

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

MASTERS OF ART PROGRAM IN PROJECT MANAGEMENT



**MAJOR CHALLENGES IN CONSTRUCTION PROJECT CLOSURE IN
GOVERNMENTAL HIGHER EDUCATIONAL INSTITUTION: - THE CASE OF
SELECTED UNIVERSITIES AROUND ADDIS ABABA**

BY: HENOK TADESSE

JUNE, 2022

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Addis Ababa-Ethiopia

DECLARATION

This research paper, titled -Assessment of significant problems in construction project closure in governmental higher educational institutions: the case of selected universities surrounding Addis Ababa, is my original work and was completed under the supervision of **Worku Mekonnen (PhD)**. All sources of information used in the final project work have been properly credited. I further confirm that the final project work has not been submitted in part or in whole to any other institution of higher learning for the intention of receiving a degree.

.

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AAU-School of Commence

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June, 2022

Title of the project work

**MAJOR CHALLENGES IN CONSTRUCTION PROJECT CLOSURE IN
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This final project work has been submitted to AAU-School of Commerce for examination with my approval as a university advisor.

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December, 2022

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ACRONYMS

AASTU: Addis Ababa Science & Technology University

AAU: Addis Ababa University

CSU: Civil Service University

FDRE: The Federal Democratic Republic of Ethiopia

PLC: Project Life Cycle

PM: Project Management

PMI: Project Management Institute

PMOK: Project Management Body of Knowledge

RII: - Relative importance index

ABSTRACT

This study was conducted on the governmental higher educational institutions in a case of selected universities around Addis Ababa. The researcher selected AAU, AASTU and CSU as a representative university around Addis Ababa. These universities had a total of 9 projects in closeout phases over the past six years. The main purpose of the study was to assess the major challenges of project closeout in these institutions. The study adopted descriptive research design. The study used quantitative methods of study. Source of data collection used for the study was only primary data. The study used census technique and identified 70 respondents from contractor, consultant, client and other stakeholders who were professionals and directly & indirectly participated in the project closeout phase these universities. The study found out that exterior challenge; a delay in utility services have scored highest as the major closeout challenge inclosing the institutions project. Also lack of urgency in approach, enthusiasm & motivation of parties involved due to achieving substantial completion, lack of technical expertise, loss of project staff interest in task remaining such as documentation and division of effort to other new projects are taken as major internal challenges of the institutions in project closeout phase. The study concludes that the governmental higher educational institutions project closeout was affected by both internal and external challenges. The study recommended that adherence to a strict & consistent monitoring and follow up of project documentation, a proper screen out in hiring of professional project consultant, adopting the practice that project closeout begins from the project inception and changing the usual project closeout culture to the level that requires to archiving project lesson learnt.

Keywords: Project closure, challenge, interior and exterior closure challenges.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Project closure is the final foremost segment of a project's life cycle. The cause of project closure is to complete the task and ensure that every team member of the project learns from what has transpired. The work burden at the closure phases is exceptionally decided via the work carried out on each project planning and execution levels. But, like different stages, undertaking closure requires a due expert care which will address the difficulties.

Due to consumer needs, technological enhancements, time and finance limitations, and method development, the development commercial enterprise is dynamic. (Chan et al., 2004). Projects go through an expansion of phases from initiation to completion, every stage is characterized via some duties geared toward figuring out, planning, designing, and building the deliberate facility (Thabet, 1999). Challenging closure is one of the most essential project stages. It's whilst all of the undertaking's agreements are officially completed. Closure takes place as soon as all commitments are met and all necessary files are signed during the project cycle. Closure is the hardest section for the project manager. As the venture's finish date progresses, the project manager will face an entire new set of problems so as to finish it effectively. Inadequate project closeout, when the project team fails to capitalize on the wealth of experience from previous projects, and client dissatisfaction with the final product are two examples. (Phiri and Haddon, 2000).

Following sizeable completion, project closure refers to the finishing touch of all construction agreement requirements, including punch listing objects, turning in documentation which include procedures and makeover guides, as-built drawings, contractor's verification bureaucracy, alternate order and declare decision, final checks, final fee, and the client's Interior decision of all bills and reporting. The closure section is supposed to begin when the contractor has largely completed the task's paintings, even though it is witnessed frequently of the remaining distance after the work has been completed. (Fisk and Rapp, 2004)'.

According to Kual (2014), the closure phase is rarely under-planned. Personnel with less experience regularly underestimate the relevance of difficulties in closure. In keeping with the establishments stakeholders that participated in a similar research, punch list items are

the maximum commonplace supply of delays. Easy reminders to the contractors and retaining simplest one in the punch listing are solutions to this trouble. In further detail, O'Neill (2015) referred that those areas can be stepped forward. team of workers must no longer, as an example, do away with paperwork that can be completed in the course of slow periods. whilst office work is postponed, it's miles more likely to be left out, out of place, or not noted entirely, especially if there aren't sufficient employees on group of workers to do all of it.

This is an important concept in modern day construction region, as it's far turning into increasingly tough to complete on time. The closure phase is one area of the enterprise wherein forget about has occurred, and the required technique of the interested representatives has constantly been inadequate (kual, 2014). Even projects that had been strolling on time would reasonably come to a halt near the realization due to various administrative and contractual task closure problems.

In keeping with Wubishet (2004), Ethiopia's production enterprise is beset by using masses of problems that plague the enterprise, making efforts to improve it challenging and complex. The fundamental issues within the building industry may be divided into agencies. The primary is hooked up to the consequences of the sector now not being perceived and planned as a whole, however as a substitute as a set of fragmented, unbiased, and regularly contradictory components. The second issue is that the development industry's growth is being brutalized through shortcomings and marketplace price inconsistency of construction inputs. The construction enterprise's development is dependent on the supply and price of constructing materials in phrases of quality, amount, and variety. Contractors fail to address their projects in the desirable margin of time, in addition to within the predicted cost scope for themselves, due to the unpredictably happening unexpected charge rises. Those problems arise as a result of undertaking closure delays in Ethiopia's production enterprise (Zerihun,2017).

However, in the Ethiopian construction business, project closure begins when the built construction is ready for service or operation, and the consultant has provided the contractor a temporary acceptance documentation. The contractor is predicted to remedy the problem in the specified defect time, in footstep with these records. The consultant can subsequent expand the very last popularity certificate, in order to be signed off by means of the venture sponsor and given to the contractor.

The aim of this paper is to evaluate the main problems in the construction project closure in governmental higher education institutions as a) these area is the most frequently qualified reported by the office of general auditor, b) the most pressing issue as it's noted by the house of the people representative, and c) considering the amount of budget allocated to these initiation is material d) considering the goodwill of these institutions and being the pioneer in handling the construction closure phases with due professional care has paramount importance to give lesson to themselves and other in the construction industry.

Therefore, this study is conducted in governmental higher educational institutions around Addis Ababa particularly in AAU, AASTU, and CSU that have an exposure in construction project closure phase.

1.2 Statement of the problem

It is perilous that the last stage gets appropriate courtesy and satisfactory planning in order to successfully surface all actions and then achieve a "lessons learned" hearing in which any faults made on one work are not recurrent on the next job. Closure additionally includes attending to the project's last foundations and effectively handing over the completed product. As an end result, if greater stress is located on arranging a radical undertaking finishing touch while accounting for any unexpected scenarios, all events involved will advantage. There are only a few groups that obey to the information of seeing a venture via thereby offering a legitimate pretext to conduct a structured study in this discipline (El-Razek, M., 2008).

As per Westland (2006), extra than 90% of errands do not conduct an impartial evaluation of their fulfillment once they are completed. The reason for that is that formally ultimate to the undertaking and evaluating its fulfillment takes money and time. Furthermore, many task managers are proof against having their project reviewed by using a 3rd party. This, mixed with the value of gaining an impartial evaluation might constitute as a reason for many agencies to neglect this section in their activities to assess new task activities.

Moreover, the closure level reasons 80 percent of projects to be behind schedule around the sector; this indicates that every project phase has its own function to play in accomplishing the project's goal and celebrating its deliverables (Kual,2014). Closure stages are greater difficult to finish than the opposite levels of development. (Rogers,2012).

This demonstrates that project closure is one of the most critical phases that must be efficiently controlled as a task network, yet most individuals fail to provide it the equal level of attention and commitment as they do for the duration of planning and execution. When a construction project is not completed on time or on the specified date as agreed by the parties, it means that it has been delayed. (Diva and Ramyas, 2015, as cited in F.K.Ziddah,2016). In keeping with Ziddah (2016), the maximum considerable difficulty with undertaking closure is put off, followed by using documentation. Another examine located that wrong project closure is a key purpose of difficulties in delays (Tadesse,2017).

Reputedly if an undertaking reveals the time and budget to complete the project closure in its complete sense, it's going to no longer make certain that the project is closed speedy and correctly, however additionally it will attain the learning required to make certain that subsequent project is even extra successful than the closing.

The researcher is inspired to study major encounters on the construction closure on the following basis a) AAU, AASTU and CSU are the pioneers in delivering both engineering and project management education at higher level but can't far from the project closure problems. b) AAU is the first and most preferred construction supervisory service delivery institution by both governmental and nongovernmental organization, hence assessing how the institution exercising its project closure to its client is paramount important c) As these institutions are/would be engaged in various construction project in a scene to excel their mission on the sector.

Cognizing, the above three foremost factors and different factors that encumber the hit of entirety of construction projects specially at the closure levels, the researcher sought to apprehend them and has attempted to advocate a sound remedial moves as future projects can undertake to clear up the ones difficulties. as a consequence, this final project work assesses the principal demanding situations in construction project closure of higher instructional institutions inside the case of AAU, AASTU and CSU.

1.3 Research questions

The research intends to answer the following questions: -

- How well are the project close out activities are undertaken in?

- What are the other challenges that hinder the construction closure phases?
- What are the benefits of implementing a standard construction project closure phase and were the involved parties to the construction closure aware of it?

1.4 Objective of the study

1.4.1 General Objective

The general objective of the study is to assess the major difficulties in construction project closure in governmental higher educational institutions.

