Addis Ababa University

College of Business and Economics

School of Commerce Department of Project Management

The Effect of Project Cost Management Practices on Project Success in The Case of Addis Ababa City Housing Development Corporation Prefabricated House Project.

A Research Project Submitted to The School of Postgraduate Studies of Addis Ababa University School of commerce in Partial fulfilment of the Requirement for the Award of Master of Arts Degree in Project management

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Addis Ababa, Ethiopia

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STATMENT OF DECLARATION

I, the undersigned declare that this research work entitled **"The effect of project cost management practices on project success in the case of Addis Ababa Housing Development Corporation prefabricated house project"** is my original work and has not been presented by any other persons for any sort of award in this or any other University, also that all sources of materials used for this research work have been duly acknowledged.

Candidate:

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Signature Date

CERTIFICATE OF APPROVAL

As thesis research advisors and evaluators, we acknowledge that we read and evaluated **Mahder Gebremichael's** thesis, **"The effect of project cost management practices on project success in the case of Addis Ababa Housing Development Corporation prefabricated house project"** which was submitted in partial fulfilment of the requirements for the Master of Science in Project Management, the Post Graduate program.

By: Mahder Gebremichael: _____ 07/07/2023

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Examiner 2 _____ 07/07/23

Signature **Date**

Chairperson _____ _____

Signature **Date**

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List of Abbreviations and Acronyms

AAHDC: Addis Ababa Housing Development Corporation

ANOVA: Analysis of Variance

PM: Project Manager/Management

PMBOK: Project Management Body of knowledge

PMI: Project Management Institutions

PMO: Project Management Office

SPSS: Statistical Package for the Social Science

WBS: Work Break down Structure

Abstract

This research examined the effect of project cost Management practices on project success in the case of Addis Ababa city prefabricated housing construction at Akakikality site office. Hence, the objective of the research is to access the effect of project cost management on project success by considering cost only as success factor and analysing how specifically the cost element would influence the project success on prefabricated housing development. Analysis was measured by Plan Cost Management, Estimate Costs, Determine Budget, and Control Costs. To achieve the objectives, the research employs explanatory research deign. Non probabilistic purposive sampling technique is used to select the sample size of the population. A questioner's survey used to collect data from 58 selected respondents through a five-point Likert scale-based and analysed by using SPSS software version 20. Results revealed that Pearson correlation among project cost management variables are moderate to high, and correlation between project cost management and project success are also high to very high. From the research finding Cost estimation has a high major significant effect on the success of the project and control cost also has positive significant effect whereas determining budget and plan cost have no significant effect on project success. Generally, limitations are seen in taking of a case of one corporation branch only and the use of just some variables may increase risk of respondent bias. In order to avoid these limitations, Future studies can extend scope to include a wide geographical area of construction projects and shall include other factors which impact the success of construction projects.

Key Words: Project cost management; Project cost planning, Cost estimation, Determining Budget, Cost controlling, Project Success

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Most developing countries' rising urbanization has resulted in acute housing shortages and low Quality. Overcrowding, excessive rent, and slum and squatter settlements have all become frequent features of the urban environment in emerging nations as a result of fast urbanization Combined with rapid socioeconomic growth, (Ozo, 1990).

For project management, Project Cost Management has become a requirement for the project's success. Successful projects required project cost management to manage and evaluate the progress of the project. The successful end of projects across different sectors and industries is one of the most significant reasons that determine the development and growth of many nations (Maylor, 2006).

The (PMBOK, 2017)explained that the project cost management process consists of Plan Cost Management, Estimate Costs, Determine Budget, and Control Costs. Moreover, (PMBOK, 2017)stated that Project cost management is predominantly concerned with the cost of the resources required completing scheduled project activities during the execution stage and this includes the cost of using in tendering, construction, maintaining, and supporting results of the project. Usually, projects are considered as successful when they meet the time, budget, and performance goals, (Shenhar, 1997). Hence, project success has been a critical topic in the project management literature, (Handfield, 2015). A successful project implies that the project has retained its technical performance (quality, cost, and time), within its schedule, and within budgetary cost (Frimpong, 2003). Hence, the objective of the research is to access the effect of project cost management on project success by considering cost only as success factor and analysing how specifically the cost element would influence the project success on prefabricated housing development.

This research accesses the effect of project cost management on project success in one of Addis Ababa city housing construction projects. In 2005, the Addis Ababa City Administration initiated a large-scale house construction project to eliminate urban poverty and provide homeownership opportunities for low- and middle-income residents. The

concept calls for a considerable shift away from single-story detached housing (government-owned rental housing) in favour of the private, new condominium, (Habitat, 2011).

Despite officials saying that over 85 percent of the work has been completed, the creation of tens of thousands of government condominium housings under the 40/60 and 20/80 programs, among others, has come to a halt in Addis Ababa. The municipal administration declared in 2022 that it was heavily in debt, reaching 54 billion birr, from the prior complicated and poorly managed housing, (Behak, 2022,).

Addis Ababa's city administration has begun building 5,000 prefabricated dwellings to meet the city's expanding housing needs. For the 5000 dwellings, an 8-billion-birr budget has been set aside. To close the gap, the city has made significant investments in subsidized and affordable housing for low- and middle-income households (Monitor., 2022). In the early twentieth century, prefabricated housing was very popular, especially during times of high demand, such as the years following WWII. Modular construction was used for a wider range of project types in the late 1950s, including schools.

1.2. Statement of the Problem

Addis Ababa's housing crisis is one of the city's most serious issues. Projects generally fail because of poor planning, constant changes in the scope, cost overrun, and project delay. The PMBOK, (2017) determine that “the project cost management process consists of plan cost management, estimate costs, determine budget, and control costs”. It is challenging to resolve current issues that result from the rapidly growing demand for condominium housing because current construction methods, such as site-based construction, are constrained by prolonged construction times due to conventional construction methods and increased construction costs due to project consequences, such as labour wages and market value.

In November 2019 inaugurated a new housing project - the construction of 20,504 units over nine of the districts of the capital. To occupy 69 hectare of land, the project is expected to create job opportunities for over 52,000 people and will include 174 blocks strewn across the city. Planned to be finished within two years, the project will cost the city 56 billion Br. Fortune, (2019). Nevertheless, this conventional type of construction had 13.98% physical progress reported on AAHDC February, 2023 monthly report.

Therefore, according to Akinsola, (1996) when project is delayed, they are either extended or accelerated and therefore, incur additional cost. The normal practices usually allow a percentage of the project cost as a contingency allowance in the contract price and this allowance is usually based on judgement.

The successful execution of construction projects and keeping them within estimated cost and prescribed schedules depend on a methodology that requires sound engineering judgment Enshassi, (2009).According to Bertram et al, (2019), modular design and construction approaches enhance productivity by 40%-50% more than traditional methods. Addis Ababa's city administration has begun building 5,000 prefabricated houses for speedy and high-quality construction. The construction of seventy prefabricated G+4 mass house production located in Akakikality sub city wereda05 has started on June, 2022 with contract amount of **4,259,724,000.00**. The project is planned to be finished within five hundred sixty-five calendar date. But according to AAHDC report the average physical progress report up to date is 33%.

Therefore, even though Addis Ababa's city administration takes in to consider this modern technology for speedy construction, still it is controversial on fulfilling the project's goal due to poor time management which has direct impact on keeping the project on the planned cost. According to PMBOK,(2017), project success is measured in terms of "completing the project activities within the constraints of scope, time, cost, quality, resources, and risk as approved between the project managers and senior management".

There are numerous literatures written on project cost management in different projects. However, there is a few empirical study conducted in government housing projects. This motivated me to conduct the study on the effect of prefabricated housing construction cost management over success of project.

1.3. Research Questions

1. What is the effect of planning cost Management on Project success in terms of cost?
2. What is the effect of estimating costs on Project success in terms of cost?
3. What is the effect of determining budgets on Project success in terms of cost?
4. What is the effect of controlling costs on Project success in terms of cost?

1.4. Research Objective

1.4.1. General Objective

The main objective of the study is to determine the effect of project cost Management practices on project success of prefabricated housing construction in the case of Addis Ababa city housing development corporation project branch 10.

1.4.5. Specific Objective

The specific objective of this study is:

- To identify the effect of planning cost Management on Success of Projects.
- To identify the effect of estimating costs on Success of Projects.
- To identify the effect of determining budgets on Success of Projects.
- To identify the effect of controlling costs on Success of Projects.

1.5. Significance of the Study

The relevance of this research is it helps to achieve projects accomplished within the schedule, budget, and quality. In this regard, it is believed that project cost management is very important to provide management with cost-related information for making decisions to complete the project with specified constraints.

This study is expected to reveal the effect of project cost management practices on the overall success of the projects. This research intends to add knowledge to the existing literature on project cost management. It is also expected to suggest important recommendations that can be advantageous to Addis Ababa city housing development Corporation and the construction industry. The research paper will also be used as an input for individuals who are interested in Project Cost Management to undertake further studies.

1.6. Scope of the Study

The conceptual scope of the study is limited to city governance of Addis Ababa prefabricated house, effect of project cost management on project success. Also, the study focuses and analyses the process of project cost management only such as Plan Cost Management, Estimate Costs, Determine Budget, and Control Costs. Other factors, which affect Project Cost Management, are out of the scope of this study. Moreover, Success factor considered for this study is cost. Other factors that could affect the Success of projects like schedule, quality, and scope management are beyond the scope of this study.

