed that 78.3% (Mean=3.92, StdDev=0.808) believe scheduling provides necessary preparation time, supporting Mubarak's (2015) view that scheduling is essential for timely project execution. Proper scheduling is crucial for allowing adequate preparation time, which helps in the smooth execution of project activities and contributes to overall project success.

Finally, 83.2% of respondents agreed that breaking down the project scope facilitates cost estimation, while 14.7% were undecided and 2.1% disagreed. Findings showed that 84.4% (Mean=4.22, StdDev=0.774) affirm that this approach, as noted by Cerezo-Narvaez et al. (2020), enhances cost estimation accuracy by improving work planning. Using a work breakdown structure (WBS) for cost estimation allows for more detailed and accurate budgeting, leading to better project planning and management. Without this breakdown, cost estimates may be less precise, potentially impacting project success.

Overall, feedback indicates that effective cost estimation strategies are key for forecasting resources and maintaining project schedules. Challenges such as resource constraints,

material costs, site conditions, and inflation may affect the accuracy of estimates. When time is limited, estimators might use secondary data, which, if poorly documented, may be less reliable. Addressing the challenges in cost estimation and relying on well-documented primary data is essential for accurate forecasting and successful project management.

4.4.3 Cost budgets influence on implementation outputs of greenhouse projects

The third objective of this study was to evaluate the impact of cost budgets on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya. The findings, as summarized in Table 4.9, reflect the respondents' perspectives on this issue.

Table 4.9 Cost budgets influence on implementation outputs of greenhouse projects

		SD	D	UD	A	SA	Mean	Std. Dev
Cost budgets are made to improve project expenditures.	F	2	2	17	56	18	3.91	.800
	%	2.1	2.1	17.	58.9	18.9	78.1	
Cost budgets are made for product improvement expenses.	F	4	17	11	52	11	3.52	1.050
	%	4.2	17.9	11.	54.7	11.6	70.3	
Allocating costs to actions in a plan ensure sustainability of projects.	F	22	4	2	26	41	3.63	1.611
	%	23.	4.2	2.1	27.4	43.2	72.6	
Data errors or inaccurate data in budgeting causes poor forecasting in budget variances.	F	0	2	2	42	49	4.43	.739
	%	0.0	2.1	2.1	44.2	51.6	88.6	
It is the baseline by which the real expenditure and the foreseen ultimate cost of the task is provided.	F	0	0	6	62	27	4.22	.549
	%	0.0	0.0	6.3	65.3	28.4	84.4	
There is a cost budget for the greenhouse.	F	3	2	0	52	38	4.26	.841
	%	3.2	2.1	0.0	54.7	40.0	85.3	
Managers use the cost budget when carrying out planned actions of the greenhouse projects.	F	0	5	19	49	22	3.93	.802
	%	0.0	5.3	20.	51.6	23.2	78.5	
Budget variance is caused by varying business circumstances and errors.	F	3	3	0	59	30	4.16	.842
	%	3.2	3.2	0.0	62.1	31.6	83.2	

F · frequency, % · Percentage, *SD* · 1, *D* · 2, *U* · 3, *A* · 4, *SA* · 5, *StdDev* · Standard Deviation

Descriptive statistics on the influence of cost budgets on greenhouse project implementation outcomes, as detailed in Table 4.9, indicate that 77.9% of respondents agreed that cost budgets are essential for improving project expenditures, while 17.9% were undecided and 4.2% disagreed. The study found that 78.1% of respondents (Mean=3.91, StdDev=0.800) confirmed that cost budgets contribute to better management of project expenditures. Effective cost budgeting is crucial for optimizing project spending and financial management, ensuring that resources are allocated efficiently and that project costs are controlled.

Additionally, 66.3% of respondents agreed that cost budgets are used for product improvement expenses, with 11.6% undecided and 22.1% disagreeing. The study revealed that 70.3% (Mean=3.52, StdDev=1.050) agreed that budgets play a role in managing product improvement costs. This aligns with Hansen, Mowen, and Heitger (2021), who noted that budgets can address various expenses, including project and product improvements. Allocating budgetary resources for product improvements can enhance the quality and effectiveness of greenhouse projects, leading to better project outcomes and innovations.

Regarding the statement that allocating costs to specific actions ensures project sustainability, 70.5% of respondents agreed, 2.1% were undecided, and 27.45% disagreed. The study found that 72.6% (Mean=3.63, StdDev=1.1611) believed that assigning costs to actions promotes project sustainability. This is consistent with Starovoytova and Arimi (2017), who emphasized that cost budgeting involves assigning costs to individual tasks. Proper cost allocation helps ensure the sustainability of greenhouse projects by ensuring that financial resources are directed towards critical activities, thereby supporting long-term project viability.

Most respondents, 95.8%, agreed that errors or inaccuracies in budgeting lead to poor forecasting of budget variances, while 2.1% were undecided and 2.1% disagreed. The study found that 88.6% (Mean=4.43, StdDev=0.739) agreed that data errors affect budget forecasting. This supports Ballantyne et al. (2015), who highlighted that errors can arise from faulty calculations or incorrect assumptions. Accurate data and careful budget

preparation are essential to avoid forecasting errors that can impact project financial planning and control.

In response to whether the budget cost serves as a baseline for real expenditures and projected costs, 93.7% of respondents agreed, with 6.3% undecided. The study found that 84.4% (Mean=4.22, StdDev=0.549) agreed that the budget cost provides a baseline for financial tracking. Using the budget as a baseline helps in monitoring actual expenditures against forecasts, facilitating better financial management and ensuring that project goals are met within the budget constraints.