1.4.2 Specific objective

- To assess the projects closure activities undertaken the selected universities.
- To identity the other challenges that hinder the construction closure process.
- To evaluate the benefits and awareness of standard construction project closure phase.

1.5 Significance of the study

This research is being carried out primarily for academic purposes as part of a Master of Art in Project Management degree program. However, the study's overall findings are intended to:

- Educate stakeholders on the issues that affect construction project closure and mitigation strategies in order to develop an effective and professional project closure strategy.
- Motivate other researchers to do additional research on a similar topic.

1.6 Scope of the study

Regardless of the fact that project closure is a global concern, the scope of this study is limited to governmental higher instructional institutions construction projects which are inside the closing stages of finishing point. Closure phase refers to project which can be among provisional and very last acceptance for the purposes of this look at. The research is confined to consciousness on primary difficulties that influences the development task closure in AAU, AASTU and CSU construction project that are in a closure phases over the last six years from the year 2017-2022. The study does not cover project which aren't purposeful (those no longer getting provisional popularity).

1.7 Limitation of the study

Emphasizes only on evaluation of major production task closure in governmental educational institutions construction tasks. Because the place of the subject has many more tasks underneath it, but because of the dependability & sureness of stakeholders' resource and time constrains, it is limited to AAU, AASTU and CSU production task which might be already closed out. In addition, complications in having access to personnel who had been at once participants in those project closure phases.

1.8 Definition of key terms

The purpose of providing definitions is to familiarize the audience with a few terms in this research that may not be part of a normal lexicon.

- **Government:** - is the Federal Democratic Republic of Ethiopia.
- **Higher Education Institutions:** - are universities that are institutionalized to deliver a tertiary level of education but not included a vocational school.
- **Project:** - is a unique endeavor to produce a set of deliverables within clearly specified time, cost and quality constraints (Westland,2006)
- **Project management:** - is the art of managing all the aspects of a project from inception to closure using scientific and structured methodology (Juneja,2018). Project management, then is the application of knowledge, skills and techniques to execute projects effectively and efficiently. It's a strategic competency for organization, enabling them to the project results to business goals-and thus, better compete in their markets (PMI,2010).
- **Project Manager:** - is the leader of the project team (PMI,2010)
- **Employer(client):** - the owner or the owner's authorized agent or representative as designated to the contractor in writing , but does not include the consultant (FIDIC,1999).
- **Contractor:** - the one that shall design execute and complete the works in accordance the contract and shall remedy any defects in the works. (FIDIC,1999).
- **Consultant (Employer representative):** - means the representative which act on the behalf of the employer, in this event the employer shall give notice to the contractor of the name, address, duties and authority of the employer representative (FIDIC,1999).
- **Project life cycle:** - the series of phases that a project passes though from its initiation to its closure (PMI,2010).

- **Punch list (check-off list):** - a detailed list made near the end of a project, showing all items still requiring completion or correction, before the work can be accepted and a certification of completion issued (Fisk and Rapp,2004).
- **A project closure report:** - is a document which formalizes the closure of a project. It provides confirmation that the criteria for customer acceptance have been met and request sign-off from the project sponsor to close the project.
- **Validate the project completion:** - a section that confirms that the criteria required to complete the project have been met and that any outstanding items have been identified.
- **Identify the closure activities:** are activities that includes the handover of deliverables and documentation to the customer, termination of supplier contracts, release of project resource back to the business or market place, and communication of closure to all project stakeholders.
- **Complete project closure actions:** - following approval, the activities stated in the project closure report are undertaken to close the project.

1.9 Organization of the Research Report

Chapter 1 outlines the background of the study, the problem statement, the objectives, the research question, the scope of the study, the limitations of the study, and the significance of the study. In the second chapter, the literature on project closure in construction projects is reviewed. The methodology is described in Chapter 3: - The study methodology is described in this chapter, along with data collection techniques and several types of questionnaires, while data analysis is covered in chapter four: - This chapter's objective is to review and explain about the gathered data. It provides an analysis of the data acquired through the questionnaires and document review survey, as well as analysis that support the study's recommendation and conclusion. It also identifies the significant problems in construction project closing in AAU, AASTU, and CSU projects. The investigation is concluded in Chapter 5 with a summary of the findings and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Introduction

This section reviews literature on project closure in the construction industry. It will consider project and project management concepts, the project life cycle, project closure, the activities of the project closure and project closure practices, problems associated with project closure as well as challenges that prevent contractors, clients and consultants from achieving projects on time.

2.1.2 General Concept of Project and Project management

Project

Project is any set of activities and tasks that a) have a specific goal to achieve within certain parameters, b) have defined start and end dates, c) have funding limits (if applicable), d) depoly human and nonhuman resources (money, people, equipment), and e) are multifaceted (cut across several functional line) Kerzner (2009),

According to Nicholas (2004), a project is the process of working toward a common goal through a series of different phases known as the project life cycle. As the project progresses through its phases, the individuals, organizations, and other resources involved change. As the project progresses, the organization structure and resource expenditures gradually increase, then decrease as the project nears conclusion.

Project Management

Project management is the process of applying appropriate and appropriate information, skills, tools, and techniques to project activities in order to effectively meet project specifications and requirements. Project management is completed or achieved by employing project procedures such as initiation, planning, execution, monitoring and controlling, and closure. (PMI, 2013).

Identification of requirements, addressing the various needs, concerns, and expectations of stakeholders in the planning and execution of the project; creation, maintenance, and

execution of active, efficient, and collaborative communications between stakeholders; management of stakeholders to meet project requirements; and creation of project deliverables and balancing competing project constraints, which include but are not limited to: Scope, Quality, Scheduling, Budget, Resources, and Risks are all things to consider when planning a project.

2.1.3 Project life cycle

The Project Life Cycle (PLC) describes the complete project's development history in detail, including a thorough explanation of each of the critical project activities. As per Trevor L. (2007), projects have very definite characteristics, all of which are time-limited; they, like products, go through a life cycle. The difference is that the life cycle is active at all times and can be repeated throughout the project. All initiatives that were accepted at the outset had a similar life cycle..

A life cycle of a project is the sequence of phases experienced by a project from initiation to termination/closure/ (PMI, 2013), these are: -a) **Initiating Process Group**. These processes were performed by obtaining permission to start the project or process to establish a new project or a new phase of an existing project. b) **Planning Process Group**. These processes needed to determine the project's scope, refine the targets, and identify the course of action needed to achieve the goals the project was undertaken to achieve. C) **Executing Process Group**. These processes were carried out in order to complete the work specified in the project management plan to meet the requirements of the project. d) **Monitoring and Controlling Process Group**. These processes needed to monitor, review and control the project's progress and performance; identify any areas where changes to the plan are necessary; and implement the appropriate changes. d) **Closing Process Group**. Such procedures were carried out to finalize all tasks and officially close the project or phase across all process groups.



Figure2. 1: project life cycle (PMI, 2013)

2.1.4 Project Closure

The project closure phase, also known as the last or final phase of the project life cycle, is a

critical step in the life of a project and requires careful consideration (De, 2001). De (2001) and Dvir (2005) emphasize the importance of correctly planning and budgeting the project closing, as well as all other phases of the project life cycle. Gardiner (2005) hit the nail on the head when he said that project closure begins during the planning stage and not at the end. Closing activities should be undertaken throughout the project's lifecycle to ensure that the project can be properly closed.

Handing over deliverables to your customer, submitting documents or paperwork to the company, canceling contractor contracts, releasing workers and equipment, and informing stakeholders about the project closure are all part of project closure.

The tasks of commissioning project deliverables and capturing all project experience are included in the project closure or termination (Gardiner, 2005). Although project closure is inevitable or expected, the manner in which it is handled and when it occurs has a substantial impact on the project's success (Hormozi et al., 2000). According to project completion, the information system has been built or created and is ready to be turned over to the customer (Cadle&Yeates, 2004).

Furthermore, according to Cadle and Yeates (2004), all technical documentation, user manuals, testing, and training should be finished at this time. Lessons learnt, final project audits or assessments, project evaluations, product validations, and approval requirements are all part of the project closure guidelines or requirements (PMI, 2013). The final stage can be considered part of the project's delivery and represents the project's closure.

All projects must go through a systematic closing process, which usually entails compiling and reviewing project-based documentation as well as financial data, as well as coordination between the lead contractor and each of the numerous partners. During this phase, project managers must demonstrate that the project's objectives and impacts were achieved in accordance with the proposal's aims. As a result, all project partners should pay close attention to the benchmarks and delivery of all task sets, as well as adequate final reporting on the activities they have completed.

This is an essential idea in today's construction business, as completing a project on time has become increasingly challenging. Closure is one component of the industry that has suffered from incompetence, which has always been insufficient for the members of the

parties concerned to respond appropriately. While planned initiatives that were running on time will come to a halt near the end of the project due to a variety of administrative, technological, financial, and psychological problems (Kual, 2014).

In financial terms, programmers need confirmation that paying out the last part of the grant is safe and no future issues or problems are expected. When projects are in the key implementation process, in terms of financial management results, programmers can afford to be somewhat versatile or flexible. Deductions from later payments can be made if there are problems, and expenditure affected by open questions can be left out until a later date. Nonetheless, closing the project means that no questions can be left open. All problems need to be finally resolved. This may be the main challenge of project closure, although the actual checks conducted in earlier stages vary little from the financial tests. If the project's financial management was nice, the closure test should be a formality that only confirms the results of other checks at the first stage.

2. 2 Empirical Literature Review

An empirical review is based on earlier study findings that have been observed and measured, and it derives information from actual experience rather than theory or belief. The main goal is to discuss and review the necessity of full project closure processes. The empirical review reviewed the research findings based on government, project financing institution, and project advising consultant reports, as well as publications in the study's field.

2.2.1 Closure Phases of Construction Project

According to PMI (2000) and Arjun (2017), the closure phase is the final major step of a project's life cycle. After the client receives and accepts all reports as required by the terms and circumstances of the award, and notifies the contractor of its acceptance and closure of the project, the project is considered completed or "closed out". The closure process entails: a) finalizing all activities completed and transfer them to the responsible entity managing and operating, b) establishing the procedures to coordinate activities needed to verify and document the customer, c) investigating and documenting the reasons for actions taken if a project is terminated before completion, d) handling over project documentation to the business, e) termination of supplier contracts, f) releasing project resources, g) communicate the closure of

the project to all stakeholders, and h) last and final is to conduct lesson-learned studies to examine what went well and what didn't.