The geographical location of the project is at Ethiopia, Addis Ababa, Akakikality sub city, woreda05.

1.7. Definition of Terms

Project: a temporary endeavour undertaken to create a unique product or service, temporary means that the project has a definite ending point, and unique means that the product or service differs in some distinguishing way from all similar products, services, or results.

Cost management is a process of controlling expenses on construction projects in every stage from feasibility to handover and ensuring that the cost plan is still in place.

Plan cost management is a method of how the project costs will be estimated, budgeted, controlled, and monitored.

Project cost estimation is the process of developing an approximation (estimate) of the costs of the resources needed to complete project activities including labour, equipment, materials, services, and any contingency costs.

Determine Budget denotes the method of mixing the estimated costs of work packages or individual activities to make an approved cost baseline.

Cost control is viewed as the process of monitoring the status of the project to update the budget and changes to the cost baseline.

Project success: effectively and efficiently achieving all project objectives in scope, on time and within budget as per the plan

Project failure: not achieving all project objectives in scope, on time and within budget in an effective and efficient manner.

1.8. Organization of the Study

This proposal of study is organized in four chapters. Chapter one gives a brief overview of the background of the study, statement of the problem, the general and specific objectives of the study, research question, scope and description of the research. Chapter two deal with a theoretical review and empirical studies of relevant literature used in the study. Chapter three describes research methods and procedures including data collection and analysis methodology, sample size determination and study design. Data result, analysis and interpretation are presented in chapter four and chapter five includes summary of finding, conclusion, recommendation and suggestion for future studies. In addition, sample questionnaire and detailed SPSS result values are drawn on the Appendices.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Project Success

Project success was initially defined whether the final output of the project functioned or not. It then evolved into the triple constraint of time, cost and quality. PMI P. M., (2013) Instruct the establishment of success criteria at the project's very beginning or before the commencement of a new phase. According to PMBOK, (2017) project success is measured in terms of “completing the project activities within the constraints of scope, time, cost, quality, resources, and risk as approved between the project managers and senior management”. Verma, (2022) Write that successful project management requires collaboration, leadership, and excellent communication. For projects to succeed, human resources are required. By doing this, organizations can raise customer and stakeholder satisfaction levels and deliverable acceptance (PMI P. M., 2013). Wateridge, (1995) States that states that before the project begins, very few project teams in the past have thought seriously about project success the project team must agree on the success criteria; otherwise, the participants will diverge and some will perceive the effort as a failure.

Cleland (1986) suggested that "project success is meaningful only if considered from two vantage points: the degree to which the project's technical performance objective was attained on time and within budget; the contribution that the project made to the strategic mission of the enterprise”. Project success is accomplishing the planned results and objectives in compliance with present conditions of time, cost, and performance (Beleiu I., 2015).

Along with increased business practice and growth in membership of project management professional bodies the subject of project management has received large interest from scholars (Cooke-Davies, 2002). However, despite column-miles of studies and publications literatures on project management provide no consistent interpretation of the term “project success”. (Baccarini, 1999); (Thomas, 2008). In an extensive review of literature on project success Muller R. a., (2012) finds that there is no precise definition and emphasizes the demand for quantifiable measures of project success.

PMI, (2004) describes the fundamental success criteria of delivering project scope on time and on budget variables. Project management success is determined by achieving the project's scope, budget, and time deadlines as well as its overall objectives. However, Project success is measured against the overall objectives of the project, (Cooke-Davies, 2002).

Considering how crucial it is to comprehend what success is, how to define it, and what elements are required for getting it, project success is one of the project management issues that has drawn in the most research. Despite this, the concept of "project success" is still poorly defined and frequently subjective (Judgev& Müller, 2005). According to Morris and Hough, (1987) the dependent variables that measure success are the metrics used to determine if a project is successful or unsuccessful, also known as success criteria. One method to get around the subjective interpretation of project success is to define and agree upon project success criteria to make project success measurable. (Muller R. a., 2007).

Determining a project's success in terms of cost, time, and stakeholder expectations is one of a project manager's many responsibilities. As stated by Scott-Young, (2008). The primary determinant of a project's success includes completing the task on schedule, staying within budget, and—most importantly—meeting the minimal required quality standard for the satisfaction of the client. According to a number of literary works, a project's completion of the stated purpose is what determines its final success. Clearly stating project deliverables is one important step in ensuring the project's success. Another viewpoint from related researchers has offered the idea that project success is typically determined by the amount of time and money spent on the goal of the project. Administrators of the organization who connect all resources, skills, and unforeseen project parameters are responsible for project success assurance. (Scott-Young, 2008).

2.2. Project Cost Management

Project cost management is the capacity to plan and monitor expenses for a construction project while also assessing the likelihood that certain risks will result in an increase in construction costs (Young, Lbbs, 2002). Cost management is the process of keeping costs under control and making sure the cost plan is still in place for construction projects at every stage, from feasibility to handover. This is supported by Dof (2009), who claims that there are several work phases involved in the cost management process, including the starting stage, the planning stage, the execution stage, the control stage, and the completion stage. The fourth of the PMBOK's ten knowledge areas for project management is project cost management. There are four processes in it. These three falls within the planning process category because they all include establishing project budgets. The final one involves managing project finances while a project is being executed, and it occurs in the Monitoring and Controlling process group..

2.2.1. Plan Cost Management

Plan cost management is a method of how the project costs will be estimated, budgeted, controlled, and monitored. The main benefit of this process is that it gives direction on how the project costs will be managed throughout the project. This process is performed at predefined points or once in the project" (PMBOK, 2017).

2.2.2. Estimate Cost

Plan cost management is a technique for estimating, budgeting, controlling, and monitoring project costs. The key advantage of this procedure is that it provides guidance for managing project expenditures throughout the project. This procedure is carried out once during the project or at predetermined intervals, (PMBOK, 2017). Stephen et al., (1994) State that "estimating is the fundamental process of answering the question how much is the project expected to cost? When project estimates are wrong will have a negative effect because the financial debt to a construction project is enormous". Cost estimation is determined utilizing the preliminary working drawings, plans, or blueprints, (Pico, 2012). Cost estimation, according to Akintoye, (2000), is a technical procedure carried out to estimate the project's overall cost for a specific item using the information and resources related with the project that are now available. According to Forbatok, (2014), evaluating costs involves coming up with an estimate of the expenses of the resources required to complete a project. In considering completing projects on schedule and under budget, project managers must take cost estimates seriously. Early cost estimates give a client the ability to evaluate the most affordable offers, secure funding, or perform a cost-benefit analysis. According to Ahiaga et al, (2015), these estimations are frequently used as the foundation for cost control during project execution.

2.2.3. Determine Budget

The term "budgeting" refers to the process of combining the projected prices of work packages or individual tasks to create a baseline cost that has been accepted. They serve as a check and balance system that establishes the benchmark for future spending. They give the project team the ability to identify and report present problems and foresee future ones through fast data gathering and reporting. They link resource utilization to the accomplishment of company goals when done correctly (PMBOK, 2017). Allocating the project cost estimate to various material resources throughout time is part of determining the

budget. The operations in the project's work breakdown structure are cantered on these material resources.

The creation of a cost baseline and the determination of project finance requirements are the key goals of the cost budgeting process. A budget, according to Weetman, (2003), is a financial assessment of the future actions outlined in a business plan. It is a thorough plan that lays out the budgets for spending and earning for a future period in monetary terms. In order to monitor and amend plans, the budgeting process integrates with the broader planning process, assesses the plan's financial implications, and gives financial input Marsh, (2009). One can establish whether a project is proceeding as planned or whether corrective action is required by comparing the project's actual cost to the approved budget (Sunidjijo, 2015). The steps of budget management are: Defining the Budget, Executing the Budget, Controlling the Budget, and Updating the Budget. These tasks and steps are intended to help manage the costs of the project. According to PMFDEV (2015), budgeting is a control mechanism where actual expenses are compared to and measured against the budget. The budget is typically a group parameter when the project is being carried out. The cost increases proportionally as the schedule slips. When a project's costs start to rise, the project manager should review the plan to see if the scope, budget, or schedule needs to be adjusted.

2.2.4. Control Costs

Cost control is viewed as the process of monitoring the status of the project to update the budget and changes to the cost baseline. It involves taking the cost baseline and performance data about what has been done to determine the work accomplished against the amount spent (PMBOK, 2017). Monitoring cost performance, ensuring that relevant project modifications are accounted for during an updated cost baseline, and notifying project stakeholders of allowed changes to the project that will have an impact on costs are all parts of controlling project costs. When people are aware that they must report their progress, they frequently do better. Performance evaluation is yet another crucial instrument for cost management. Contractors' cost-controlling strategies, according to Patel al, (2018), place a lot of emphasis on the material cost component. However, labour and equipment expenses should also be taken into consideration since they may have an impact on the project just as much as the material component.

2.3. Factors Affecting Project Cost Management

For the project to be successful, cost control is a crucial component. Many contractors still use cost control strategies today, despite this. Cost escalations are a common issue in the construction sector. Although there have been significant improvements in project management and cost engineering over many years, substantial budget overruns and delays continue to occur (Lichtenberg, 2015)this demonstrates that for contractors to be successful in their businesses, they should apply the cost management process effectively.