Regarding the presence of a cost budget for the greenhouse, 94.7% agreed, and 5.3% disagreed. The study found that 85.3% (Mean=4.26, StdDev=0.841) confirmed the existence of a cost budget for greenhouse projects. Having a cost budget is crucial for setting financial targets, managing cash flow, and monitoring performance, thereby contributing to the overall success of greenhouse projects.

When asked if managers use the cost budget for planned actions in greenhouse projects, 74.7% agreed, 20.0% were undecided, and 5.3% disagreed. The study found that 78.5% (Mean=3.93, StdDev=0.802) affirmed that managers use the budget to allocate resources and address financing issues. Utilizing cost budgets allows managers to allocate resources effectively and address financial challenges, improving the management and execution of greenhouse projects.

Lastly, 93.7% of respondents agreed that budget variances are caused by changing business conditions and errors, while 6.3% disagreed. The study found that 83.2% (Mean=4.16, StdDev=0.842) accepted that budget variances result from varying circumstances and errors. This aligns with Hansen, Mowen, and Heitger (2021), who described variances as either favorable or unfavorable depending on the conditions. Recognizing the causes of budget variances helps in adjusting financial strategies and improving budgeting practices to better manage project resources and expectations.

Overall, the respondents highlighted that cost budgeting is vital for managing greenhouse projects effectively. It enables project managers to estimate costs, track expenses, and ensure that projects are completed on time and within budget. Proper budgeting supports

financial stability and project success, and addressing challenges such as data inaccuracies and changing business conditions is crucial for maintaining accurate and effective budget management.

4.4.4 Cost control influence on implementation outputs of greenhouse projects

The fourth objective of this study was to assess the impact of cost control on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya. Table 4.10 presents the findings derived from respondents' opinions on this matter.

Table 4.10 Cost control influence on implementation outputs of greenhouse projects

		SD	D	UD	A	SA	Mean	Std. Dev
Cost controls are used to track expenditures versus allocated budgetary.	F 1 % 1.1	10 10.5	8 8.4	40 42.1	36 37.9	4.05 81.1	.993	
Cost controls are useful when improving profitability of the greenhouse projects.	F 0 % 0.0	10 10.5	17 17.9	54 56.8	14 14.7	3.76 75.2	.834	
Cost control is a phase of the cost management process.	F 2 % 2.1	12 12.6	20 21.1	45 47.4	16 16.8	3.64 72.8	.978	
Tight cost control gives a greenhouse a substantial impact over its cash flows.	F 0 % 0.0	8 8.4	0 0.0	54 56.8	33 34.7	4.18 83.6	.812	
Cost controls are applied in the implementation of the greenhouse projects.	F 5 % 5.3	13 13.7	20 21.1	44 46.3	13 13.7	3.49 69.9	1.061	
Cost controls are used to manage losses that the greenhouse projects may encounter.	F 2 % 2.1	16 16.8	13 13.7	55 57.9	9 9.5	3.56 71.2	.953	
Project manager is accountable for cost controls of expenditure and budget distribution.	F 1 % 1.1	11 11.6	0 0.0	47 49.5	36 37.9	4.23 84.6	.792	
Cost control optimizes expenditure costs within planned and assigned budget.	F 0 % 0.0	7 7.4	0 0.0	52 54.7	36 37.9	4.14 82.7	.941	

F · frequency, % · Percentage, *SD* · 1, *D* · 2, *U* · 3, *A* · 4, *SA* · 5, *StdDev* · Standard Deviation

Descriptive statistics on the influence of cost control on greenhouse project implementation, as shown in Table 4.10, revealed that 80.0% of respondents agreed, 8.4% were undecided, and 11.6% disagreed with the statement that cost controls are used to

track expenditures against the allocated budget. The study found that 81.1% (mean=4.05, StdDev=0.993) of respondents affirmed that cost controls are crucial for tracking expenditures versus the allocated budget. This indicates that implementing cost controls is vital for ensuring that project expenditures are kept within budget, which helps in maintaining financial discipline and avoiding overspending.

Respondents' views on the utility of cost controls in enhancing profitability of greenhouse projects showed that 71.6% agreed, 17.9% were undecided, and 10.5% disagreed. The study found that 75.2% (mean=3.76, StdDev=0.834) of respondents accepted that cost controls are beneficial for improving profitability. This finding implies that effective cost control mechanisms can help reduce unnecessary expenses and optimize financial performance, thereby enhancing the profitability of greenhouse projects.

Regarding the role of cost control as a phase in the cost management process, 64.2% of respondents agreed, 21.1% were neutral, and 14.7% disagreed. The study found that 72.8% (mean=3.64, StdDev=0.978) accepted that cost control is an integral phase of the cost management process. This supports the notion that cost control involves revising budgets and tracking expenditures, which is essential for identifying and reducing costs to increase overall project profitability.

Respondents' opinions on whether tight cost control impacts cash flows significantly revealed that 91.6% agreed and 8.4% disagreed. The study found that 83.6% (mean=4.18, StdDev=0.812) of respondents affirmed that stringent cost control has a substantial effect on managing cash flows. This highlights the importance of tight cost control in maintaining healthy cash flows, which is crucial for the financial stability and smooth operation of greenhouse projects.

A majority of 60.0% of respondents agreed that cost controls are applied in implementing greenhouse projects, 21.1% were undecided, and 18.9% disagreed. The study found that 69.9% (mean=3.49, StdDev=1.061) of respondents accepted that cost controls are indeed applied during project implementation. This suggests that incorporating cost controls into project management practices helps in monitoring and managing project expenditures effectively.

When asked about the use of cost controls to manage potential losses in greenhouse projects, 67.4% of respondents agreed, 13.7% were undecided, and 18.9% disagreed. The study found that 71.2% (mean=3.56, StdDev=0.953) of respondents accepted that cost controls are used to mitigate potential losses. This implies that cost controls are essential for minimizing financial risks and managing losses that may arise during project execution.