2.2.2 Construction Project Closure Activities

According to MSU (2008), construction project closure refers to the completion of a construction contract and includes a number of administrative, contractual, and technical activities such as punch list completion, furnishing "as built" documents and operations and maintenance information, final inspections, corrections, claim and change order resolution, submission of contractor's verification forms, final acceptance of the work, and final payment. (MSU,2008).

Closure is commonly characterized in the construction industry as the time between when the owner can occupy the structure for its intended beneficial use, sometimes known as "substantial completion," and when the contractor receives final payment. Owners may have a different perspective, hence this definition has been expanded to encompass their administrative and final project accounting processes. Contract closure is the process of verifying that contracts are complete and administratively processing them for official closure. According to Busanky (2003), closure occurs when all administrative tasks have been accomplished. All disagreements have been resolved, and the final payment has been made. The mechanics of the closure process, as well as the persons involved, differ based on the project's kind and complexity. However, in many cases, slowdowns at the conclusion of the contract cycle are caused by a variety of factors, resulting in lengthy, complicated, and time-consuming phases (Busansky, 2003). Contract closure, according to SMCI (2018), is the process of verifying that contracts are complete and administratively processing them for official closure.

According to FDRE Standard Biding Document (2011, page 49-52), provided construction projects are expected to be grant a provisional accepted certificate while the project is ready for function. However, following the issuance of the provisional acceptance certificate, the contractor will complete the remaining project work order completion in accordance with the specifications and comment within 365 day of the defect liability period as it stipulated on the grant document. Once the contractor accomplishes in delivering the project as required, the project consultant will prepare and provided to the project sponsor for the final project closure report sign-off and approval.

2.2.3 Substantial completion to actual completion

The legal importance of "substantial completion" and how it impacts the owner's authority to compel the contractor to complete the project has been studied (Carson et al., 2009; Crowley et al., 2008). The contractually fixed cash figure has been deemed inappropriate and unenforceable in various court challenges involving liquidated damage provisions (Crowley et al., 2008). The first milestone linked with delay predictions is frequently considerable completion, sometimes known as "punch-list" work, which brings the project to a close and allows for final completion. The actual quality of the work, the pace of occupancy, the start of warranty terms, and the calculation of delay fees or liquidated damages may all be disputed during punch-list work (Rogers, 2012). This can be avoided if the closing phase is planned before work begins, but it is off the project management team's radar screen at the start of the project, and as a result of the lack of initial planning, it later becomes the most difficult and unmanageable part of the project to schedule and complete.

The figure given below, shows that the common schedule logic between substantial and final completion.

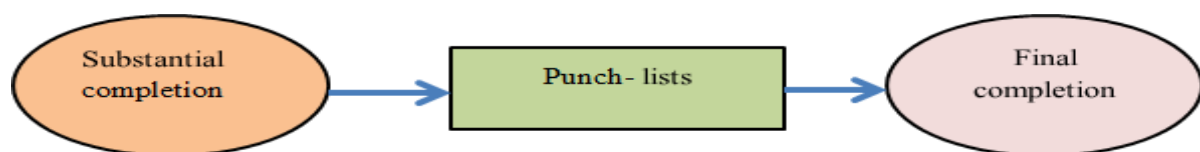


Figure2.2: Common Schedule Logic between Substantial and Final Completion (Kual, 2014)

It provides no information on the tasks that must be completed in order to complete the project. There are a series of activities that take place between significant and actual completion, beginning with the development and execution of the punch list, followed by the occupancy certificate, then the beneficial occupancy, also known as the occupancy of the project's owner, before it is 100 percent complete, and it complements the achievement of substantial completion (Fisk and Rapp, 2004). Finally, commissioning, final inspection by the local government, final client inspection, final completion, and project completion are all included.

2.2.4. The importance of project closure

According to Barager (2013), project teams can fail to recognize the conclusion of a project if there is no clear closure mechanism in place, and the project can then drag on, sometimes at great expense.

A formal project closing, according to Field and Keller (2007) and Barager (2013), guarantees that the assignments and events remain healthy, that customers and stakeholders

are satisfied with the end result, that key knowledge is collected, and that the end product meets the project goals. The team feels accomplished, and resources for new initiatives are made available.

Also De (2001) also states that poor project closure management will result in several negative consequences, including time overruns, overrun costs, damage to the project team's reputation and prestige, squandering valuable human and other resources that could have been put to better use elsewhere, and stressing project workers.

Failure to complete a thorough project close-out could (a) put the organization at risk, (b) prevent the organization from realizing the expected benefits of the project's accomplishments, (c) result in significant losses for the organization, and (d) erode the project manager's and project management team's credibility.

2.2.5. Types of project closure

On some projects, the completion may not go as smoothly as planned. Although the scope statement may specify a certain end date for a project, the actual end date may or may not be appropriate. Fortunately, most undertakings are blessed with a well-defined finale. Projects having different endings than planned can be identified with regular project updates. Identify the various types of closures in this section. Gray and Larson (2008) list five reasons for a project's termination:

a) **Normal closure:** When a project is completed as planned or expected, this is the most common condition of project closure. When the project's goals and objectives are met, the client approves the project, and the project's typical closure process begins.

b) **Premature closure:** Most initiatives do not achieve all of their aims or goals, or are not given the opportunity to do so. Instead, they are prematurely closed by removing project aspects that were established in the scope of the project at the outset. This could be due to cost considerations, such as the client reducing project money or the project exceeding its budget. When a project is of strategic importance and must be completed sooner than projected, such as the launch of a new product, premature closure is common. Delaying the product past its original completion date may cause the consumer to miss out on an opportunity.

c) **Perpetual projects:** On the other hand, some tasks never seem to end. These are initiatives that have had a number of setbacks, failures, and issues. Drift, add-ons, and changes of limitless variety affect perpetual undertakings. The problem with these initiatives is that they never reach their goals or objectives owing to constant scope creep and alterations. This is extremely frustrating for both the project manager and the project team.

It will also be extremely aggravating for the customer since, despite their repeated requests for modifications, they do not believe the project's objectives would be met. At some point, the project manager must define the scope and plan for completion. This can be accomplished by changing the project's scope in order to compel its end, limiting funding or resources, or imposing a deadline. As a result, any new demands from the client can be considered as a second phase of the project rather than a never-ending cycle.

d) Failed projects: Far too often projects close because they have failed. There are a number of grounds for project failure. It is not unusual for the client to run out of funds, thus permanently killing the project.

e) Changed Priority: Organizational priorities alter frequently, as does the strategy's direction. During the 2008–10 financial crises, for example, businesses moved their attention from profit-generating projects to cost-cutting programs. The supervisory board adjusts project selection goals on a regular basis to reflect changes in the company's operations. During the process, projects may need to be amended or cancelled. As a result, a project's priority may begin to degrade or crash as conditions change over the project's life cycle. It may be necessary to modify or cancel ongoing initiatives if priorities shift. Different methods of project termination bring different issues. Some adjustments may be necessary to generic closure processes to accommodate the type of termination of the project that you face.

2.2.6. Component of project closure

The goal of project closure is to analyze or evaluate the project, i.e., if the project's goals or outputs were met, and to draw lessons learned for future use (ITRM Guideline-Project Management Guideline, 2006). As a result, project deliverables turnover, project status reports and lessons learned, resource allocation, financial account closure, project record collecting, and post-implementation review preparation are all part of the project closure process. According to the ITRM Project Management Guideline, the main key concern for project closure is administrative closure and logistics. The project closure has two basic components for a construction project, namely contract closure and administrative closure. Richman (2002) mention that there are two components of project closure which are administrative closure and contract closure.

2.2.6.1. Contractual closure

The process of signing off on a project under the terms and circumstances agreed is known as contractual closing. As indicated above, this will entail verifying the finished project

scope, contract audit, final payment, and release of retention. The contractual closure of a construction project should ensure that the following actions are completed and acknowledged by all stakeholders, according to the FTA Construction Project Management Handbook (2006). Plans for a punch list, manuals and instructions, assurances and pledges, beneficial occupancy, document drawings, preliminary review, final inspection, gaining project approval from key stakeholders, final payment, and commissioning are among the activities. The process of contract closing is depicted in the diagram below. (Sanghera, 2006,p.251).

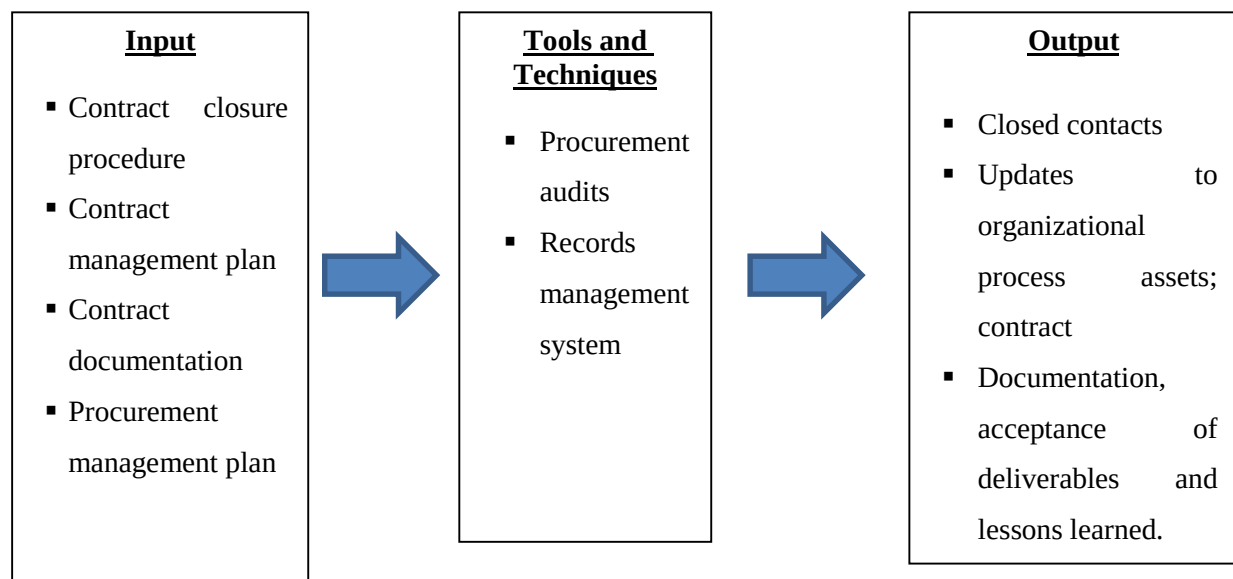


Figure 2.3 - Contract closure process

2.2.6.2 Administrative closure

Administrative closures are actions taken by the contractor to ensure that project resources are distributed correctly (ITRM Guideline-Project Management Guideline, 2006). Demobilization of the project, closure of project finance and financing, collection of project records, project assessment, and closure of stakeholders are among the activities completed (Federal Transition Administration, 2006). These activities are project demobilization, Closure of project financing and funding, disposition of project records, project evaluation and stakeholder closure. Sanghera (2006) provides the details of the input to and the output of project closure and the tools and techniques used during the closing process (Sanghera,2006).