2.3.1. Cost Management Plan Related Factors

The goal of planning is to establish the project's estimation, budget, management, monitoring, and control methods. Following are a few examples of the planning-influencing factors listed by PMBOK, (2017): Pre-approved financial resources, a schedule and risk management plan, organizational culture and structure, the state of the economy and exchange rates, published commercial and project management data, productivity variations, financial controls procedures, existing formal and informal cost estimating, budgeting, financial databases, strategic funding, level of accuracy, organizational procedure links, and reporting formats are some of the factors to consider.

2.3.2. Estimate Cost Related Factors

Cost estimating is the process of predicting the expenses and resources required to fulfill the tasks and activities of a project. The timeline for the project's completion and the anticipated profit for the construction contractor are both significantly impacted by how accurate these estimates are. As a result, cost estimators (surveyors, engineers) should be aware of the variables that affect cost estimation accuracy. The top ten factors influencing the accuracy of cost estimates, according to Mohammed et al, (2018), are clear and detailed drawings, specifications, pricing, the experience of construction projects, perception of estimation importance, equipment (cost/availability/performance), project complexity, clear scope definition, accuracy, reliability of cost information, site constraints (access, storage, services), material availability, financial capabilities of the client, and availability of resources According to Akintoye, (2000) the complexity of the project, scale, and scope of the construction, market conditions, the building method, site restrictions, the client's financial situation, build ability, and location of the project are the primary aspects related to cost estimate practice.

(Asal, (20140) listed twelve criteria as being the most crucial.These factors were: economic instability, quality of firm's project planning and management, relevant experience of estimating team, availability of management and finance plans, the ability to estimate, labour and equipment required, estimating method, project location, periodical payments, the accuracy of bidding documents provided by the client, competent and leadership of project manager and impact of the project schedule.

2.3.3. Determine Budget Related Factors

Every management at an institution needs to be able to forecast, establish, and manage a budget. As a result, budget management is a task that extends to all organizational levels of management. Currently, there are several methodological approaches to budgeting, and how they are used depends on the objectives to be attained and the management strategies used. As a result, there are many variables that affect the budgeting process. Poor WBS definition, inaccurate activity cost estimates, a lack of supporting information for estimated costs, an inaccurate/impractical schedule, schedule variance, lack of experience with the project type, improper planning, an underestimation of the project's duration, and a lack of experience are all factors that have been identified from various literature reviews.

the practice of awarding contracts to the lowest bidder, the absence of resource calendars, the absence of a risk register, the inadequacy of cost-related item details in the agreement, the lack of project management tools and techniques, the failure to update the budget after variations or changes, the lack of a contingency allowance, and company policies and procedures of cost and coordination between client and consultant. According to Kira et al. (2016), external factors that affect the budgeting process include these include aspects like competition, advancement in science and technology, international relations, macro and microeconomics, a political environment, and the social sector. Additionally, the internal aspects known as industrial, technological, organizational, human resources, automation, and corporate information systems are impacted by contemporary conditions. The key variables that determine an IT project's ability to stay within budget include project size, project similarity, frequency of the budgeting control system, and documented project risk management application, (Barbara et al. 2015).

Jan (2014), states the mission, financial policies, compensation objectives, pricing policies, management style, accountability, and debt policies were classified by the budgeting process as internal factors that have an impact on project budgeting, while sources of support,

government regulations, labour market competition, and inflation were classified as external factors.

2.3.4. Control Cost Related Factors

"The aim of project controls is to make sure projects completed as per the schedule, within the contractual budget and per the standard required. In practice, it is a complex task undertaken by project managers which involves constantly measuring progress; weighing plans, and making corrective actions when required" (Kerzner, 2003). The project manager should adhere to an appropriate cost controlling and monitoring strategy throughout the project cycle in order to succeed. Avoiding issues that could affect the process is necessary for implementing the right project control system. The following are identified as factors that are relevant to the cost control process from several collective literature reviews. Allowance of many variations during project implementation, change in construction methods, poor instruction and control, team conflict, unqualified or inexperienced labour, rework on the job site, experience with projects similar to this, complexity of the project's construction and site, frequent changes in subcontractors, poor site management and supervision, change in design/scope, communication errors, force majeure, unpredictable weather conditions, risk, and uncertainty, high cost of labour, problems associated with overtime, accidents, implementation of management information systems in cost updating, coordination between client and contractor, not using project management tools for monitoring and control, improper records for all types of communications and delay in progress payments .

2.4. Empirical Literature Review

The study analysed publications and theses that focused on quantifying the impact of cost management across various nations and years in order to provide input on the topic "Time and costs are at best only guesses, calculated at a time when least known about the project. Quality is a phenomenon; it is an emergent property of people's different attitudes and beliefs, which often change over the development life cycle of a project. Why has project management been so reluctant to adopt other criteria in addition to the Iron Triangle, such as stakeholder benefits against which projects are assessed? This paper proposes a new framework to consider success criteria", (Atkinson, 1999). This paper agreed that project cost management and project success have a direct relationship. In their study, Akewushola et al. (2012) identified that there is a significant relationship between Project cost and acceptability by clients. Consequently, it was advised, among other things, that the client's share of the

overall project cost be kept to a minimum. By using sufficiently inventive and innovative project managers in the allocation of project costs without compromising the project's quality. Additionally, there is a direct correlation between project success and project cost management in this study. Furthermore, Solomon's (2017) found that project cost management explains how resource planning, cost estimating, cost budgeting, and cost control have a major impact on the effectiveness of a project's management overall.

According to the research Aftab et al.(2012), time and cost performance are the essential requirements for any project's success. Unfortunately, Malaysia's construction sector is thought to be underperforming, failing to meet its goals for time and cost performance. As a result, the majority of projects have significant time and cost overruns. According to the study's findings, only 8% of construction projects were completed within the agreed-upon time frame, while 92% of them ran over budget. Respondents concurred that the time overrun was between 5 and 10%. Only 11% of respondents stated that projects are typically completed within the estimated cost, and 89% agreed that projects frequently experience cost overruns, with an average overrun of 5 to 10% of the contract price. Issues with project management, contract administration, financial resource management, design, and documentation are some of the main causes of this subpar performance. Additionally, a qualitative study was conducted with the experienced staff members involved in managing a construction project using semi-structured interviews. This study led to the development of 13 mitigation strategies to improve time performance and 15 mitigation measures to improve cost performance. The study will aid professionals in putting mitigation measures into place throughout the planning phase to produce effective construction projects.

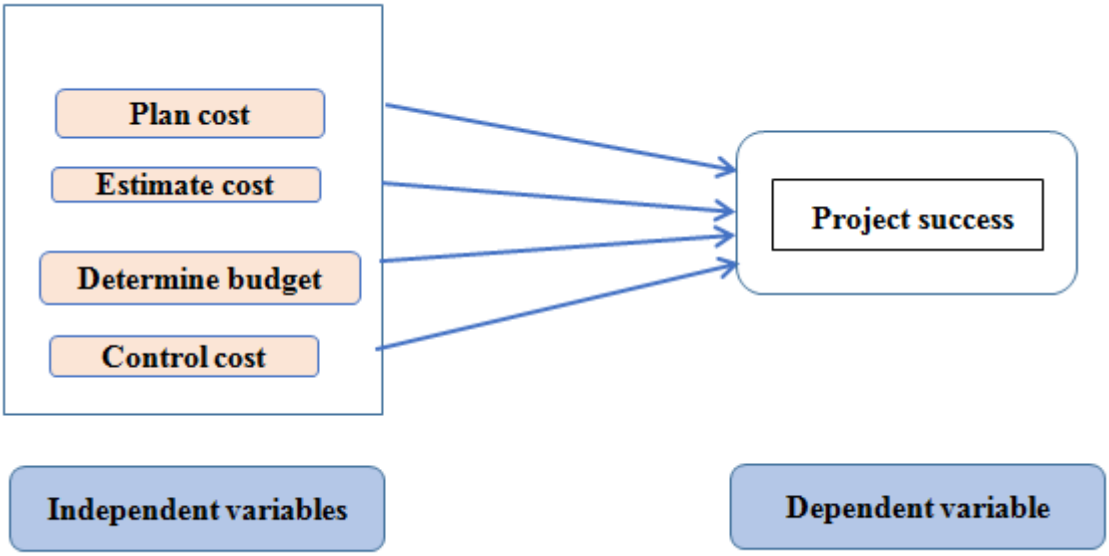
BETRU, (2021) recent research in Ethiopia states the impact of various factors has been shown to have a positive and statistically significant effect on the project's overall success in terms of planning cost management, cost estimation, and cost control. However, setting a budget has no bearing on a project's success, which may be a result of the absence of financial experts from this study's limitations.

2.5. Conceptual Framework

Each step in the project cost management process has input, output, and outcomes, (PMBOK, 2017). Thus, the goal of this research study is to evaluate the input, output, and results of the Plan Cost Management, Estimate Costs, Determine Budget, and Control Cost procedures on

the success of housing development projects. Based on the above literature review the below conceptual framework is developed.