Respondents overwhelmingly agreed (87.4%) that project managers are accountable for overseeing cost controls and budget distribution, while 12.6% disagreed. The study found that 84.6% (mean=4.23, StdDev=0.792) of respondents supported the view that project managers are responsible for cost control. This aligns with the findings of Harrison and Lock (2017), highlighting the role of project managers in budgeting and cost management to ensure projects remain within financial constraints and achieve profitability.

Additionally, 92.6% of respondents agreed that cost control optimizes expenditure within the planned budget, while 7.4% disagreed. The study found that 82.7% (mean=4.14, StdDev=0.941) of respondents accepted that cost control effectively manages expenses within the budget. This demonstrates the effectiveness of cost control in maintaining financial discipline and optimizing project expenditures.

Interview responses indicated that effective cost control ensures that a project's budget remains on track, which is crucial for completing the project within its planned scope. One agricultural officer noted that without cost control, greenhouse projects could suffer financial losses due to unchecked expenditures. Thus, cost control is essential for predicting and managing future expenses, reducing the risk of budget overruns, and ensuring project success.

To address the challenges encountered in managing the implementation of greenhouse projects, it is recommended that stakeholders receive training on cost management. This includes attending seminars and workshops on project management, clearly defining project objectives, and developing a detailed roadmap to achieve project goals. Proper training and clear planning can enhance the effectiveness of cost control measures, leading to successful project outcomes.

4.5 Testing assumption of the multiple regression

To ensure rigorous data analysis for the study, various assumption tests of multiple regression analysis were employed. These included tests for Normality, Linearity, Multicollinearity, and Homoscedasticity.

4.5.1 Normality Assumption Test

A normality test was conducted to assess whether the data for each variable followed a normal distribution. The Kolmogorov-Smirnov and Shapiro-Wilk tests were employed for this purpose. According to these tests, a significant value below 0.05 indicates that the data is not normally distributed, whereas a significance value above 0.05 suggests that the data is normally distributed (Das & Imon, 2016). As shown in Table 4.11, the p-values for each variable in the study—Cost Resource Planning ($p = 0.293$), Cost Estimates ($p = 0.370$), Cost Budgets ($p = 0.235$), and Cost Control ($p = 0.254$)—were all above the threshold of 0.05, indicating that the data for all study variables adhered to a normal distribution.

Table 4.11: Normality Test Results

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Cost resource planning	.227	11	.117	.917	11	.293
Cost estimates	.192	14	.175	.936	14	.370
Cost budgets	.192	15	.141	.926	15	.235
Cost control	.181	17	.122	.900	17	.254

a. Lilliefors Significance Correction

4.5.2 Linearity Assumption Test

The study conducted a test for the linearity assumption by comparing the significant values and deviation from linearity with the expected p-value. According to Ernst and Albers (2017), data is considered linear if the significant value is lower than the expected p-value, and the deviation from linearity is higher than the expected p-value. Table 4.12 displays the results of the linearity test, showing significant values of 0.000 for all four study

variables (Cost resource planning, $p = 0.000$; Cost estimates, $p = 0.000$; Cost budgets, $p = 0.000$; and Cost control, $p = 0.000$), which are below the expected value of 0.05. This indicates a linear relationship between cost management and the implementation outcomes of greenhouse projects in Tran-Nzoia County. Additionally, the test for deviation from linearity yielded values exceeding the expected threshold of 0.05.

Table 4.12: Linearity Test Results

			Sum of Squares	Df	Mean Square	F	Sig.
Implementation output of greenhouse projects and Cost resource planning	Between Groups	(Combined)	7.012	11	.637	5.980	.000
		Linearity	4.210	1	4.210	39.490	.000
		Deviation from Linearity	2.802	10	.280	2.629	.448
	Within Groups		158.457	8.315	.107		
	Total		197.101	15.326			
Implementation output of greenhouse projects and Cost estimates	Between Groups	(Combined)	6.508	10	.651	5.830	.000
		Linearity	4.969	1	4.969	44.515	.000
		Deviation from Linearity	1.539	9	.171	1.531	.751
	Within Groups		135.286	8.819	.112		
	Total		197.101	15.326			
Implementation output of greenhouse projects and Cost budgets	Between Groups	(Combined)	7.641	9	.849	8.837	.000
		Linearity	6.971	1	6.971	72.560	.000
		Deviation from Linearity	.670	8	.084	.872	.544
	Within Groups		141.852	7.686	.096		
	Total		197.101	15.326			
Implementation output of greenhouse projects and Cost control	Between Groups	(Combined)	6.794	11	.618	5.646	.000
		Linearity	5.138	1	5.138	46.973	.000
		Deviation from Linearity	1.656	10	.166	1.514	.850
	Within Groups		141.852	8.532	.109		
	Total		197.101	15.326			

4.5.3 Multicollinearity Assumption Test

To assess the correlation among the study's independent variables, a multicollinearity assumption test was conducted. This involved evaluating tolerance and the variance inflation factor (VIF). A tolerance value below 0.10 or a VIF exceeding 10 typically signals a severe multicollinearity issue. A tolerance value under 0.2 suggests a potential problem, while a tolerance near 1 indicates minimal multicollinearity, and a tolerance close to 0 implies a possible threat of multicollinearity. According to the multicollinearity results detailed in Table 4.13, there is minimal multicollinearity observed, as all independent variables had tolerance values above 0.50. Additionally, all VIF values were below 10, indicating that none of the variables needed to be excluded from the analysis.