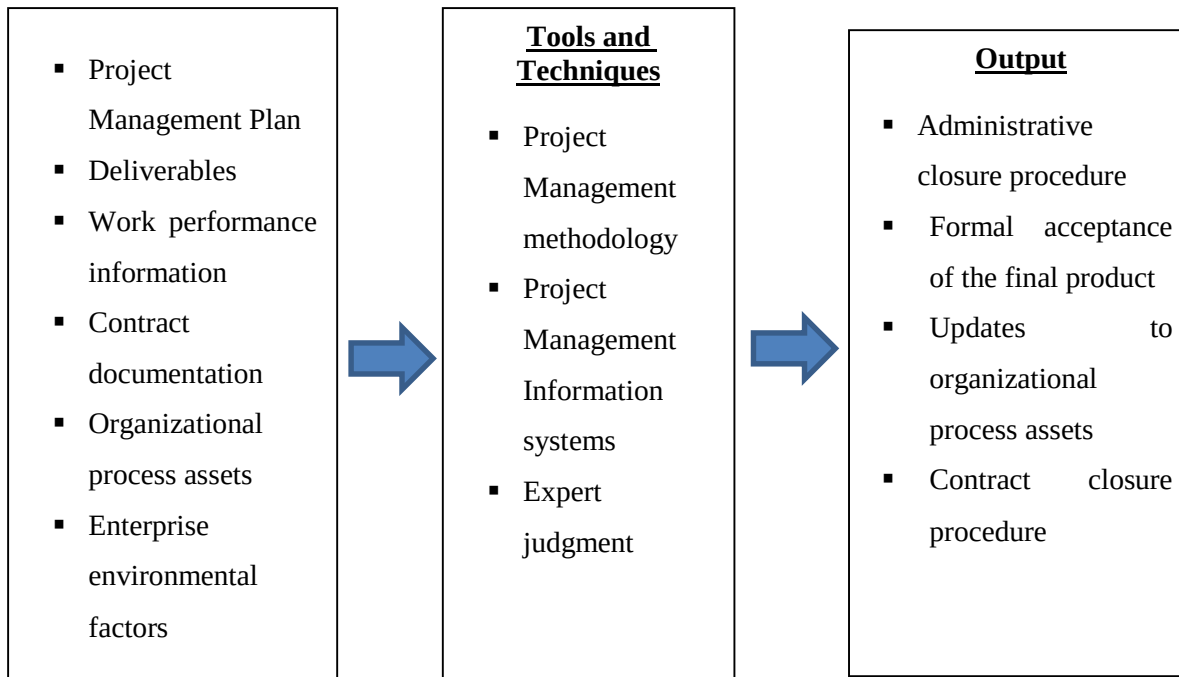


Figure 2.4 - Project closure process (Sanghera, 2006, p. 247)

2.1.7 Project closure challenges

Numerous things can go wrong during the project's completion. Projects are influenced by a number of factors, both exterior and interior to the organization that oversees and implements them. Poor project management, insufficient incentives for potential recipients to participate in project selection and design, poor relationships between project activities and project development, project purpose, and insufficient attention to the exterior environment during project design are just a few examples.

Spire and Hamburger (1988), recommend that the major challenges of project closure for the project manager at termination. Project termination' should be treated as a project itself to complete the project successfully, according to Spire and Hamburger (1988). In addition, the function of project closure suits the classic definition of a project as a unique undertaking with limited resource constraints. In the closure phase, Spire and Hamburger identified a number of potential problems. These are divided into the intellectual and emotional elements that should be addressed by management when the termination process begins.

According to KirtGilliland (2019), the potential issues during project closure or some common pitfalls that crop up during project closure are;

- **Punch list Delays:** A punch list for a project is a list of things to modify or complete before a project can be deemed complete. After physical construction has been completed, the punch list is created and generated with the help of the architect who worked on the project. Any delays in completing the necessary changes can lead to costly delays in the timeline for completion of the project.
- **Incomplete Document Production:** As the project owner, you'll want all of the project's paperwork in your possession as soon as the keys are turned over. A comprehensive collection of project documentation is necessary for a variety of reasons. Not only is it vital to keep correct records, but you may also require paperwork for equipment maintenance and warranty services. You may need paperwork in the future if a section of the construction does not match the contract's standards. An issue that may not be easily obvious when you take over a project is not having all of the project's paperwork. Owners frequently discover that they lack a required piece of documentation months or even years after the project is completed. Finding the person or institution who has the records you need can be difficult by then. Due to the possibility for problems, all essential documentation must be received as part of the project's closing process and prior to taking possession of the premises.
- **Communication Breakdown:** Any project's success hinges on its ability to communicate effectively. This is applicable for the duration of the project, including its termination. Communication gets more difficult as each entity involved in a project begins to demobilize. As time passes and people and firms involved in the project go on to other careers, obtaining the relevant paperwork from each activity becomes more difficult. Communication between project stakeholders will slow and eventually deteriorate, causing major delays in each phase of the project's completion. On the punch list, changing orders can be delayed, and documentation cannot be produced.

Havila, Medlin, & Salmi (2013) list the following as the challenges in the project closure stage: -a) skills & competencies required to close a project differ from the skills required to execute the project, b) Project sometimes undergo re-negotiations of schedule, or have their goals redefined or the resources get shuffled, c) for long-term projects the project closure tends to attain a strategic perspective.

The overall challenges of project closure arise from either interior or exterior to the project. These interior and exterior difficulties of project closure that possibly affect the project are

explained as follow: -

A) Interior difficulties

This type of challenges is under the control of the owners/clients, contractors, and consultants. Kual(2014) identified Interior based difficulties of project closure arises from the technical, financial, administration or psychological factors. The challenges based with owners/clients, contractors, and consultants are discussed as follow:

I. Contractor based challenges

Contractors are typically motivated to complete projects in the lowest amount of time possible in order to save overhead expenses and earn final contract payments (Rogers, 2012). Contractor-based issues develop as a result of the contractor's poor management of critical project operations. As a result, the contractor, according to Archarya et al. (2006), is responsible for the successful implementation of the construction design; they are also responsible for the majority of the delays. According to them, the contractor is in charge of the construction financing, job planning, scheduling, and site management, supply management, and coordination among the workers, among other things. As a result, if these are not handled properly, the project may be delayed or even fail. Technical, financial, administrative, or psychological issues may contribute to contractor-based project closure challenges.

a. Technical: According to Heerkens (2002), to ensure that the project delivers what has been promised, most of the technical issues and issues that could be addressed during the project's execution and control phases will arise during the final phase of closure. The technical challenges arise from clients are, excessive/multiple punch lists, absence of a clear handover strategy , delay in performing testing of equipment and engineering systems after substantial completion, errors and discrepancies in design documents, vague details in drawings, contractor (subcontractor personnel transferring to new projects) lack of sufficient staff in closure stage, thorough/detailed/ identification and agreement on all remaining deliverables, shortage / late- arrival of resources, i.e., manpower, materials and equipment in closure stage / and inability to finish punch lists due to lack of appropriate technical manpower.

b. Psychological: Approaching the project's closure process, the performance of the team

begins to falter. After finishing their research, some team members have disappeared; those who remain may be worried about "life after this project." Team members (or those remaining) are struggling to complete the last few tasks, which may not have been included in the original plan. This is a difficult time for the project manager to fight against the team's loss of interest or looking for the next assignment. The psychological challenges that face at the closer out stage as identified by Kual (2014) are: loss of team functionality as some members complete their tasks, loss of interest in tasks such as documentation, attention is diverted as members transition into new projects or other work, lack of urgency in approach, enthusiasm and motivation of parties involved due to achieving substantial completion and fear of no future work.

c. Administrative: Murali et al. (2007) identified challenges such as inadequate planning of contractor and inadequate contractor experience contributes to of causes delay. Examples of administration are contractor lack of preparedness and planning for closure, completing punch lists in occupied space, improper / untimely contractual closure documentation, lack of contractor commitment to meet contractual agreements /like providing spare parts/.

d. Financial: - Essam (2006) identified the problems of subcontracting, the contractor is not well structured, the financial problems of the contractor and the low quality of the work of the contractor relate to the causes of delays. The dispute between Contractor and other parties identified by Sadi et al. (2006) can trigger project delay. For example, with client, disagreement on the cost of additional work with clients and contractor poor financial control system can be also the challenges of project closure.