Figure 2-1: Conceptual Framework



Source: Adapted from different literatures, 2023

2.6. Research Gaps

Numerous researches on the impact of project cost management on success have been conducted, and most of them seem to concur that project cost management is a key factor in success, (Vasista et al. 2016). According to a study of the literature, studies have been conducted mostly in the United States, Malaysia, Iran, India, Nigeria, the United Kingdom, and other countries. Studies conducted in other nations have a population gap on Ethiopia's current situation. Additionally, since Ethiopia's construction industry continues to face serious management issues, urgent research on this subject and related issues is required. Generally, the aim of this study is to fill this gap by meeting the general and specific objective. And specifically, the objective of the previous research carried out in Ethiopia has focused on project cost management on success only on a different organizations perceptive (Berhanu, 2017), (BETRU, 2021). But the objective of this study is to assess the effect of cost management on project success which delimited to Addis Ababa housing development corporation prefabricated house project.

Chapter Three

3. Research methodology

3.1. Research Design

According to Cooper and Schindler (2014), the fundamentals of research design are outlined as an activity and time-based framework. It directs the choice of sources and types of information and is always dependent on the research topic. A framework that details the relationships between the study variables and spells out the specifics of each research activity. The Research design serves as a guide for achieving goals and responding to inquiries. It serves as the guide for data gathering, measurement, and analysis (Cooper&Schindler, 2014).

The study employed an explanatory style of research methodology to gain a deeper understanding on the effect of project cost management practiceon prefabricated house development project success. As a result, a quantitative study methodology was used to evaluate this relationship. This study used a quantitative research approach, and the research questions were created to specifically analyse the impact of project cost management on a project's overall success.

3.2. Research Approach

The study's goals and the availability of pertinent data required the use of quantitative research. Quantitative research is a formal, systematic process that describes the relationships among variables. Quantitative approaches place a strong emphasis on measurements that are objective and the statistical, mathematical, or numerical interpretation of survey data. To generalize the impact of cost management approach on project success, quantitative and statistical analysis of data from the two research groups is conducted.

Description of Study Variables

The variables of this study are:

1) Dependent variable: The dependent variable of the study is the project success.
2) Independent variable**:** the independent variable of the study is project cost management practice of prefabricated housing development.

3.3. Target Population

The scope of the population of study focuses on one of the widest projects under Addis Ababa City Housing Development Corporation which is prefabricated mass house development. The target population of the study are the project managers and senior Engineers in the corporation working on the project who are recently working on the ongoing projects of the Corporation. This population will be selected among the total population since they have longer experience on the company projects and concept on project management and their project cost management experience from existing 40/60 and 20/80 projects.

3.4. Sampling Technique

Non-probability purposive sampling will be used to pick the study's sample. Since every staff member does not have the same or equal knowledge of the cost management practice of the company and the knowledge areas that are used in this project work, as it was discovered through the project work, the purpose of using non probability purposive sampling is to choose a sample who is knowledgeable about the cost management practice of the chosen project and to choose a sample who will be best able to answer the research question of this proposal work Participants in the study should meet the following requirements: (a) be a licensed professional engineer in construction or others and architect; (b) have overseen and completed the construction of at least one building in Addis Ababa;

3.5. Sampling Size

Sample size determination process is the act of choosing the number of observations or replicates to include in a statistical sample. The sample size is going to be determined based on the knowledge capacity of the respondents about the cost management practice of the organization on the chosen project. For this research 64, relevant respondents were involved, who have direct exposure to the Project Cost management system of the project.

3.6. Data Collection Process

From the study sample, both primary and secondary data sources will be used to extract the necessary information for the study from the research sample. The questionnaire is the study's methods and tools for gathering primary data. Relevant theoretical articles are studied as a secondary data source in addition to using them to collect relevant primary data for the study.

The questionnaire is prepared in order to address the research variables and to achieve the general objective of the study, and in order to meet the specific objectives, which are used to identify the effect of elements of cost Management on Success of Projects. The questionnaire surveys were prepared and circulated to collect data and analyse the performance of the ongoing project. Most of the questions were formulated based on the literature papers reviewed and the inputs and tool and technique requirement of project cost management process written in (PMBOK, 2017).

A close-ended questionnaire which had 22 questions developed using 5 points Likert scale to express how much the degree of effect. At a minimum, there were four questions for each dependent and independent variable. In addition, the questions were designed to meet the objective of the study and to obtain relevant information from the selected staff working in the project site.

3.7. Data Analysis

The data was collected and analysed using quantitative data analysis methods. The Statistical Package for Social Scientists (SPSS) will be used to code and evaluate the data that has been obtained. Because SPSS is a widely accessible and user-friendly analytic tool that the researcher is familiar with, it is utilized to facilitate data analysis. The responses were compiled using descriptive statistics measures of central tendency (mean and standard deviation).

The statistical package for social sciences (SPSS) program was also used to do inferential statistical analysis, correlation, and multiple linear regression. The following describes how to use these statistical tools and presentation techniques.

a) Correlation

Correlation (r) is used to describe the strength and direction of relationship between two variables. Since all variables are measured as an interval level, Pearson product moment correlation was used. Correlation “r” output always lies between -1.0 and +1.0 and if “r” is positive, there exists a positive relationship between the variables. If it's negative, the relationship between the variables is negative. While computing a correlation, the significance level shall be set at 95% with alpha value of 0.05 or a chance of occurrence of odd correlation is 5 out of 100 observations.

b) Multiple Regression Analysis

Multiple regression analysis is a major statistical tool for predicting the unknown value of a variable from the known value of variables. And regression analysis is selected because it is the best alternative to examine the impact analysis between a dependent variable and a set of independent variables.

The study used following regression model:

$$\boldsymbol{Y=\beta 0+\beta 1x1+\beta 2x2+\beta 3x3+\beta 4x4+e}$$

Where: Y = project success

X1 = plan cost

X2 = estimate cost

X3 = determine budget

X4 = control cost

$\boldsymbol{\beta}$ = Beta coefficients, $\boldsymbol{e}$ = Error term

3.8. Validity and Reliability

3.8.1. Validity

The study was done on the ongoing prefabricated housing development by AAHDC. Therefore, the population is homogenous and helps to have robust and valid data. All reasonable efforts were made to ensure that the data collecting tools were simple for respondents to comprehend so that the desired information could be gathered, boosting the reliability of the final conclusions. In light of the corporation's background, the questionnaire was modified and its validity was confirmed. Prior to the data collection, the instrument was also evaluated and checked for content validity and ethicality by the study advisor and members of the senior target population. Additionally, all cited sources are acknowledged with proper citation.

3.8.2. Reliability

This study used survey questionnaires which are already tested and applied on an international research level. But due to some modification on the adapted instrument to check it is understood by the respondents or not, 10 pilot tests were distributed for the selected

stuffs subject matter experts to ensure the Internal consistency of items which is the level of homogeneity of a scale was measured and incorporated in the instrument to be checked by using Cronbach's alpha coefficient on SPSS Version 20.0.

Cronbach alpha is a coefficient that is used to measure reliability or internal consistency of items; it indicates how closely the items are related to each other, and how free they are from bias (Sekaran and Bougie, 2009). If Cronbach alpha value is more than 70% for all variables, then reliability is assumed. Table (3.1) shows that Cronbach's Alpha coefficients for all variables are more than 70%, therefore reliability is assumed, (Tavakol & Dennick, 2011).

Table 3.1: Cronbach's Alpha coefficient

no	Variables	No of items	Cronbach alpha
1	Cost management planning	4	0.799
2	Estimate cost	4	0.7020
3	Determine budget	5	0.766
4	Control cost	5	0.702
5	Project success	4	0.762

Source: Own Survey, 2023

3.9. Research Ethics

Moral standards that direct or have an impact on how people behave are involved in ethical dilemmas. This study exemplifies the fundamental rules of research ethics, which include respecting the opinions of participants and the researcher. The questioner provides information to the participants regarding the study's goals. The information is then gathered utilizing surveys with the participant's complete agreement. The statement makes it quite obvious that these individuals are volunteers wanting to assist with the research project, and it is open and honest about their opinions. Participants in the research will be free to leave at any time, and their anonymity, the confidentiality of their personal information, and the protection of their data will all be guaranteed. Information about the researchers will be kept private and not disclosed to anybody outside the research.

Chapter Four

4. Data Presentation, Analysis &Discussion

This section deals with the analysis and interpretation of data collected from the survey questionnaire. Responses for the measures on the questionnaire are summarized and presented using tables, graphs and charts to facilitate easy understanding.

Of the 64 questionnaires distributed, 61 filled questionnaires were collected. Of which, two overrated responses (5 on all measures) and one underrated response paper (rating of 1 & 2 for all measures) were identified. Therefore, these responses have excluded and lowered the number of filled questionnaires to 58 which gives a response rate of 90.63%. According to Mugenda (2003) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate is adequate for analysis and reporting. The adopted questionnaire was developed using five scales ranking i.e., Likert scale; where 1 represents very low, 2 low, 3 average, 4 high and 5 very high. To analyse the collected data with that of the objective set for this research, Statistical procedures were carried out using SPSS Statistics version 20. Since the data collection was administered by the researcher, the usability of the questionnaires was checked upon collection and respondents were asked to refill for any missing values.

4.1. Demographic characteristics of respondents

Below is a presentation of the gender, age, educational level, work experience and maximum size of the project lead distribution of the survey questionnaire respondents.