Table 4.13: Collinearity Statistics Results

	Collinearity Results	
	Tolerance Values	VIF
Cost resource planning	.940	1.064
Cost estimates	.866	1.154
Cost budgets	.799	2.014
Cost control	.859	1.164
Average VIF		1.127

4.5.4 Homoscedasticity Assumption Test

The study conducted a homoscedasticity test to examine the variance in residuals within the regression model employed. Levene's test was utilized to evaluate the equality of variances among the variables. According to the findings shown in Table 4.14, the homoscedasticity assumption test yielded a significant value of $p=0.901$, which exceeds the threshold of 0.05 (Mikelonis, Lawler, & Passalacqua, 2016). This result indicates that the assumption of homoscedasticity was satisfied, confirming that the residuals' variance was consistent.

Table 4.14: Levene's Test of Equality of Error Variances

Levene Statistic	df1	df2	Sig.
.779	91	202	.901

4.6 Inferential Analysis

Inferential analysis was employed to investigate the relationships between the variables under study. This analysis utilized Pearson's product-moment correlation coefficient and regression methods. Correlation is a statistical measure that indicates the strength of the relationship between two variables, with values ranging from -1 to +1. A coefficient of -1.000 denotes a perfect negative correlation, while a coefficient from +0.001 to +1.000 represents a perfect positive correlation. A coefficient of 0.000 signifies no relationship between the variables (Orodho, 2013). The results of the correlation analysis are presented in Table 4.15.

Table 4.15 Overall Correlation Analysis Results

			Cost resource planning	Cost estimates	Cost budget	Cost control	Implementation output of greenhouse projects
Cost resource planning	Pearson Correlati on	1		.567**	.600**	.221*	.650**
	Sig. (2- tailed)			.000	.000	.031	.000
Cost estimates	Pearson Correlati on	.567**	1		.515**	.118	.578**
	Sig. (2- tailed)	.000			.000	.255	.000
Cost budget	Pearson Correlati on	.600**	.515**	1		.474**	.708**
	Sig. (2- tailed)	.000	.000			.000	.000
Cost control	Pearson Correlati on	.221*	.118	.474**	1		.452**
	Sig. (2- tailed)	.031	.255	.000			.000
Implementation output of greenhouse projects	Pearson Correlati on	.650**	.578**	.708**	.452**	1	
	Sig. (2- tailed)	.000	.000	.000	.000		
	N	95	95	95	95	95	95

** . Correlation is significant at the 0.01 level (2-tailed) &*. Correlation is significant at the 0.05 level (2-tailed).

4.6.1 Cost resource planning

The study aimed to determine how cost resource planning affects the outcomes of greenhouse projects in Trans-Nzoia County, Kenya. The results, presented in Table 4.15, demonstrate that cost resource planning has a significant positive impact on the implementation results of greenhouse projects, with a correlation of ($r=0.650$; $p<0.05$). This suggests that effective cost resource planning is crucial for assembling the resources necessary for the success of greenhouse projects. It plays a key role in identifying the comprehensive resources needed to achieve project goals.

These findings are consistent with Kahvandi et al. (2019), who highlight that a project resource management plan is essential for pinpointing the total resources required for a successful project. A well-utilized resource plan helps in determining the amount of labor, resources, and equipment needed to execute the project. Such a plan summarizes the resource levels necessary for project completion and influences project sustainability. When documented accurately, it details the specific labor, resources, and equipment required for effective project implementation.

4.6.2 Cost estimates

The study aimed to assess the impact of cost estimates on the execution outcomes of greenhouse projects in Trans-Nzoia County, Kenya. According to the results presented in Table 4.15, cost estimates were found to have a positive and statistically significant effect on the implementation outcomes of these projects ($r=0.578$; $p<0.05$). This indicates that accurate cost estimates play a crucial role in the successful implementation of greenhouse projects. They serve as critical indicators that can influence the future success of these projects.

These findings align with the report by Smith, Jaggar, and Love (2016), which highlights the strong correlation between cost estimates and project designs. It emphasizes the importance of ensuring that projects are completed within their allocated budgets and that the designs offer good value for money. Projects should account for both initial and operational costs, with whole-life costing being a key component of the design process.

The total life costs of essential project components should be evaluated during the design phase.

4.6.3 Cost budget

The study aimed to evaluate the impact of cost budgets on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya. According to the results presented in Table 4.15, cost budgets significantly and positively affect the success of greenhouse project implementations, with a correlation coefficient of ($r=0.708$; $p<0.05$). This suggests that well-prepared cost budgets play a crucial role in achieving successful project outcomes. Effective budgeting enables financial professionals to align project strategies with goals by meticulously planning expenses and timelines, which helps ensure the smooth operation of the project.

These results are consistent with Kivila et al. (2017), who highlighted that budget cost is a critical performance metric in project management. Effective project management involves comprehensive planning, estimation, budgeting, control, and cost management to complete projects within the allocated budget. Securing adequate funding often requires extensive fundraising, and many organizations struggle with this challenge. Similarly, Hansen et al. (2021) support the notion that budgeting is vital for major business projects. A well-structured budget is essential for project completion, as projects without a solid budget may fail or remain incomplete. The complexity of budgeting varies depending on the project's industry and the availability of additional financial resources.

4.6.4 Cost Control

The study also aimed to assess the impact of control costs on the outcomes of greenhouse projects in Trans-Nzoia County, Kenya. As detailed in Table 4.15, the results show a positive and statistically significant relationship between control costs and project outcomes ($r=0.452$; $p<0.05$). This indicates that effective cost control is a crucial strategy for improving the success of greenhouse project implementation. Effective project cost control starts with monitoring and tracking expense changes, known as variations, which may be either “favorable” or “unfavorable.” These variations aid in making more accurate future predictions.

These findings align with the work of Abubakar and Adebayo (2014), who noted that cost control aims to minimize deviations in cost and schedule from initial plans. Cost controls serve as a safeguard for project management, enabling businesses to forecast future expenses and mitigate the risk of budget overruns. This management process is continuous throughout the project lifecycle and helps reduce expenses, enhance operational efficiency, improve procurement effectiveness, and integrate advanced technologies and practices in greenhouse production.