II. Client based challenges

Client-based variables have been recognized as a source of project implementation delays in various studies conducted by different academics. Client-based project closure issues may arise as a result of technical, financial, administrative, or psychological factors. Owner-induced delays, according to Archarya et al., (2006), are caused by the construction project's initiator and financier. The owner / client has the financial capacity to influence the scope and order of the project. Shewaferahu(2016) highlighted owner change orders as contributing to project implementation delays. Late payments and delayed decision-making are examples of owner change orders. Owner intervention, sluggish decision making, unrealistic contract term, and imposed criteria are all factors that contribute to delays,

according to Meaza (2015). Client type, lack of prompt decision-making, unrealistically imposed contract, and client-initiated modifications are all factors that contribute to delays, according to Fong et al (2006). Essam (2006) classified delay reasons as change or variation orders, owner-induced delay, and owner-induced oral change orders. Owner delays in furnishing and delivering the site to the contractor, change orders by the owner during construction, poor communication and coordination by the owner and other parties, slowness in the decision-making process by the owner, lack of incentives for the contractor to finish ahead of schedule, and suspension of work by the owner are all factors that contribute to delays, according to Sadi et al. (2006). Owner involvement, sluggish decision-making by the owner, and unrealistic contract durations are all factors that contribute to delays, according to Abdalla et al. (2002). Sweis et al. (2007) identified the delays in site preparation, delay in contractor 's claims settlements, work suspension by the owner, too many change orders from owner, slow decision making from owner, inference by the owner in the construction operations, delay in progress payments by the owner. There are a lot of factor that were get from previous study about the factor cause the delay in construction project that relate to the client such as a) the owner's inference in the construction work changes the owner's orders, b) owner poor communication and coordination by with other parties c) slow decision making from owner, c) delay in payment.

III. Consultant based

Consultant-based variables have been recognized as a source of project implementation delays in earlier studies by various academics. Consultant-based project closure issues may arise as a result of technical, financial, administrative, or psychological factors. Shewaferahu (2016) recognized a consultant-based element as a contributing source of delay, as well as an inspection-based one. Inadequate consultant experience and poor communication and coordination are two possible consultant-based reasons causing delays in building projects in Malaysia, according to Divya.R and S.Ramya (2015).

B. Exterior difficulties

This group of challenges are out of the control of owners/clients, contractors, and consultants. David (2016) study concluded that the political environment affects the construction of a project, changes in government actions are a major exterior risk factor militating against the success of projects. An exterior difficulties includes federal regulatory requirement (government interest in early completion of the project), weather effect on

construction activities, and accidents during construction and delays in providing utility services. Meaza (2015) and Kual (2014) both have been identified unfavorable weather condition causes of project delay. An activity that can affect something based to government policy and its administrative practices. Most business owners will keep a watch on any political developments, such as new legislation or regulatory revisions, that could affect how their firm operates and its bottom line. Citizens elect politicians to make decisions about public policy, such as the implementation of public projects, while the government hires bureaucrats to enforce these rules. When faced with significant amounts of political pressure inside their districts, legislators may be driven to improve the quality of potentially vote-winning public projects. As a result, they may endeavor to overcome obstacles such as the offensiveness, inaction, or dishonesty of bureaucrats. There is evidence that the quality of public projects can be enhanced through political competition. According to David(2016), political interference plays a critical but poorly understood role in determining the success or failure of the processes of project management that dominate efforts to form international regimes or, more generally, institutional arrangements in international society. An examination of the nature of project management serves as a springboard both for pinpointing the role of leadership in regime formation and for differentiating three forms of leadership that regularly come into play in efforts to establish international institutions: structural leadership, entrepreneurial leadership, and intellectual leadership Holland et al.(, 2009).

The main job of regime development occurs in the interaction of various types of leadership; for those interested in highlighting the processes involved in the formation of political movements, studying interactions between individual leaders is a top concern. Not only does such a study aid in explaining the conditions under which regimes form or fail, but it also allows the individual to return to an important area of international affairs (Migai, 2008 cited by David (2016)). Politics manifests itself in all organizations as the opinions and attitudes of the various stakeholders in these organizations. Additionally, the project's stakeholders may have their own agendas and preferences for participation in the project. These stakeholders' ties to the project can range from very supportive to adversarial, but they must be considered and managed depending on their sphere of influence. Exterior politics, such as political turbulence, are beyond the control of neither the sponsor nor the project manager.

Public projects are frequently left unfinished or delivered in bad condition, according to the

World Bank (2004, as referenced in David) (2016). Failure to complete these projects jeopardizes citizen welfare and results in an estimated annual loss of US\$150 billion in public funds, according to the World Bank (2007, as reported in David) (2016). The severity of these failures differs by country, resulting in national and global inequities. Both politicians and bureaucrats are considered as crucial agents in the delivery of government programs, according to Adriaanse and Voordijk (2014).

The unresolved issue is how politicians can influence the government's bureaucratic arm and increase bureaucratic output in order to fulfill short-term electoral concerns. Politicians typically do not carry out government projects themselves, but rather assign them to bureaucrats, whom they subsequently reward. We have a very limited grasp of the relationships between politicians and bureaucrats, both in terms of causes and effects David (2016).

The elements affecting project closure are listed in the table below by Kual (2014), and include the future of project staff, handover and maintenance, documentation, contract completion, financial accounting, project evaluation, and handling the loss of interest in the project.

Table2.1: Factors affecting project closure (Kual, 2014)

No	Major Factors	Types
1	Psychological	• Project manager or superintendent demobilized before final completion • Stress of learning new technology due to manpower shortage (Example: Software based to the client's database, in order to submit the required documentation to the client). • Lack of urgency in approach, enthusiasm and motivation of parties involved due to achieving substantial completion • Demotivation of team members losing their coworkers due to project downsizing • Leadership of the project team • Barrier in communication flow
2	Financial	• Owner directed change orders • Delay by owner for payment of work before substantial completion • Contractor project team bonuses or other incentives for timely

		final completion
3	Technical	• Technical Expertise • LEED / Other commissioning requirements (certification) • Lack in planning and resource allocation • Unclear directives for closure, in specifications and contractual requirements • Accidents to people/equipment after substantial completion. • Procedural inexperience of owner representative or architect
4	Administrative	• Improper / Untimely contractual closure documentation • Subcontract closure requirements. • Multiple punch lists • Shortage / Late-arrival of resources, i.e., manpower, materials and equipment • State and Municipal regulatory requirement • Federal regulatory requirement

Source: Factor affecting project closure (kual 2014)

2.1.8 Successful project closure

According to A.A.E.Othman (2007), on his conference paper on delivering successful project through achieving professional project closure and identified the key elements for achieving successful project closure as follow:

1. **Ensure that the project will deliver what was promised:** This important aspect should be discussed throughout the execution and control process. The project manager must constantly check and protect the project deliverables' functioning and quality from deterioration. From the project's close-out perspective, the project manager must prevent last-minute surprises.
2. **Actively lead the project team through a confusing period of time:** At this stage, the project manager will work to increase his exposure more than at any other moment since the project began. The project team will begin to disintegrate as a cohesive one as the project nears conclusion. The project manager's communication will become increasingly difficult. Organizing people and things will become increasingly challenging. All of this necessitates the project manager having a high profile and playing a strong leadership role.
3. **Ensure timely completion of the “odds-and-ends” (the punch list activities):** The project manager will reach a point where he or she will be able to abandon the initial

project plan. When this occurs, the project manager will be able to direct everyone's attention on the exact work items required to complete the project. This can be accomplished by adhering to the punch list's standards.

4. **Prepare for the transition into the next phase in the overall project life cycle:** The timeline following the project's completion is critical to the project's progress. The consumer is usually satisfied with the project's outcomes and uses them. One of the basic rules of project management is that the project manager's primary role is to facilitate a smooth "handover" to the client or user.
5. **Secure consensus that the project has met the completion criteria:** As earlier said, you should establish completion criteria at the start of your project. If you ignore this problem until the end of your project, disputes can spiral out of control. It may necessitate extensive revision to address some concerns that arise late in the project.
6. **Obtain customer acceptance and verify customer satisfaction:** This has not been achieved sufficiently, at least not in a formalized manner. The project manager will aim to create an almost "celebratory" environment while approaching customer acceptance and satisfaction. A planned session in which you ensure client pleasure and approval will signal the successful end of the project in a favorable way, just as a formal kick-off meeting signals the commencement of the project.
7. **Ensure that the project records reflect accurate "as-built" data:** This issue might be seen in a wide spectrum of documents. This refers to the process of revising any and all project-based papers to reflect the reality that emerges at the conclusion of the project. It means that reliable historical data exists, which will be extremely useful to project teams in the future. To reflect the real "final," the project files (particularly the project plan) should be updated.
8. **Transfer the learned to others:** Successful projects need the completion of a "learned lessons report." The goal of this study is to gather data by thoroughly examining project interactions. Understanding the nature of positive and negative interactions allows future efforts to reduce negative consequences while maximizing positive prospects. All of the study's important stakeholders should be consulted by the project manager. The project manager is in charge of planning and executing the report. The style and arrangement of the lessons gained might vary, but in a team meeting setting, it's common to use a brainstorming method. Transferring crucial information or lessons learnt to everyone who can benefit from the newly obtained knowledge is important and beneficial. Transferring what critical information has been gathered or lessons learned to anyone

who can profit from the newly acquired experience are important and useful.

9. **Acknowledge the contribution of contributors:** Those that assisted the project manager in achieving project success should be acknowledged. It's not just a pleasant move; it's a crucial component of the future. People who work hard and make significant contributions may become demotivated if their efforts go ignored. It may have a negative impact on the organization's overall effectiveness. It matters more to people than nearly any other sort of reward, according to study after study. Financial benefits are nice, but for most people, the most important thing is to know that others value their labor. It's a personal affirmation that shows them that everyone wants to make a difference.
10. **Bring the project to efficient administrative closure:** This could include a wide range of administrative concerns. Accounting issues, such as closing open charge account numbers, must be handled by the project manager, for example. It also entails making sure that all outstanding invoices are sent out and that all bills are paid. It may also entail the termination of rental or lease arrangements, as well as the disposal or storage of any surplus materials (Heerkens, 2001).

3. Conceptual framework

This is also reflected in the conceptual framework, which is a diagram that depicts the relationship between the independent and dependent variables. Different authors' findings (kual (2014), Meaza(2015), Markus and Tanis (2010), David (2016), Divya.R and S.Ramya (2015), and others) were used to create the study's conceptual framework. The investigation was guided by the following conceptual framework.