4.1.1. Profession & Age distribution of respondents

As can be seen from Table 4.1, the majority of the respondents hold professional certificates in Engineering (n=34, %=58.62%) and 27.59 %(n=16) are certified in construction and the rest 13.79 %(n=8) have management professions. This shows that there were a high number of engineers responsible for execution of the project. Project Cost Management affects most who are involved in the project during the implementation period. Since the study was conducted on a prefabricated housing project, project works are mostly led by the technical (Engineering) teams. Thus, most of the population for this research was selected from the Engineering department. In addition, the majority of the engineer respondents (n=19) fall in the age group of 31–40 years' old which is also true for the manager and construction team

respondents (n=6 and n=8 respectively). Generally, 89.6% of the respondents are below the age 40 which shows that the workforce is composed of mainly young employees which is an advantage in construction cost management younger try to develop the conventional construction methodology standards with their updated knowledge, Young employees especially age groups between 21-30 years show enthusiasm towards their first job, they adhere to the corporation policies and are more sincere at the workplace, and More flexible to work for extra hours. Also, they come up with the most innovative initiatives that would help the success of the project regarding cost and schedule.

Table 4.1: professional certification and age group of respondents

Table 4.1 professional certeficate hold * age of respondents Crosstabulation

Count

		age of respondents			
		21-30years	31-40years	41-50years	Total
professional certeficate hold	engineering	10	19	5	34
	management	2	6	0	8
	construction	7	8	1	16
Total		19	33	6	58

Source: Own Survey, 2023

4.1.2. Educational qualification of respondents

The below table (Table 4.2) shows that 46 respondents (79.3%) have a Bachelor's degree and 12 respondents (20.7%) have Master's degree. This shows that the majority of the respondents are educated to a level of Bachelor's degree. Hence, all of the professionals selected had enough educational background. It shows that respondents are literate enough in order to understand and answer the research instruments correctly and respondents with different educational backgrounds are represented in the study.

Table 4.2: Educational Level

		Frequency	Percent
Valid	bachelor degree	46	79.3
	masters	12	20.7
	Total	58	100.0

Source: Own Survey, 2023

4.1.4. Work Experience and successful Experience in construction projects

As indicated on below table 4.3 and table 4.4 about respondents' overall experience in the corporation and the successful experience which is the percentage in which respondents stays in active project sites to understand the level of their experience and how that might influence their practices. The results on the below table (4.3) showed that respondents' experience below 4 years both in the corporation and as a construction management team was 18 (31%). Also, between 5 to10 years is 25 (43.1%). Respondents with experience in the project between 11 to15 years are 15 (20.7%) and the rest classification more than 15 years are 3(5.2%). This shows most of the project managers in the company worked less than 10 years in different construction projects and were classified in the younger age group which will serve the company for a longer period.

Table4.3: Work Experience

		Frequency	Percent
Valid	less than 4 years	18	31.0
	5-10	25	43.1
	11-15	12	20.7
	16-20	3	5.2
	Total	58	100.0

Source: Own Survey, 2023

Among all, as shown below on Table 4.4 18(31%) of respondents have successful experience of 20% from their year of experience in construction building projects and 5(8.6%) have 40% of their experience. From all respondents 4(6.9%) have 60% of their experience and the rest classification above 80% of successful experience working on construction project sites takes a larger portion of 31(53.4%). This shows most of the workforce stays in active project sites so they have successful experiences in the project and other similar projects.

Table 4.4: successful work experience

		Frequency	Percent
Valid	20%	18	31.0
	40%	5	8.6
	60%	4	6.9
	80%	21	36.2
	100%	10	17.2
	Total	58	100.0

Source: Own Survey, 2023

4.1.5. Respondents Management Position

As shown in Table 4.5, 44.8% of the respondents selected from the project team member, 48.3% of the population were from middle level project manager positions which are senior engineers and managers, and 6.9% are top managers which are construction supervision and contract administration team leaders and also the project manager directorates.

Table 4.5: Respondents working position

		Frequency	Percent
Valid	project team memeber	26	44.8
	middle level management	28	48.3
	top management level	4	6.9
	Total	58	100.0

Source: Own Survey, 2023

4.2. Descriptive Analysis of Project Cost Management

4.2.1. Plan cost management

Table 4.6 shows that the respondents' perception agreed with the given statements under cost management plan with the degree of the process in cost planning inputs mean values are ranging from 2.81 to 3.45 with average value of 3.034 and standard deviation ranging from 0.841 to 1.191 with average value 1.05. Such results indicate that respondents seen an average cost management planning practice on items of cost planning inputs. As per the

response the study tries to check cost management planning in relation to the effect on project success on details of planning like having pre-approved financial resources, having schedule and risk management plan, use of financial control procedures, taking in to consideration of the organization culture will help project success as stated on the literature review. The results showed that, more or less technical teams agree on the points listed and needs further improvement in cost planning practice to meet the overall project success.

Table 4.6: plan cost management

	N	Mean	Std. Deviation
Taking in to consideration the organizational culture, market conditions and currency exchange rate for planning	58	2.8103	1.19144
Having Schedule & risk management plan for the project	58	2.9310	1.24057
Using financial controls procedures, financial databases, historical information and lessons learned repository for planning	58	2.9483	.92570
Having project charter or preapproved financial resources for the project	58	3.4483	.84131
Valid N (listwise)	58		

Source: Own Survey, 2023

4.2.2. Cost estimation

Table (4.7) shows that the respondents' perception agreed with the given statements under estimation of cost related factors. The respondent level of agreements was with interval mean value from 2.87 to 3.45 and with average mean 3.06 showing they have an agreement on their response. The standard deviation ranges from 1.006 to 1.236. With an average value of 1.147. In the responses, the project has given average feedback related to cost estimation based on having a cost and quality management plan and scope baseline and also using lesson learned register, project schedule, resource requirements and risk register for estimation. But they responded less to factors related with using market conditions and published commercial information, exchange rates and inflation for estimation and also on use of cost estimating policies. Though, the project needs to develop cost estimation on use of these two factors.

Table 4.7: estimate cost management

Estimating cost	N	Mean	Std. Deviation
Having cost management plan, quality management plan and scope baseline for this estimation	58	3.0862	1.20357
Using Lessons learned register, project schedule, resource requirements and risk register for Estimation.	58	3.3448	1.23618
Using market conditions published commercial information, exchange rates and inflation for estimation.	58	2.8793	1.14060
Using cost estimating policies, estimating templates, historical information and lessons learned repository for estimation	58	2.9310	1.00633
Valid N (listwise)	58		

Source: Own Survey, 2023

4.2.3. Related to determining budget

As per Table (4.8) for the statements given under factors that determine budgeting for the project implementation, the respondent level of agreements was with interval mean value from 3.00 to 3.4 and with average mean 3.2 showing the project lacks budgeting experience. The standard deviation ranges from 0.803 to 1.487. With an average value of 1.07 on their response, the project has above average negative experiences to budget determining elements.

Table 4.8: determine budget

related to cost budgeting	N	Mean	Std. Deviation
Lack of experience in Cost Budgeting	58	3.0	1.48678
Using inadequacy of the details of cost related items in the agreement for budgeting	58	3.1	.92619
Not updating budget after variation of changes	58	3.2	1.23911
Poor Work Breakdown Structure definitions	58	3.3	.80324
Using Inaccurate cost Estimation for budgeting	58	3.4	.87255
Valid N (listwise)	58		

Source: Own Survey, 2023

4.2.4. Controlling cost

As per Table (4.8) for the statements given under factors that related with controlling cost of project, the respondent level of agreements was with interval mean value from 2.914 to 3.64 and with average mean 3.2 showing the project lacks reducing expenses and regulating the cost of project is still hindered. The standard deviation ranges from 0.751to 1.315 with an average value of 1.03.

Table 4.8: control cost

related to controlling cost	N	Mean	Std. Deviation
Lack of proper training and experience in Cost Controlling vicinity	58	2.9138	1.31502
Allowance of numerous variations during project implementation	58	3.1207	.75108
Having conflict between project participants for cost controlling	58	3.1207	.85998
Change in schedule and construction methods for cost controlling	58	3.2241	1.21458
Week monitoring and reporting methods	58	3.6379	1.00347
Valid N (listwise)	58		

Source: Own Survey, 2023

To summarize the cost management variables, on all the cost management dimensions' respondents moderately agree or give average to the points raised. The statements clarify factors of cost management and based on the mean value of the independent variables from respondents, results showed that most of the respondents responded below average on their response. This implies cost management practices of the project need improvements and still there is a gap.

4.3. Descriptive Analysis of Project Success

According to Table 4.9, the mean value of the Project Success variables is ranging between 2.931 to 3.34 and standard deviation ranging between0.88 and 1.16. The below result shows there is an average agreement among respondents for the project success variable of the project. The average mean of Project success variables is 3.1 with standard deviation 0.9085, which also implies there is a medium progress of project which leads to overall success of project. On the other hand, most of the respondents disagreed on the statements that the efficiency and the openness of the contract conditions succeeded as expected from the plan and schedule.

Table 4.9: project success variable

project success variables	N	Mean	Std. Deviation
Project contract condition	58	2.9310	1.16772
Project efficiency	58	2.9310	.89564
Project effectiveness	58	3.1897	.88767
Project cost overrun	58	3.3448	.94686
Valid N (listwise)	58		

Source: Own Survey, 2023

4.4. Relationship between project cost management and Project Success

One of the major objectives of the study is to assess the effect of project cost management on Project success. For this purpose, inferential statistics of correlation & regression analysis have been used & the results are presented in the below sections.