4.7 Multiple Regression Analysis

The study employed multiple linear regression analysis to examine the overall linear relationship between the dependent variable (the effectiveness of greenhouse project implementation) and the independent variables (cost resource planning, cost estimates, cost budget, and cost control). As indicated in Table 4.16, the analysis revealed an R^2 value of 0.637. This result suggests that cost management practices positively impact the effectiveness of greenhouse project implementation, with 63.7% of the variation in implementation effectiveness attributed to the strategies of cost resource planning, cost estimates, cost budget, and cost control. The remaining 36.3% of the variation in implementation effectiveness is influenced by factors not included in this study.

Table 4.16: Multiple Regression Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.798 ^a	.637	.621		.33417

a. Predictors: (Constant), Cost resource planning, Cost estimates, Cost budget and Cost control.

4.7.1 Assessing the Fit of the Model Summary

Analysis of variance was employed to assess the suitability of the multiple regression model for the data. As presented in Table 4.17, the results revealed that the effect of the dependent variable was statistically significant ($F=39.558$; $p<0.05$). This suggests that the multiple regression model was appropriate for the data. Consequently, the overall regression model, encompassing variables such as Cost Resource Planning, Cost

Estimates, Cost Budget, and Cost Control, was statistically significant and impacted the implementation outcomes of greenhouse projects.

Table 4.17: ANOVA Test Results

Model	Sum of Df	Mean Square	F	Sig.	
1 Regression	17.669	4	4.417	39.558	.000 ^b
Residual	10.050	90	.112		
Total	27.719	94			

a. Dependent Variable: Cost control

b. Predictors: (Constant), Cost resource planning, Cost estimates, Cost budget and Cost control.

4.7.2 Regression coefficients

A T-test was used to assess the statistical significance of each regression coefficient to determine the beta (β) values, which indicate the strength of each independent variable's impact on the dependent variable. The results, displayed in Table 4.18, show the regression coefficients for the study variables. The findings indicated that cost resource planning significantly and positively affected the implementation outputs of greenhouse projects ($\beta=0.213$; $p<0.05$). Similarly, cost estimates had a significant positive impact on implementation outputs ($\beta=0.185$; $p<0.05$). Cost budget also positively and significantly affected implementation outputs ($\beta=0.229$; $p<0.05$), and cost control showed a significant positive effect on the same outputs ($\beta=0.145$; $p<0.05$).

Table 4.18:Regression Analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.028	.282		3.645	.000
Cost resource planning	.213	.065	.282	3.287	.001
Cost estimates	.185	.066	.228	2.826	.006
Cost budget	.229	.066	.321	3.471	.001

Cost control	.145	.050	.211	2.882	.005
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From Table 4.18, the multiple regression equation can be written as:

$$Y = 1.028 + 0.213X_1 + 0.185X_2 + 0.229X_3 + 0.145X_4 + \dots \text{Eq.4.1}$$

The results can be interpreted as follows: With constant cost resource planning, cost estimates, cost budget, and cost control, the implementation output of greenhouse projects was 1.028 units. The coefficient of 0.213 suggests that a one-unit enhancement in cost resource planning leads to a 0.213-unit increase in greenhouse project implementation output. Similarly, a one-unit improvement in cost estimates results in a 0.185-unit increase in output, while a one-unit increase in the cost budget yields a 0.229-unit rise in output. Additionally, a one-unit enhancement in cost control results in a 0.145-unit increase in greenhouse project implementation output.

4.8 Hypothesis Testing

In this section, the research aimed to determine the relationships among the study variables. Pearson correlation analysis was employed to assess these relationships. Each of the four hypotheses was evaluated, where a p-value below 0.05 indicated a significant relationship between the variables, leading to the rejection of the null hypotheses. Conversely, a p-value above 0.05 suggested no significant relationship, resulting in the retention of the null hypotheses. The results are detailed in Table 4.19.

Table 4.19 Hypothesis Table

Hypotheses	β and P values	Decision rule(accept/reject)
H₀₁: There is no statistically significant relationship between the cost resource planning and implementation output of greenhouse projects.	$\beta_1=0.213$; $P=0.000<0.05$	Rejected the null hypothesis
H₀₂: There is no statistically significant relationship between the cost estimates influence and implementation output of greenhouse projects.	$\beta_2=0.185$; $P=0.001<0.05$	Rejected the null hypothesis

H₀₃: There is no statistically significant relationship between cost budgets influence and implementation output of greenhouse projects.	$\beta_3=0.229;P=0.010<0.05$	Rejected the null hypothesis
H₀₄: There is no statistically significant relationship between control cost influences and implementation output of greenhouse projects.	$\beta_3=0.145;P=0.010<0.05$	Rejected the null hypothesis

4.8.1 Hypothesis Testing of cost resource planning and implementation output of greenhouse projects in public universities

The initial hypothesis (H01) proposed that there is no statistically significant relationship between cost resource planning and the implementation outcomes of greenhouse projects. However, as demonstrated in Table 4.19, the results supported the alternative hypothesis, revealing a statistically significant relationship between cost resource planning and implementation outcomes ($\beta_1=0.213$; $p=0.001<0.05$). The β coefficient of 0.213 suggests that cost resource planning accounts for 21.3% of the variation in the implementation outcomes of greenhouse projects. The p-value of 0.000, which is below the threshold of 0.05, indicates that cost resource planning has a positive and statistically significant impact on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya.

4.8.2 Hypothesis testing of cost estimates and implementation output of greenhouse projects

The second hypothesis (H02) of the study proposed that there is no statistically significant relationship between the cost estimates and the implementation outcomes of greenhouse projects. However, the findings, as presented in Table 4.19, supported the alternative hypothesis, revealing a statistically significant relationship between these variables ($\beta_2 = 0.185$; $p = 0.000 < 0.05$).