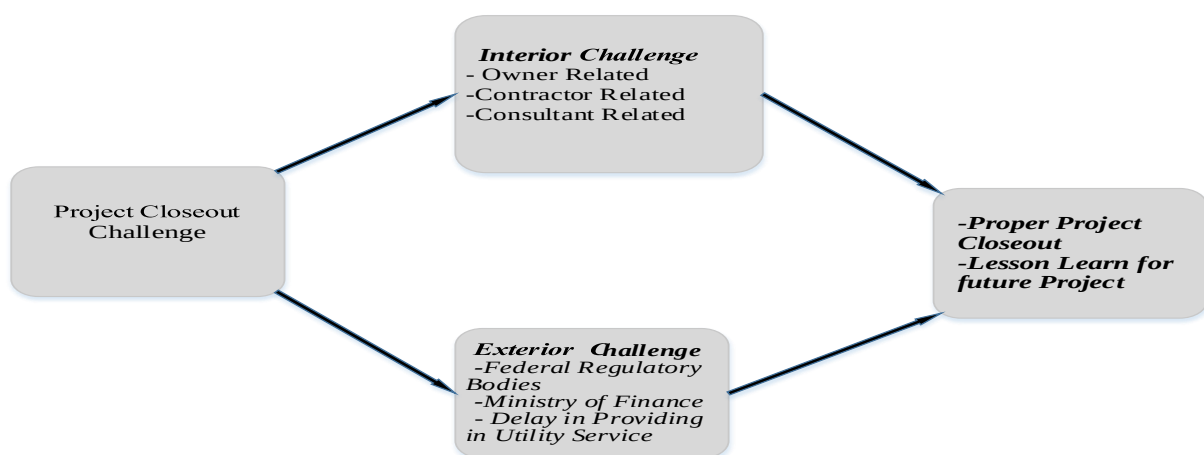


Figure 2.5: Conceptual framework of the study (source: own (2022))

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research is a methodical procedure of articulating a problem, formulating a hypothesis, gathering facts or data, analyzing the facts, and arriving at specific conclusions, either in the form of answers to the situation at hand or in the form of generalization for some formulation of a theory (Kothari,2004). As a result, research methodology is a plan for bringing together all of the research procedures and directing the researcher toward the study's objectives. As a conclusion, the aim of this part is to describe the study's methodological approach for reaching the specified research objective. It begins with a summary of the study's overall approaches and methodologies.

The major purpose of the study is to determine the key challenges in construction process completion of project and also the topic areas that are significant to Ethiopia's existing and anticipated construction projects. In order to achieve this emphasis area, the research strategy, sample selection, sampling procedures, and data collecting and analytical techniques are all explained and completely stated.

3.2 Research Design

The research methodology begins with the discussion's selection, which was accomplished through an unorganized literature research, descriptive research, and informally relationship with co - workers and professionals in the subject; the research strategy was then established. Afterwards, the research design was employed to find information and data sources. The research instruments were selected based on the gathered and informational resources that were evaluated, including the documentary sources that were significant in the study. The review includes books, journals, and publications, as well as internet platforms.

The data for this research emerged from primary sources, and descriptive research design was used for the methodological approach. To analyze the study objectives and answer the research questions stated above, the researcher is experimenting with quantitative research. Following a thorough assessment of the literature, a questionnaire was developed and delivered to the contract administrator, contractor, consultant, program manager, and other stakeholders.

3.3 Sources of Data and Research Instruments

Research tools were employed to gather relevant information. The factors that cause project closeout issues were identified using a questioner. Primary data sources was employed by the researcher. Contractors, project supervisors, consultants, clients, and other stakeholders provide primary data through questionnaires. The researcher preferred structured and closed-ended surveys due to time restrictions and the aim to get a high response rate from respondents. The responses to the questionnaires were also evaluated in order to acquire a better understanding of the respondent's viewpoint.

The respondents for the survey were purposefully chosen based on the project's cost and having a representative sample from each of the three universities. The questionnaire, which consists of closed-ended questions, is obtained by the contractor, project managers, consultant, client, and other consultants.

3.4 Population and Sample Size

3.4.1 Population

The definition of the population, as per Zikmund (2003), was a recognizable whole set of components of interest being researched by a researcher. In this case, it is the construction projects of three projects from each of AAU, AASTU, and CSU, for a total of nine projects that have received preliminary and/or final approval. Nonetheless, because one of the CSU projects is located in Woliso, outside of Addis Ababa, the researcher was unable to reach it.

3.4.2 Sample Size Determinations

In order to perform this research, the researcher employed a census. A census is an examination of each and every component in a population, whether it's everyone or everything. It's called a complete enumeration since it counts everything. It is a research of every unit in a population, all or none (Calleam Consulting Ltd) (2012).

The majority of censuses give true population evaluation instead of sample selection, baseline data can be collected for future studies, and precise information on small sub-groups of the population is more likely to be provided, according to Calleam Consulting Ltd. (2012). And because of it other factors, such as the fact that the entire research population is smaller than 100,

it elected to employ census approaches instead of sampling techniques.

Contractors, consultants, project supervisors, project sponsor, university facilities, HR, administrative staffs, managing directors, and instructors who have directly or indirectly engaged in the 8 projects located at AAU, CSU, and AASTU make up the defined target audience for this study. They are capable of explaining and respond to the necessary inquiries in accordance with the researcher's interests.

As a result, the researcher chose all three studies from AAU and AASTU, as well as two from CSU, for a sampling representation of around 89 percent. There are 70 individuals/respondents on all sides of the targeted groups who engaged directly in the closeout stage. Persons who directly or indirectly engaged in the project closeout stage, stakeholders who are affected in the project closeout stage, professionals (with a first degree or higher), and individuals who are presently available in Ethiopia were included in the study.

As per the census technique employed, there are 70 respondents in the entire study population: 8 contractors, 6 consultants, 8 project supervisors, 3 project offices, 10 staffs, 10 HR staffs, 10 Administrative staffs, 5 Managing Directors, and 10 Instructors.

Table 3.1 Number of total targeted population and sample size

Engaged Parties	AAU			CSU		AASTU			Total Population
	Commerce Bulding	Black lion Medical Library	Ethiopian language and cultural acadamy	Library and Store	Septic Tank	Student Dormetary	Student Dormetary	Student Dormetary	
Contractor	1	1	1	1	1	1	1	1	8
Consultant	1	1	1	1	1	1			6
Project supervisor	1	1	1	1	1	1	1	1	8
Project Sponsor	1			1		1			3
Facility Dep't	2	2	2	2		2			10
HR Dep't	2	2	2	2		2			10
Adminisrative Dep't	2	2	2	2		2			10
Managing Directors	1	1	1	1		1			5
Instructors	2	2	2	2		2			10
Total	37			16		17			70

3.5 Data Collection Instrument and Method

Primary data was used which it refers to information gathered directly from the researcher on a variable via structured questioning,

3.5.1. Data Collection Instrument

The core data for this study was gathered through a questionnaire from all 70 project participants, including the project sponsor, consultant, project supervisor, contractors, and other stakeholder who were directly involved in the project closeout stage.

To collect primary data for this study, a structured questionnaire was prepared, delivered, and filled out by the sampled respondents. Because questionnaire surveys are frequently less expensive, easier to administer to a large number of people, and produce more consistent and trustworthy answers. A five-point rating scale was used to grade the structured questionnaire.

3.5.2. Procedure of Data Collection

The questionnaire and document analysis approach were employed to obtain data for this study. The first approach utilized to disseminate questionnaires to respondents was self-administered questionnaires. All 70 participants were sent invitations to fill out and send their responses in paper copy and electronically by e-mail. Relevant contracts, modifications, performance reports, contractor's compliant letters, instructions, and other documents have been evaluated to complement information acquired through the questionnaires.

3.6 Methods of Data Analysis

The statistical analysis of descriptive statistics including frequency, mean, and the Relative Importance Index (RII) that helps to describe and comprehend the properties of a certain data set by delivering short summaries about the sample and measures of the data was employed for quantitative data in this study. By evaluating the data collected from the surveys, descriptive statistics were used to identify major closeout difficulties in the AAU, AASTU, and CSU projects. The descriptive statistics were used in the quantitative data analysis, which was aided by the Statistical Package for Social Scientists (SPSS) program for Windows, Version 23.

The RII metrics utilized in this study were to determine the relevance of the variables in

challenging the closeout stage of building projects at AAU, AASTU, and CSU. This has been used to present the findings in the context of the university's construction project. This was calculated using the following formula:

$$RII = \frac{\sum W}{A * N}, \text{ where, } 0 \leq RII \leq 1$$

W:- is the weight given to each factor by the respondents and ranges from 1 to 5, (where 1 is strongly disagreed and 5 is strongly agree);

A:- is the highest weight (i.e 5 in this case) and ;

N:- is the total number of respondents.

3.7 Validity of Research Instruments

As per Kothari, validity is the degree to which an instrument measures what it claims to measure (2004). As per Borg and Gall, expert judgment improves the content validity of an instrument (1989).

The validity of a survey is determined by how well the questions were written to be clear and unambiguous. As a conclusion, the researcher had needed the help of the chosen supervisor, who has been assisted in the improvement of the instrument's material validity as a research specialist.

In terms of accuracy, validity refers to how an instruments asks the right questions. The content validity of the research instrument for this study was determined through piloting, which included assessing the subjects' responses to the research goal.

The information chosen and included in the questionnaire must be based to the variable being studied in order to be considered acceptable for a research instrument. The testing supervisor, a research expert, is consulted to determine the instrument's material validity. The relevance of the questionnaire parts to the study's objectives has been independently assessed by the research.

3.8 Reliability of Research Instruments

As per Mugenda & Mugenda (2003), reliability is a measure of how consistent a research instrument's outcomes are following repeated testing. The questionnaires are divided into two identical halves, and the Spearman-Brown Prophecy formula is used to calculate the coefficient of correlation for the two parts.