4.4.1. Pearson Product-moment Correlation analysis

Correlation analysis studies the joint variation of two or more variables for determining the strength and direction of the relationship among the variables, (Kothari, 2004). Accordingly, in order to identify whether the dependent variable & independent variables have a joint variation, Pearson's product moment correlation coefficient was computed. Pearson correlation results range between 1 (perfectly linear positive correlation) to -1 (perfectly linear negative correlation). When the correlation value is 0, no relationship exists between the variables understudy and when the correlation value lies in the middle between 1 & -1 (excluding 0) the below interpretation guide (Table 4.11) developed by, Tavakol. et.al (2005) becomes handy. Accordingly, this guide has been used to interpret the results which are summarized in the coming sections.

Table 4.10: correlation result interpretation guide

Correlation value in range	Interpretation
0.00 to 0.19	Weak/ very low correlation
0.20 to 0.39	Low correlation
0.40 to 0.59	Low correlation
0.60 to 0.79	High correlation
0.8 to 1.0	Very high correlation

Source: (Tavakol et.al, 2005)

Table4.11: Pearson's correlation among all variables

Correlations

		plan	estimatecost	determiningbudget	controlcost	projectsuccess
plan	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	58				
estimatecost	Pearson Correlation	.589**	1			
	Sig. (2-tailed)	.000				
	N	58	58			
determiningbudget	Pearson Correlation	.616**	.649**	1		
	Sig. (2-tailed)	.000	.000			
	N	58	58	58		
controlcost	Pearson Correlation	.680**	.634**	.751**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	58	58	58	58	
projectsuccess	Pearson Correlation	.596**	.762**	.629**	.719**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	58	58	58	58	58

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

Source: Own Survey, 2023

Results in Table 4.11 revealed that there was a positive and significant relationship between cost management planning and project success (r=0.596, Sig. value=0.000). This implies best practices in cost management planning high correlations with project success. Secondly, there was a strongly positive and significant relationship between estimating cost of project before start of the project and project success (r =0.762, Sig. value=0.000), between regulating determined budget and project success (r =0.629, Sig. value=0.000), between controlling cost of the project and project success (r=0.719. Sig. value=0.000). This implies that estimating cost of a project, in regulating a determined budget and controlling cost of project have high to very high correlation with project success.

4.4.2. Tests of Regression Model

Basic assumption tests for the model have been carried out by the researcher before performing multiple linear regression analysis. These tests include those for multicollinearity, normality of the distribution, and linearity of the relationship between the independent and dependent variables. The results are in Appendix 2, and each test result is interpreted below.

A. **Normality Distribution Test**

The independent variables must be normally distributed for multiple regressions. The points will fall in a straight line if the data's underlying distribution is normal. Different kinds of non-normality are represented by deviations from this line. Outliers are indicated by stray

points at each extreme of the normal probability plot. Long or short distribution tails are indicated by curves at the plot's two ends. Curvature that is convex or concave suggests an absence of symmetry. Plot gaps, plateaus, or segmentation point to a specific phenomenon that requires more investigation. As shown in the following According to a typical PP plot of the regression's standardized residual, cost control and project performance are correlated linearly. PP's plot is shown in Appendix 2.

B. Linearity of the Relationship Test

The second assumption for computing multiple regressions is a test of the linearity of the relationships between dependent and the independent variables. As depicted in the below scatter the visual inspections of the scatter plot shows there exists a linear relationship between project cost management and project success. The scatter plot is shown in Appendix2.

C. **Multicollinearity Test**

. In the case of multicollinearity, there is a high degree of correlation between the independent and dependent variables. Tolerance and variance inflation factor (VIF) values were analysed to see if the variables were multicollinearity. According to Pallant, (2005), tolerance is an indicator of how much of the variability of the specified independent variable is not explained by another independent variable in the model and if its value is less than 0.1, it indicates that the multiple correlations with other variables is high, implying possibility of multicollinearity. Whereas, VIF is the inverse of tolerance value (1 divided by tolerance). If the VIF value is above 10, it signals a chance of multicollinearity. Accordingly, the result in Appendix 2 shows that there is no possibility of multicollinearity among the variables in the model since all the tolerance values are above 0.1 and the corresponding VIF values are below 10. Therefore, for the current data multicollinearity is not an issue.

4.4.3. Multiple Regression analysis

Regression is a measure of association between two sets of variables. Thus, in order to determine the statistically significance effect of the independent variables on the dependent variable, multiple regression analysis was used. As an extension of simple regression, the goal of multiple regressions is to enable a researcher to assess the relationship between a dependent (predicted) variable and several independent (predictor) variables. The end result of multiple regressions is the development of a regression equation (line of best fit) between the dependent and independent variables (Pallant, 2005). In this study it is aimed to identify

the effect of cost management practices on project success. Accordingly, on the correlation analysis section, it is identified that all the independent variables have significant positive correlation with project success. Based on this, multiple regressions have been conducted to know their impact on project success. Accordingly, adjusted R2 values were referred to indicate the percentage variance in the dependent variable (Success) explained by the independent variables (which are cost planning, estimate cost, determine budget and control cost) and the statistical significance of this relationship is also tested.

Table 4.12: summary result of multiple linear regression analysis

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.822[a]	.675	.651	1.77115	1.967

a. Predictors: (Constant), controlcost, estimatecost, plan, determiningbudget

b. Dependent Variable: projectsuccess

Source: Own Survey, 2023

The model summary in Table 4.12 shows the coefficient of determination which revealed the model explanatory power. The R-value of 0.822shows there is a strong and positive correlation among the four variables. And an adjusted R- square (R2) value of 0.651 shows that 65.1% of variance on dependent variables, project success is explained by practices of cost management planning, estimation of cost, determining budget and controlling cost of project. The remaining 22.5% of project success can be explained by other factors not included in the model.

Durbin-Watson test

The assumption of autocorrelation is that the covariance between the error terms over time is zero. It is assumed that the errors are uncorrelated with one another. If the errors are correlated with one another, it would be stated that they are "auto correlated" or that they are serially correlated (Brooks, 2008). To confirm whether there is autocorrelation or not the Durbin Watson test (DW) rule for autocorrelation was applied in this study. The regression result of DW as shown in table 4.12 above was 1.967 DW test result is almost two which implies there is no autocorrelation.

ANOVA

The regression model's overall fit can be examined with the help of ANOVA. Accordingly, table 4.13 of this study shows that the value of R and R2 found from the model summary is (F=27.544), (P<0.001). This indicates that over all, the regression model statistically significantly predicts the project success of prefabricated housing development project using the four independent variables.

Table 4.13: ANOVA model fit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	345.619	4	86.405	27.544	.000[b]
	Residual	166.260	53	3.137		
	Total	511.879	57			

a. Dependent Variable: projectsuccess

b. Predictors: (Constant), controlcost, estimatecost, plan, determiningbudget

Source: Own Survey, 2023

Standard Beta Coefficient

Not all factors are retained in an analysis and only factors that are statistically important should be retained. The standardized coefficients are the coefficients which can explain the relative importance of explanatory variables. These coefficients are obtained from regression analysis after all the explanatory variables are standardized.

Table4.14: Regression coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.940	1.180		.796	.429	-1.427	3.306		
	plan	.048	.100	.054	.480	.633	-.153	.249	.487	2.054
	estimatecost	.456	.101	.500	4.531	.000	.254	.658	.503	1.987
	determiningbudget	-.005	.097	-.007	-.053	.958	-.199	.189	.379	2.640
	controlcost	.335	.120	.371	2.793	.007	.094	.576	.348	2.872

a. Dependent Variable: projectsuccess

Source: Own Survey, 2023

Standardized beta values indicate the contribution of the variables in the model for the prediction of the dependent variables which enables them to rank the variables based on their

contribution, (Pallant, 2005). Therefore, in this case, cost estimate and control cost is significant to show their effect on project success of prefabricated housing development of AAHDC. Whereas, plan cost and determine budget had insignificant effect on project success.

- **Estimate cost**: had a p-value of 0.000 which is less than 0.01 (1% level of significance), and was concluded that estimate cost had a positive and significant effect on project success. This implies a unit change in estimate cost increases project success by 0.5units.
- **Control cost**: had a p-value of 0.007 which is less than 0.01 (1% level of significance), and was concluded that estimate cost had a positive and significant effect on project success. This implies a unit change in estimate cost increases project success by 0.335units.

Chapter Five

5. Summary, Conclusion & Recommendation

In this chapter, major findings are going to be summarized and the subsequent conclusions will be made. Based on the conclusion, recommendations are forwarded in relation to literatures reviewed to better enhance the corporation project success.