The β coefficient of 0.185 indicates that cost estimates account for 18.5% of the variation in implementation outcomes for greenhouse projects. The p-value of 0.006, which is below the threshold of 0.05, confirms a statistically significant and positive effect of cost estimates on the implementation outcomes of greenhouse projects in Trans-Nzoia County,

Kenya. Additionally, the current policies on cost control appear to have a substantial influence on the success of these projects.

4.8.3 Hypothesis testing of cost budget and implementation output of greenhouse projects

The third hypothesis (H03) proposed that there is no statistically significant relationship between the cost budget and the implementation outcomes of greenhouse projects. However, the results of the study, as detailed in Table 4.19, supported the alternative hypothesis, showing a statistically significant relationship between the cost budget and implementation outcomes ($\beta_2=0.229$; $p=0.000<0.05$).

The β coefficient of 0.229 indicates that the cost budget accounts for 22.9% of the variance in the implementation outcomes of greenhouse projects. Additionally, the p-value of 0.000, which is below the threshold of 0.05, confirms that the cost budget has a statistically significant and positive impact on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya.

4.8.4 Hypothesis testing of cost control and implementation output of greenhouse projects

The third hypothesis (H04) of the study posited that there is no statistically significant relationship between cost control and the implementation outcomes of greenhouse projects. However, the findings, as detailed in Table 4.19, supported the alternative hypothesis, revealing a significant statistical relationship between cost control and implementation outcomes ($\beta_2=0.145$; $p=0.000<0.05$).

The β coefficient of 0.145 indicates that cost control accounts for 14.5% of the variation in implementation outcomes of greenhouse projects. The p-value of 0.005, being below the threshold of 0.05, confirms that cost control has a positive and statistically significant impact on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya.

Effective cost control involves anticipating and assessing risks before they materialize and adjusting the project budget accordingly. This proactive approach reduces the chances of

exceeding the budget. In construction projects, where budget overruns are common, proper cost control measures are crucial as they help prevent such issues and provide valuable insights for future budgeting.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study aimed to evaluate the impact of cost management on the outcomes of greenhouse projects in Trans-Nzoia County. This chapter summarizes the key findings, draws conclusions, and provides recommendations.

5.2 Summary of Findings

5.2.1 Cost resource planning and implementation output of greenhouse projects

The results regarding the impact of cost resource planning on the outcomes of greenhouse projects revealed that labor availability was not a significant issue, as there is a sufficient workforce in the market. Greenhouse farmers generally experience few difficulties in obtaining the necessary seed plants for each season. However, delays in following the annual work plan sometimes occur due to financial constraints or payment issues with stakeholders. Cost resource planning proves essential for the successful execution of greenhouse projects, as it facilitates the timely and efficient allocation of various resources.

Resource planning has a positive and statistically significant effect on the implementation outcomes of greenhouse projects, with a β coefficient of 0.213 and a p-value less than 0.05. This indicates that effective cost resource planning is closely linked to the success of greenhouse project implementation and plays a crucial role in cost management. Effective planning serves as a foundational element for determining the success of greenhouse projects.

5.2.2 Cost estimates on implementation output of greenhouse projects

The research findings on the estimated costs and their impact on the execution of greenhouse projects showed that most respondents agreed that the cost of resources is a key predictor of the value of implemented greenhouse projects. Accurate cost estimation involves breaking down the overall project scope into manageable segments. Incorporating the project schedule into cost estimates is essential, as it aids in the execution of

greenhouse projects. Additionally, cost estimates are crucial for securing new business opportunities and are used by property owners to evaluate the feasibility of projects before beginning construction.

The analysis revealed that cost estimates have a positive and statistically significant effect on the outcomes of greenhouse projects ($\beta=0.185$; $p<0.05$). This indicates a strong relationship between cost estimation and cost management, significantly affecting the implementation and success of greenhouse projects. Managers rely on cost estimates to define the project's scope, assess feasibility, and allocate the budget. Furthermore, these estimates guide decisions on whether to bid for a project and help forecast the potential project costs. Consequently, accurate cost estimates contribute to the successful implementation of greenhouse projects.

5.2.3 Cost budgets and implementation output of greenhouse projects

The study's findings on cost budgeting indicated that most respondents believed inaccuracies or errors in data lead to poor forecasting and budget variances. Effective cost budgeting is essential for greenhouse managers as it helps set growth targets, enhances focus based on factual information, and improves cash flow management. Cost budgeting serves as a baseline for comparing actual expenses with projected costs. Variations in budgeting can arise from different business conditions and errors. Fluctuations in the economy or global trade can also contribute to budget discrepancies.

The study found that cost budgets positively and significantly impact the implementation outcomes of greenhouse projects ($\beta=0.229$; $p<0.05$). This suggests that accurate cost budgets improve project implementation. Project procedures are closely linked to cost budgets, which often determine the availability and allocation of resources, operations, and activities. Errors in project budgeting, whether from miscalculations, poor judgment, or insufficient oversight, can jeopardize the success of the entire project.

5.2.4 Cost Control and implementation output of greenhouse projects

The study findings revealed that most participants agreed that cost control effectively manages expenditure within the planned budget, with rigorous cost control significantly

affecting a greenhouse's cash flows. This indicates that cost control measures are essential for monitoring the progress of implemented projects. Nonetheless, a considerable number of respondents acknowledged that cost controls are utilized in the execution of greenhouse projects. Project managers are responsible for overseeing cost control, including monitoring expenses and budget allocation.