Procedures and reports have also been double-checked for accuracy and dependability. Dependability refers to the degree to which a research instrument produces consistent results or data following repeated tests. The Cronbach Alpha Moment Coefficient was calculated to verify the questionnaire's reliability as a research tool after a pilot test. This determines how consistent the questionnaire's replies are each time it is presented.

$$\text{Cronbach's Alpha is given as } \alpha = \frac{N * C}{V + (N - 1) * C}$$

Where: N = the number of items, C = Average covariance between item-pairs,
V = Average variance

For the instruments to be considered reliable, the acceptable reliability coefficient value of alpha is 0.70. The total questionnaire test generated a reliability test of 0.89, which meant that the research instrument was reliable.

Cronbach's Alpha for total questionnaire

Cronbach's Alpha	N of Items
0.767	82

Source: own survey (2022) N= 82

Cronbach's Alpha for variables

Variable	Cronbach's Alpha
Technical	.752
psychological	.782
Administrative	.832
Financial	.853

3.9 Ethical consideration

The study respondents have been notified of the study's anonymity to ensure respect for the confidentiality of study participants. Their confidential information is only accessible by the researcher and the supervisor. Respondents were not asked to write their names on the survey schedules. No one was forced to participate in the study, with the exception of those who willingly agreed to do so. They were not required to disclose any identifying information, and transcripts and the final report did not include any identifying information, such as the subjects'

names. After the study is completed and a final report is issued, the tools used to collect data are destroyed. The study also attempted to arrive at conclusions based solely on objective judgments gathered from the data. As a result, the scope of data analysis and interpretation was restricted to what the data actually revealed.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This section organized the information gathered from the participants so that it could be analyzed. The technique of critically evaluating recorded input and draw inferences is known as analysis, whereas the practice of showing information in an understandable manner is known as presentation (Kombo and Tromp, 2006). One of the survey's goals was to uncover the hurdles to construction project closure at governmental higher educational institutions, thus the scholar looked at the statistics. The inputs are analyzed to classify technical, financial, psychological, and administrative obstacles faced by inner stakeholders such as contractors, clients, consultants, project supervisors, and other stakeholders, as well as outer challenges encounter at project closure.

The number of respondents who participated in the study are referred to as the response rate. Requests were delivered in paper form and online via email to 70 participants who are both experts and practitioners in the construction sector. The research was sent out to those who were actively engaged in the university's project closure stages, specifically clients, consultants, and contractors. Persons who have interest and working in a managerial position at these institutions are also included in the poll. A total of 70 questionnaires were sent to participants, with 70 of them being returned once they were completed. This resulted in a response rate of 80%. A response rate of 50%, as per Mugenda & Mugenda (2003), is sufficient for examining and reporting. The response rate in this study is summarized in Table 4.1.

Table 4.1: Questionnaire Response rate

Category	Frequency	Percentage
Response	70	100%
Not returned	0	0%
Total	70	100%

Source: Own survey (2022)

4.2. Demographic factors

The researcher has identified demographic data from the participants, such as their gender,

employment history in the construction industry, academic qualifications or course of specialization, academic status, and the company for which they are or were employed, which are important data for the analysis.

Table 4.2: Demographic variables

No.	Demographic variables	Frequency	Percentage
1	Gender		
	Male	60	86%
	Female	10	14%
	Total	70	100%
2	Employment in construction sector		
	0-5	13	19%
	6-10.	34	49%
	11-15.	23	33%
	Total	70	100%
3	Course of Specialization		
	Civil Engineer	19	27%
	Mechanical Engineer	4	6%
	Electrical Engineer	2	3%
	Others	45	64%
	Total	70	100%
4	Academic Status		
	Degree	48	69%
	Master	15	21%
	PhD.	7	10%
	Total	70	100%
5	Hired Company/Institution		
	AAU	31	44%
	CSU	12	17%
	AASTU	13	19%
	Contractors	8	11%
	Consultants	6	9%
	Total	70	100%

Source: Own survey (2022)

4.2.1. Gender

The researcher invited participants to provide their gender as a regulating factor in the study. The results presented in Table 4.2 shows a disparity in the proportion of men and women characters is reported. According to the poll, (60) 86 % were men, and (10) 14 % were women. The findings confirm that there was sex inequality; this could be because the number of staff on a construction project is usually men. The researcher wanted to know the participation of females in such governmental higher educational institutions project closure and found out

that they have little involvement. The findings confirm the sex imbalance; this might be due to the sector-specific trend that most workers in construction projects are men. Women's engagement in such governmental higher educational institutions projects closure was investigated by the scholar, who finally discovered that they had lower participation.

4.2.2. Work Experiences in Construction sector

The purpose of this unit of the survey is to assess the participants' employment history in establishing if the project closure was achieved via competent construction workers or specialist knowledge by the hiring of competent individuals. In terms of employment history, the findings show that 34 participants, or 49 %, had 7 to 11 years of working experience, indicating sufficient exposure to comprehend the research goals. The other participants (13 participants or 19 percent) had 0 to 6 years of employment record in the construction sector, then (23) participants or 33% with employment records of 12 to 16 years in the construction sector. The findings show that the project participants have a considerable level of working exposure that they can identify & comprehend the roles in the project closure.

4.2.3. Education background

Data pertaining to the participant's area of study were examined. This data would assist the scholar to assess if the institutions were using technical know-how personnel to perform the project closure activities.

In terms of workers' areas of study, Table 4.2 shows that 19 (27 percent) of participants were Civil engineers, 4 (6 percent) were mechanical engineers, and 2 (3 percent) were electrical engineers. In addition, 45 (64 percent) of the participants were stakeholders having relevant skills but with different streams of the academy. The findings suggest that the project developers have sufficient or necessary academic qualifications to complete the project closing. For electro-mechanical, civil, and other activities that require distinct expertise and ability from people, multiple academy disciplines of study are essential for the construction closure stage.

4.2.4. Academic Status

The scholar sets the parameters in the study that comprises only experts with a bachelor's or higher, as per the participants' academic status. The result of the participants' academic success is depicted in Table 4.2. As per the findings, most of the participants (69 percent, or 48 percent) had obtained their first degree. Master's degrees were obtained by 21% (15) and PhDs were obtained by 10% (7) of the

participants, respectfully. According to the findings, the project has hired personnel with a variety of degrees in multiple disciplines, with the most holding a bachelor's degree, which enables them to comprehend and handle the project's closure activities.

4.2.5. Organization that the respondents are/were working

Data about the participants' present or previous employers assists in determining which project engaged parties and/or stakeholders they are operating for, as well as whether they are the employees of the project sponsor, consultants, or contractors. The rationale for raising this queries is that it is only to be reasonable to incorporate participants and project partners that operating on and impacted by the project closure stage in the study for a complete know-how of the problem.

Table 4.2 also illustrates that most participants recorded 31 (44%), 13(19%), and 12(17%) have been from AAU, AASTU, and CSU allied employees respectively. On the other hand, a participant from project contractors & consultants which are hired by the institutions comprises 11% and 9% of the total participants 70. As per the data examined most of the respondents are other stakeholder groups that are selected from AAU's three different projects. Nonetheless, all (100%) of the project's contractors and consultants responded to the question raised by the scholar.

4. 3 Respondents Attitudes about Project Closure Views

The participants were requested for their thoughts on project closure and their views on the finalization of construction projects. The replies were graded on a five-point Likert scale: 1. strongly disagree, 2. Disagree,3. Agree, 4. Strongly agree, and 5. Neutral.

Table 4.3: Respondents Attitudes about Project Closure

I	Professionals and Client General-Attitude	1	2	3	4	5	Total Respon dent	Mean
1	The closure stage is more hard to accomplish than the other stages of construction.	2	0	0	8	15	25	4.36
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.	18	7	0	0	0	25	1.28
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.	5	8	1	3	8	25	3.04

4	The closure stage of construction projects is focused heavily in the institution project.	5	5	1	11	3	25	3.08
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.	11	5	1	6	2	25	2.32
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.	6	6	1	7	5	25	2.96
7	For monitoring and performing project closure, the institution project has a standard approach.	12	7	5	1	0	25	1.8

II	Other stakeholders- General-Attitude	1	2	3	4	5	Total Respon dent	Mean
1	The closure stage is more hard to accomplish than the other stages of construction.			4	4	37	45	4.73
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.	38	5	2			45	1.20
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.	23	12	4	2	4	45	1.93
4	The closure stage of construction projects is focused heavily in the institution project.	23	12	4	2	4	45	1.93
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.	32	9	2	2		45	1.42
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.	23	14	2	4	2	45	1.84
7	For monitoring and performing project closure, the institution project has a standard approach.	39	4	1	1		45	1.20

Source: Own survey (2022)

As per the data gathered from participants Table 4.3 shows that 92% of respondent's project closure agreed with the statement that the closure stage is more hard to accomplish than the other stages of construction from the perspective of all stakeholders engaged in the sector. One can deduct from this assessment that the government higher educational institutions found the project closure phase is burdensome for a number of rationales. The absence of due care given to the closure phase, the incapability to handle it effectively, less trained staff usually undervalue the role of project closure due to various administrative and contractual project closure challenges, and in general, there is an absence of good Project Management knowledge among client or contractors in these institutions could be the contributing factors.

Furthermore; both the professionals and other stakeholders 100% disagreed with the statement that the closure stage is normally completed as per the timetable on such projects where the effort goes as per plan. In addition; 14 out of the 25 (56%) believed that the closure stage of construction projects is focused heavily on the institution projects, however, 35 out of the 45 (77.7%) other stakeholders' disagreed with this attitude. Such inconsistencies in reply could have occurred due to other stakeholders' poor knowledge of the project sponsor's readiness or the professional commitment to work with the client moving forward.

Other stakeholders disagreed with a reported mean value below 2 on the following basic attitudinal quires these are: during the initial phases of any project, the institution devotes sufficient effort and time to project closure planning; when project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our institution; and for monitoring and performing project closure, the institution project has a standard approach. On the other hand, professionals replied to such quires a little higher in mean value compared to the other stakeholders but scored below 3. Thus, one can learn from the above survey that, the institutions have a standard approach for monitoring and performing project closure.