5.1. Summary of Major Findings

Since the main objective of this research is to assess the effect of project cost management on project successes of prefabricated housing development of Addis Ababa city housing development Corporation. The study targeted a total of 64 respondents. However, only 58 respondents responded and returned their questionnaires contributing to a 90.6% response rate. The reliability values for all constructs are all greater than 0.70, which is considered acceptable. Respondents from different age groups, educational background, and years of experience both in the prefabricated housing development and even other conventional constructions are represented in the data collected. The result of the background of respondents shows that 89.6% of the respondents are below the age 40 which shows that the workforce is composed of mainly young employees which is an advantage in construction cost management younger try to develop the conventional construction methodology standards with their updated knowledge, the majority of the respondents hold professional certificates in Engineering (n=34, %=58.62%) and 27.59%(n=16) are certified in construction and the rest 13.79%(n=8) have management professions. This shows that there is a high number of engineers responsible for execution of the project. Project Cost Management affects most who are involved in the project during the implementation period. Since the study was conducted on a prefabricated housing project, project works are mostly led by the technical (Engineering) teams. Regarding work experience Respondents with experience in the project between 11 to15 years are 15 (20.7%) and the rest classification more than 15 years are 3(5.2%). This shows most of the project managers in the company worked less than 10 years in different construction projects and were classified in the younger age group which will serve the company for a longer period.

As per the results of this descriptive study all the cost management dimensions' respondents moderately agree or give average to the points raised. The statements clarify factors of cost management and based on the mean value of the independent variables from respondents,

results showed that most of the respondents responded below average on their response. This implies cost management practices of the project need improvements and still there is a gap.

From correlation there is significant association between the independent variables Cost Estimating, Cost Budgeting, Cost Control and cost plan with the dependent variable Overall Success of Project, in AAHDC prefabricated housing Project, since the p-value for those project cost management components in this project work is less than 0.05. From the model summary, we had adjusted R square of 0.651 i.e., 65.1% of the variations in the overall success of a project in cost management of AAHDC prefabricated housing development is explained by practices of cost management planning, estimation of cost, determining budget and controlling cost of project. The remaining 22.5% of project success can be explained by other factors not included in the model. The ANOVA result show the P-value of 0.000 indicates that the regression relationship is significant in predicting how those four independent variables (cost estimate, budget estimate, resource planning and cost control) influence the overall success of a project management. The regression model's overall fit can be examined with the help of ANOVA.

Based on the regression analysis, the results of project cost management effect on project success ranked as: first. Cost estimates have the highest weight and have more effect on project success based on the result of this study in having a significant effect on project successes. Estimating costs contains developing an estimate of the costs of the resources needed to finalize a project. in order to complete projects within budget constraints, project managers must take cost estimates seriously. (Forbatok, 2014)

In the responses, the project has given average feedback related to cost estimation based on having a cost and quality management plan and scope baseline and also using lesson learned register, project schedule, resource requirements and risk register for estimation. But they responded less to factors related with using market conditions and published commercial information, exchange rates and inflation for estimation and also on use of cost estimating policies. Though, the project needs to develop cost estimation on use of these two factors.

5.2. Conclusion

Generally, in response to the research problem and hence answering the research questions, the following conclusions were drawn.

As described in the introductory section of this study, project cost management is critical for the project success of an organization. Since cost management is the process of estimating,

determining budget, and controlling project costs used in the implementation of the project. Accordingly, the main objective of the study is to determine the effect of project cost Management practices on project success in the case of Addis Ababa city prefabricated housing construction at Akakikality sub city. Thus, based on the major findings stated above, the following conclusion has been reached. Regarding cost estimation of cost of the project, the result displayed that it has a high major significant effect on the success of a project than other variables both on correlation and regression result. Cost estimation is a critical cost management variable in increasing the success of projects. In order to effectively manage the cost of a project Cost estimates must be prepared in the early stages of a project to allow a client to evaluate the most economical tenders, secure funding, or perform a cost-benefit analysis. This is identified as a major gap and hence the corporation needs to take immediate action to resolve the drawbacks of the practice. Cost control has a moderately high significance effect when compared to cost estimate on the project success as per the result. This is a positive finding and a proof that the corporation should enable the project teams to observe current cost level, compare them with the standard cost plan and institute corrective action in order to protect the project from cost overrun.

Determining the budget and plan cost has insignificance effect on project success. As per this study, prefabricated housing development project success is taken as a function of cost only and analysed by taking the overall average as per the study design. Finally, to conclude on the importance of project cost management for project success, the study showed cost estimate has rated the highest importance, followed by cost control. Also, there is a strong relationship between cost management variables, and also with Project Success. Likewise, there is a strong relationship between the overall cost management and Project Success.

5.3. Recommendations

The basic purpose of evaluating the effect of project cost management should be to accomplish the project success. If a project has well developed cost management practice, it has a strong impact to achieve the project goal and for project success. Therefore, based on the result and findings of the study, the following recommendations have been drawn:

- The current study recommends and emphasizes the development of cost management practices starting from resource planning and estimating cost to determining budget for the project and control cost especially using the above variables as a baseline

prefabricated housing development project branch should provide a guideline for estimate and forecast the direct and indirect cost of the project.

- The project branch should continuously measure the status of the project against the resource plan to know its success or failure.
- The Addis Ababa city housing development corporation should make laws to compel all project branches to adopt cost management practices based on the standard. This will give radical change in increasing project success by implementing projects within cost and schedule.

5.4. Suggestions for future research

The study is intended to examine the effect of project cost management on project success. In this regard, the research obtained valuable results however there are some potential limitations discussed below.

- This study is done on one branch of AAHDC prefabricated housing development project which makes it indicative but cannot be fully conclusive. Thus, future studies in this area could be done in a broader geographic scope and including other firms to increase conclusiveness of the findings.
- Among different factors that affect project success variables, this study used limited ones and got reliable results. But there are also other factors that respondents suggested to be included and may have a major impact on project success. These are political influence, technology, and corruption. Future research should look into these factors for better implementation of housing development projects.

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APPENDIX 1

Questionnaire for Project Work

Addis Ababa University

School of Commerce

MA in Project Management

Questionnaire for Project Work

INTRODUCTORY LETTER

Dear Sir/Madam;

This questionnaire is design to collect information on **The Effect of Project Cost Management Practices on Project Success.** Which I am conducting a study asa partial fulfilment of MA program in Project Management. Thus, I kindly request you to complete the attached questionnaire. Your responses highly valuable to the outcome of the research. In addition, to test empirically the effect of project cost management on project success.

Please also note that all the information will remain confidential and the findings of this study will used for academic purpose only. I would like to express my heartfelt gratitude in advance for your time and cooperation.

Sincerely yours;

If you have any hesitation or question,
Email: gmehadi55@gmail.com
Tel: +251937-999365
Thank you for your interest in participating in the research and for your time and kind Cooperation

MahderGebremichael
AddisAbeba
 Tel: +251937999365

Section 1: Demographic information

Please indicate your choice to each question selecting the appropriate option.

1. What type of professional registration certificate you hold?

A) Architecture

B) Engineering

C) Management

D) Design

E) Construction

F) NA

3. What is your age?

A) 21-30 years

B) 31- 40 years

C) 41-50 years

D) 51 and above

4. What is your highest educational level?

A) High school or equivalent

B) Associate or technical degree

C) Bachelor's degree

D) Master's

E) Doctorate degree

F) Other

5. How long is your design or construction project management (Project manager) experience? A) Less than 4 years C) 11-15

B) 5-10 Years D) 16-20

E) Above 20 years

6. What is the estimated percentage of successful experiences on construction or design projects?

A) 20% D) 80%

B) 40% E) 100%

C) 60%

7. Which of the following management position best describes you?

A) Middle level management (Project Team Leader, Project Site Supervisor/Manager)

B) Top management level (Project Manager Position, Design team leader, Resident Engineer, Owner)

C) Project team members (Engineers, Architects working under middle level management)

Section 2: Assessment on the factor of cost management effect

Please indicate the level of effect which project cost management process factors effect on success of projects in reference to your completed project. Please Tick (√) where appropriate in the space provided for each question.

R.N	Construction project cost management factor	Degree of effect				
		Very low	low	Average	High	Very high
	Question Related to Cost Management Planning					
1	Having project charter or preapproved financial resources for the project					
2	Having Schedule & risk management plan for the project					
3	Using financial controls procedures, financial databases, historical information and lessons learned repository for planning					
4	Taking in to consideration the organizational culture, market conditions and currency exchange rate for planning					
	Question Related to Estimating Cost					
1	Having cost management plan, quality management plan and scope baseline for this estimation					
2	Using Lessons learned register, project schedule, resource requirements and risk register for Estimation.					