Cost control demonstrates a positive and statistically significant impact on the outcomes of greenhouse project implementations ($\beta=0.145$; $p<0.05$). This suggests that accurate cost estimates are crucial for successful project implementation. Effective cost control practices are instrumental in identifying and reducing business expenses to enhance profitability, beginning with the budgeting phase. Thus, cost control is a vital component for sustaining and improving the profitability of greenhouse projects.

5.3 Conclusions

Cost resource planning is useful for implementing greenhouse projects because it helps to efficiently identify and allocate various resources assigned to the projects at the right time. The availability of labour force needed to work in the greenhouse was not a challenge. All the resources required in the greenhouse like water, pesticides are readily available and also delays exist when implementing annual work plan structure sometimes. Therefore cost resource planning has significant influences on assembling resources that builds the foundation of any successful greenhouse projects.

Estimating costs involves breaking down the overall scope of a project into manageable components. Accurate cost estimates are essential for securing new business and enhancing performance. Stakeholders use these estimates to evaluate the feasibility of projects before beginning construction. Farmers face various challenges in cost estimation, including economic, social, and technological issues currently impacting the field.

Greenhouse managers rely on cost budgeting to set growth targets, maintain focus based on factual data, and manage cash flow effectively. Project procedures are closely linked to cost budgets, as the available or required funds typically influence the duration and type of resources, operations, and activities used. Respondents who are familiar with cost

budgeting find it easier to manage their greenhouse projects and compare anticipated budgets with actual expenditures.

Effective cost control helps manage spending within the planned budget and significantly impacts cash flow. Many respondents acknowledged that cost controls are applied during greenhouse project implementation. Project managers are responsible for overseeing cost control measures, ensuring expenditure and budget distribution are monitored. Effective cost control practices, beginning with budgeting, are crucial for identifying and reducing expenses, thus boosting profitability and sustaining greenhouse project growth.

5.4 Recommendations

This study makes the following recommendations based on the findings on the effect of cost management on the implementation output of greenhouse projects in TransNzoia County, Kenya.

- i. The ministry of agriculture should employ adequate extension officers that visit all the greenhouse projects and educate stakeholders, farmers and employees on the cost management practices so as to improve on successful implementation of the greenhouse projects.
- ii. All the greenhouse stakeholders and farmers should form their own SACCO which will enable them make regular forums that will help them manage their projects and also help in identifying disparities that may arise from the greenhouse projects.
- iii. This study also recommends that stakeholders should consider utilizing activity duration estimates which helps improve success of implementation output of greenhouse projects. Also, stakeholders should allocate costs to actions in a plan because it ensures sustainability of projects.
- iv. All farmers and stakeholders are also encouraged to practice cost controls which helps to manage losses that the greenhouse projects may encounter

5.5 Suggestion for Further Studies

The study aimed to evaluate the impact of cost management on the implementation outcomes of greenhouse projects in Trans-Nzoia County, Kenya. It also recommends that future research explore the challenges associated with cost management in the

implementation of greenhouse projects across all counties in Kenya and in other regions globally.

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APPENDIX I: INTRODUCTION LETTER

PRISCILLAH WAMUCII KARUNYU,

MOI UNIVERSITY,

P.O BOX 30900-30100

ELDORET.

TO WHOM IT MAY CONCERN**RE: PERMISSION TO CARRY OUT ACADEMIC RESEARCH:**

I am a student pursuing Master's Degree in Project Management at Moi University, Eldoret. I am conducting a study on "to **assess how cost management influences implementation outputs of greenhouse projects in Kitale, Trans-Nzoia County, Kenya**". Any information provided will be highly appreciated and used specifically for academic purpose and it will be treated with utmost confidentiality.

Thanks for your assistance.

Priscillah Wamucii Karuny

APPENDIX II: QUESTIONNAIRE FOR FARMERS

QUESTIONNAIRE NO:.....

Dear Respondent,

This questionnaire is aimed at gathering primary data on the research topic “**To assess how cost management influences implementation outputs of greenhouse projects in Trans-Nzoia County, Kenya**”. You are kindly requested to fill in the questions depending on the instructions given. The information you provide will be treated with utmost confidentiality and will be used for the purpose of accomplishing academic goals. Do not include your name anywhere in the questionnaires.

PART A: GENERAL INFORMATION

Please write in the space provided or (√) tick appropriately,

A1. Gender

i. Male

ii. Female

A2. Age bracket

i. Below 21 years

iv. Between 41-50

ii. Between 22-30

v. 51 Years & above

iii. Between 30-39

A3. Level of education

i. Degree/postgraduate

iii. Certificate

ii. Diploma

iv. Other

Others (please specify)

A4. How many years of experience do you have in greenhouses industry?

i. Below 5 Years

iii. Between 10-15 Years

ii. Between 5-10 Years

iv. Above 16 Years

A5. What sector do you work in?

i. Public

ii. Private

Key words and meaning:

Project refers to an activity with a starting date, specific goals and conditions, defined responsibilities, a budget, planning, a fixed end date and multiple parties involved.

Cost management refers to how procedures are applied in monitoring the expenses and enactment beside projects progress or operations.

Project implementation refers to how procedures are applied in monitoring the expenses and enactment beside projects progress or operations.

Resource planning refers to business management technique commonly referred to as enterprise resource planning.

Cost estimate refers to an estimation of programs/operation/project cost with distinct overall value and might have distinguishable constituent values.

Cost budget refers to the anticipated expenditure as identified by the budget. It provides a baseline by which the real expenditure and the foreseen ultimate cost of the task.

Cost control refers to a phase of the cost management process where the assigned budget is revised and expenditure is tracked.

PART B: Cost resource planning influence on implementation outputs of greenhouse projects

The table below gives cost resource planning practices that influence implementation output of greenhouse projects. Give your opinion on the statement; Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D) and Strongly Disagree (SD).

	Statement	SA	A	UD	D	SD
i)	There is working breakdown structure on the greenhouse projects.					
ii)	Delays exist when implementing annual work plan structure sometimes.					
iii)	All the resources required in the greenhouse like water, pesticides are readily available.					
iv)	Availability of labour force needed to work in the greenhouse is not a challenge.					
v)	Ability to acquire desired planting seeds and seedlings is a challenge.					
vi)	Resource mobilization for planting and harvesting is well planned for every season.					
vii)	There are no major changes in resource planning since established structures are used for decades.					
viii)	Cost resource planning is useful for implementing greenhouse projects.					

PART C: Cost estimates influence implementation output of greenhouse projects

The table below gives statements on cost estimates influence in implementation output of greenhouse projects. Give your opinion on the statement; Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D) and Strongly Disagree (SD).

	Statement	SA	A	UD	D	SD
i)	Cost estimates are important when planning and implementing greenhouse projects.					
ii)	Resource rates are used to do estimate costs when implementing greenhouse projects.					
iii)	Project schedule is factored when doing estimate costs since it helps when implementing greenhouse projects.					
iv)	Activity duration is considered when doing estimate costs of the projects.					
v)	Activity duration estimates helps improve success of implementation output of greenhouse projects.					
vi)	Cost of the resources predicts value of the greenhouses projects implemented.					
vii)	Scheduling of the project activities gives the management enough preparation time which increases success.					
viii)	Cost estimation is made possible by breaking down a project's total scope into convenient parts.					

PART D: Cost budgets influence implementation output of greenhouse projects

The table below gives statements on cost budgets influence in implementation output of greenhouse projects. Give your opinion on the statement; Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D) and Strongly Disagree (SD).

	Statement	SA	A	UD	D	SD
i)	Cost budgets are made to improve project expenditures.					
ii)	Cost budgets are made for product improvement expenses.					
iii)	Allocating costs to actions in a plan ensure sustainability of projects.					
iv)	Data errors or inaccurate data in budgeting causes poor forecasting in budget variances.					
v)	It is the baseline by which the real expenditure and the foreseen ultimate cost of the task is provided.					
vi)	There is a cost budget for the greenhouse.					
vii)	Managers use the cost budget when carrying out planned actions of the greenhouse projects.					
viii)	Budget variance is caused by varying business circumstances, and errors.					

PART E: Control cost influences implementation outputs of greenhouse projects

The table below provides statements on the control cost influences in implementation output of greenhouse projects. Give your opinion on the statement; Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D) and Strongly Disagree (SD).

	Statement	SA	A	UD	D	SD
i)	Cost controls are used to track expenditures verses allocated budgetary.					
ii)	Cost controls are useful when improving profitability of the greenhouse projects.					
iii)	Cost control is a phase of the cost management process.					
iv)	Tight cost control gives a greenhouse a substantial impact over its cash flows.					
v)	Cost controls are applied in the implementation of the greenhouse projects.					
vi)	Cost controls are used to manage losses that the greenhouse projects may encounter.					
vii)	Projectmanager is accountable for cost controls of expenditure and budget distribution.					
viii)	Cost control optimizes expenditure costs within planned and assigned budget.					

PART F: PROJECT IMPLEMENTATION

The table below gives statements on cost management influences in implementation output of greenhouse projects. Give your opinion on the statement; Strongly Agree (SA), Agree (A), Un Decided (UD), Disagree (D) and Strongly Disagree (SD).

	Statement	SA	A	UD	D	SD
i)	Cost resource planning has improved implementation output of greenhouse projects.					
ii)	Estimate costs help in the budgetary allocation on implementation outputs of greenhouse projects.					
iii)	Cost budgets inform managers the baseline value of the greenhouse projects.					
iv)	Cost controls have improved sustainability of greenhouse projects by generating more profits.					

THANK YOU FOR BEING PART OF THIS ACADEMIC RESEARCH

APPENDIX III: INTERVIEW SCHEDULE FOR AGRICULTURAL OFFICERS:

REF: REQUEST FOR INFORMATION

I am a student pursuing Master's Degree in Entrepreneurship at Moi University. I am conducting a study on the research topic "**how cost management influences implementation outputs of greenhouse projects; the case of Kitale, Trans-Nzoia County, Kenya**". Any information provided will be highly appreciated and used specifically for academic purpose and it will be treated with utmost confidentiality.

Thanks for your assistance.

Priscilla Karuny Wamucii

PART A: GENERAL INFORMATION

Designation.....

PART B:

Key words and meaning:

Project refers to an activity with a starting date, specific goals and conditions, defined responsibilities, a budget, planning, a fixed end date and multiple parties involved.

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Cost estimate refers to an estimation of programs/operation/project cost with distinct overall value and might have distinguishable constituent values.

Cost budget refers to the anticipated expenditure as identified by the budget. It provides a baseline by which the real expenditure and the foreseen ultimate cost of the task.

Cost control refers to a phase of the cost management process where the assigned budget is revised and expenditure is tracked.

B1. How does cost resource planning influence implementation output of greenhouse projects?

.....

B2. What are the main causes of negative resource planning in your project?

.....
.....

B3. How do cost estimates influence the implementation output of greenhouse projects?

.....
.....

B4. What are some of these challenges faced when estimating the cost of your project?

.....
.....

B5. How does cost budget influence the implementation output of greenhouse projects?

.....
.....

B6. What are your plans on farmers who do not understand the importance of cost budgeting for the benefit of successfully implementing the projects?

.....
.....

B7. How does cost control influence the implementation output of greenhouse projects?

.....
.....

B8. What are some of the challenges that you encounter when managing implementation output of greenhouse projects?

.....
.....

B9. What are your possible solutions to the challenges encounter when managing implementation output of greenhouse projects?

.....
.....

THANK YOU FOR BEING PART OF THIS ACADEMIC RESEARCH