3	Using market conditions published commercial information, exchange rates and inflation for estimation.					
4	Using cost estimating policies, estimating templates, historical information and lessons learned repository for estimation					
	Question Related to Determining Budget					
1	Poor Work Breakdown Structure definitions					
2	Using Inaccurate cost Estimation for budgeting					
3	Lack of experience in Cost Budgeting					
4	Using inadequacy of the details of cost related items in the agreement for budgeting					
5	Not updating budget after variation of changes					
	Question Related to Controlling Cost					
1	Allowance of numerous variations during project implementation					
2	Change in schedule and construction methods for cost controlling					
3	Week monitoring and reporting methods					
4	Having conflict between project participants for cost controlling					
5	Lack of proper training and experience in Cost Controlling vicinity					
	Question Related to Cost performance (Success)					
1	Project efficiency					
2	Project effectiveness					

3	Project cost overrun					
4	Project contract condition					

Appendix 2

Correlation and Regression Results

Correlations

		plan	estimatecost	determiningbudget	controlcost	projectsuccess
plan	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	58				
estimatecost	Pearson Correlation	.589**	1			
	Sig. (2-tailed)	.000				
	N	58	58			
determiningbudget	Pearson Correlation	.616**	.649**	1		
	Sig. (2-tailed)	.000	.000			
	N	58	58	58		
controlcost	Pearson Correlation	.680**	.634**	.751**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	58	58	58	58	
projectsuccess	Pearson Correlation	.596**	.762**	.629**	.719**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	58	58	58	58	58

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

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	controlcost, estimatecost, plan, determiningbudget[b]	.	Enter

a. Dependent Variable: projectsuccess

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.822[a]	.675	.651	1.77115	.675	27.544	4	53	.000	1.967

a. Predictors: (Constant), controlcost, estimatecost, plan, determiningbudget

b. Dependent Variable: projectsuccess

Coefficients[a]

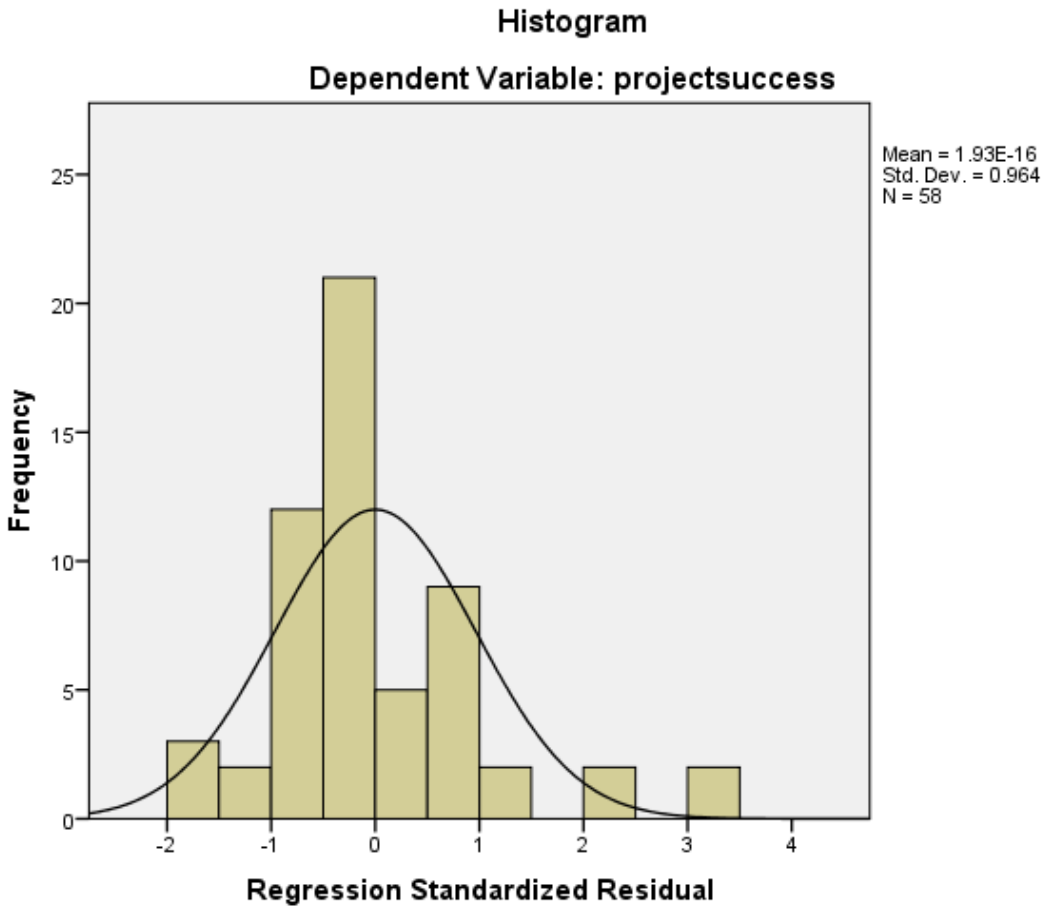
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.940	1.180		.796	.429	-1.427	3.306		
	plan	.048	.100	.054	.480	.633	-.153	.249	.487	2.054
	estimatecost	.456	.101	.500	4.531	.000	.254	.658	.503	1.987
	determiningbudget	-.005	.097	-.007	-.053	.958	-.199	.189	.379	2.640
	controlcost	.335	.120	.371	2.793	.007	.094	.576	.348	2.872

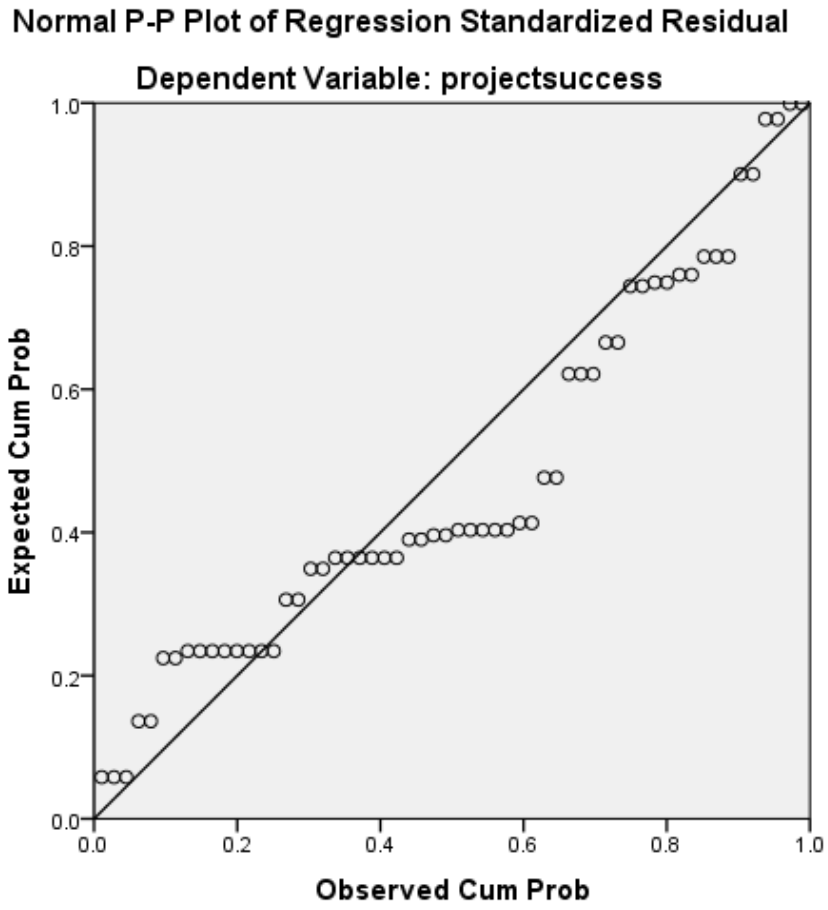
a. Dependent Variable: projectsuccess

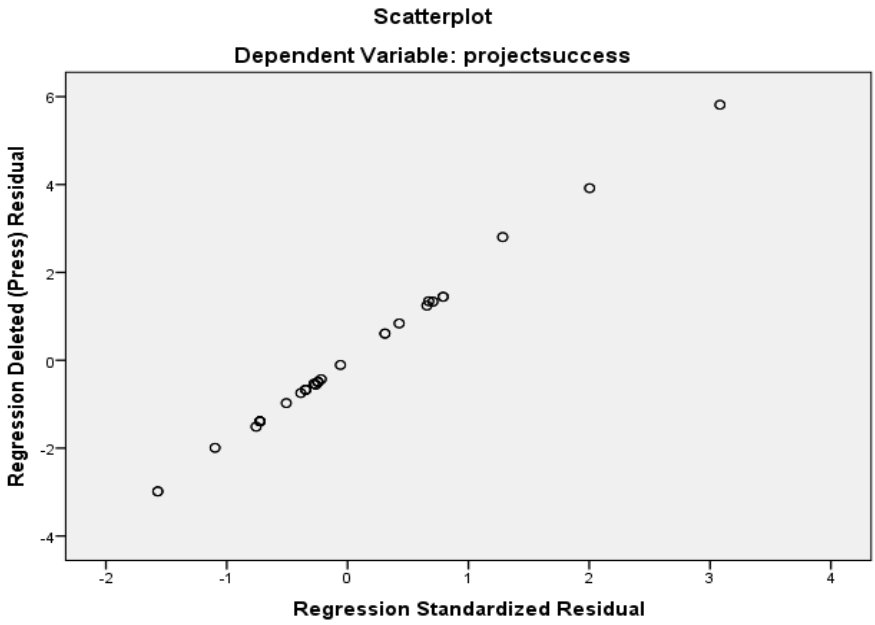
Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	plan	estimatecost	determiningbudget	controlcost
1	1	4.902	1.000	.00	.00	.00	.00	.00
	2	.037	11.466	.72	.18	.09	.01	.00
	3	.028	13.169	.01	.58	.56	.02	.00
	4	.021	15.106	.12	.14	.35	.53	.05
	5	.011	21.544	.16	.10	.00	.44	.94

a. Dependent Variable: projectsuccess




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: projectsuccess
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0


Scatterplot
Dependent Variable: projectsuccess
Regression Deleted (Press) Residual
Regression Standardized Residual
-4
-2
0
2
4
6
-2
-1
0
1
2
3
4