4.4. Interior difficulties of construction project closure

4.4.1 Contractor based difficulties

Table 4.4: Contractor based project closure challenge

No	Contractor based difficulties	1	2	3	4	5	Total Respondent	Mean	RII
I.	Technical								
1	No defined succession clear plan.		0		6	2	8	4.25	0.85
2	Inspection of apparatus and technical components after major completion is prolonged.				7	1	8	4.13	0.83
3	Guidance by a consultant to pass the project to the owner		3		1	4	8	3.75	0.75
4	Orders for Project sponsor changes have been fulfilled.		5		2	1	8	2.88	0.58
5	The design is developed and provided as-built.	1	7				8	1.88	0.38
6	Numerous check lists	4	2	1			7	1.38	0.28
7	Defects and inconsistencies in design papers, as well as ambiguous elements in sketches				6	2	8	4.25	0.85

8	Professionals from the contractor/subcontractor are shifting to new initiatives, and there is a lack of manpower at the closure stage.				6	2	8	4.25	0.85
9	Most outstanding tasks were not identified and agreed upon in a detailed manner.				5	3	8	4.38	0.88
10	In the closure stage, there is a deficit / delayed provision of supplies, such as labor, supplies, and devices.				6	2	8	4.25	0.85
11	Absence of competent skilled workers hinders completion of the checklist.			2	6		8	3.75	0.75
II.	Psychological								
1	Absence of desire for basic activities like reporting.				7	1	8	4.13	0.83
2	Worry of being laid off in the future.				6	2	8	4.25	0.85
3	Top employees, such as the project manager, are unreachable.				5	3	8	4.38	0.88
4	There is a loss of intensity in the effort, as well as excitement and drive among the persons concerned as a result of completing a significant portion of the project				1	7	8	4.88	0.98
III.	Administration								
1	Closure forethought and preparation by the contractor were insufficient.				4	4	8	4.50	0.90
2	Closure paperwork are gathered and sorted.				5	3	8	4.38	0.88
3	Filling up checklists in a specified area.		4	1	2	1	8	3.00	0.60
4	Loss of dedication on the part of the contractor to fulfill contractual obligations (such as delivering replacement parts).		3		5		8	3.25	0.65
5	Contractual closure documentation that is incorrect or late.			2	6		8	3.75	0.75
IV.	Financial								
1	There is a controversy on the amount of extra effort.				7	1	8	4.13	0.83
2	The budgetary control is ineffective.			1	6	1	8	4.00	0.80

Source: Own survey (2022)

Technical Factors difficulties

As per the table 4.4 contractors were almost fully agreed that there is no defined succession clear plan with a mean value of 4.25. They were also agreed that the inspection of apparatus & other technical systems after major completion is prolonged with 4.13 mean value and the problem also exacerbated as a variation of works requested by project sponsor changes is not fulfilled in addition to the unidentified outstanding of task with a mean value of 2.88

& 4.38 respectively. Technically contractors were also disagreed that they do the design the as built and the extent of check lists used in the construction project closeout with a mean value of 1.88 & 4.38 respectively. In addition, the absence of competent skilled works also the other factor that hinders the completion of checklists ranked 3.75 mean value from the total of 8 contractors.

Psychological factors difficulties

On the other hand, eight of the project contractors has agreed to all of the 4 psychological based questions asked. As per the respondent's reply, contractors lack a desire on basic activities like reporting and a worry of being laid off in the future are some of the major psychological factors that makes difficult the construction closeout. A loss of intensity in an effort as well as excitement and drive among the persons concerned as a result of completing a significant portion of the persons concerned as a result of completing a significant portion of the project and unreachability of senior contractor engineer are the other two factors that challenges the closeout phases.

Administrative Factors difficulties

According to table 4.4, contractors have agreed that there is no sufficient project closure forethought and preparation with a mean value of 4.5 and difficulties in gathering and sorting closure documentation with 4.38 mean value. Furthermore, a late or incorrect contractual closure documentation, a loss of effort on the part of the contractor to fulfill contractual obligations and difficulties in filling up checklists in a specified area are also the other administrative factors that challenges the project closure process.

Financial Factors difficulties

On the basis of contractor's reply, there is a controversy on the amount of extra effort with a mean value of 4.13 and ineffectiveness of the budgetary control record 4.00 are the two main financial factors.

4.4.2 Consultant based difficulties

Table 4.5: Consultant based project closure challenge

S. N	Consultant Based Difficulties	1	2	3	4	5	Total Response	Mean	RII
I.	Technical								
1	Specialized know-how is inadequate.				2	4	6	4.67	0.93
2	Consultants validate the project closure paper works late /ascertain the accuracy and substance of the contractor's report/.		1		1	4	6	4.33	0.87
3	Inspection and certification of the device in line with the requirements		1	1	4		6	3.50	0.70
4	Assistance of the project sponsor's handover of the construction project.			1	4	1	6	4.00	0.80
5	The project sketch has been authorized as-as built.	1	4		1		6	2.17	0.43
6	Differences of opinion with the contractor about the checklist.		3		3		6	3.00	0.60
II.	Psychological								
1	At important turning moments, relevant employees must be replaced.			1	4	1	6	4.00	0.80
2	short of intensity on the part of the consultant	1			1	4	6	4.17	0.83
3	Qualified consultants are in short supply.	1			1	4	6	4.17	0.83
4	Consultants are in short supply as the project nears completion.	4	2				6	1.33	0.27
5	Motivation in basic activities like reporting	1	4	1			6	2.00	0.40
III	Administration								
1	Closure planning and preparation by consultants were lacking.	1	4	1			6	2.00	0.40
2	Ineffectiveness of the workmate	4			2		6	2.00	0.40
3	Slow in drawing conclusion		1	1		4	6	4.17	0.83
4	The Project sponsor lacks steps in closure process.	5	1				6	1.17	0.23
IV	Financial								
1	Delay in approval of contractor payment	1	4	1			6	2.00	0.40

Source: Own survey (2022)

Technical Factors difficulties

As per table 4.5 six of the project consultants agreed that there is an inadequacy of know-how to the particular project closeout activities with 4.67 mean value and even the existing consultants accepted that the validation of project closeout paper is late at the close out phases reported 4.33 mean. Though consultants believed that their assistance to handover the project site to the project sponsor's scored 4.00 mean value their inadequacy of know-

how might be the probable reason that challenges them to work toward the project closeout phases requires. These challenges have also seen on other remaining activities such as not obtaining the as built project design that should be prepare by the contractor reported 2.17 mean value.

Psychological Factors difficulties

Table 4.5 has also shows that consultants agreed that relevant employees has left the project near the project close out reported 4.00 mean and also they lack the strength to accomplish the closure activities with a mean value of 4.17 which they do on the project execution. The closeout challenges have also exacerbated by the short supply of qualified consultants reported as 4.17 mean value. On the other hand, consultants are disagreed that the motivation in doing basic activities like reporting and documentation is not in place with mean value 2.00.

Administration Factors difficulties

As shown on table 4.5 four of the administration related factors have reported as challenges in doing project closeout phases. As per the respondents, consultants are lacks in steps to perform the closure process a mean value of 1.17 and this might be a caused by a slow in drawing conclusion reported 4.17. The lack of planning and preparation and ineffectiveness of workmate reported by the consultant with a mean value of 2.00 is also the other administrative factor of project closeout phases.

Financial Factors difficulties

The delay in approval of contractor payment reported with 2.00 mean value is also the financial factor that makes the project closeout difficulties from the consultant sides. This might have causes some of the psychological factor such as demotivating the rest of basic activities like preparation of project close out documentation and reporting.

4.4.3 Client based difficulties

Table 4.6: Client based bas ed project closure difficulties

S.N	Project Owner/Client Based	1	2	3	4	5	Total respondents	Mean	RII
I.	Contractual closure								
1	The device was put to the inspected	1	2				3	1.67	0.33

2	Most payments have been settled.	1	2				3	1.67	0.33
3	Obtain a discharge permission and a warranty.	2	1				3	1.33	0.27
4	The asset has been repossessed in its entirety.	1	1	1			3	2.00	0.40
5	There are no underlying problems.	3					3	1.00	0.20
6	Spending increases have been injected.	1	1	1			3	2.00	0.40
7	Product has been received.	1	2				3	1.67	0.33
8	Proving that all projects have been acknowledged.	2	1				3	1.33	0.27
9	Purchasing has been examined.	2	1				3	1.33	0.27
II.	Administrative closure								
1	The formal transition was finished on schedule.	2	1				3	1.33	0.27
2	Evaluation of the knowledge gained.	2	1				3	1.33	0.27
3	Generated an output statement.	3					3	1.00	0.20
4	The project closure statement has been authorized.	3					3	1.00	0.20
5	The leftover material has been delivered.	2	1				3	1.33	0.27
6	Achievement has been recognized.	3					3	1.00	0.20
7	The goal was accomplished.		1	2			3	2.67	0.53
8	Delighted.	3					3	1.00	0.20
9	Victory is lauded.	3					3	1.00	0.20

Source: Own survey (2022)

Contractual Closure difficulties

As per table 4.6 project sponsors shows entirely their disagreement on the issues raise in association with contractual closure difficulties. As per their response client's devices were not in to inspection (1.67 mean value) this may result in to retain any unsettled bills (1.67 mean value) and show their reluctance in obtaining a discharge permission and warranty (1.33 mean value) to the respective engaged parties.

Administrative closure difficulties

Like the contractual closure difficulties, table 4.6 also shows that administrative closure difficulties are also reported with a lower mean value below 2.00. This shows that clients are in difficulties in performing the administrative part of project closure. Some of these are formal transition was not finished on schedule, an evaluation of the knowledge gained was not done and

the project left over materials were not delivered with the mean value of 1.33 for each. On the other hand, project sponsors were didn't accept that the project closure statement authorization, project achievement recognition and project celebration reported with a mean value of 1.00.

4.4.4 Project Supervisor based

Table 4.7: Project Supervisor based project closure challenge

S.N	Project Supervisor Based	1	2	3	4	5	Total respondents	Mean	RII
I.	Technical								
1	Project sponsor-requested work variation		1		3	4	8	4.25	0.85
2	Closure files are gathered and sorted.	3	5				8	1.63	0.33
3	Requests for changes were fulfilled as requested.	2	4	1	1		8	2.13	0.43
4	Inspection and certification of the device in line with the requirements.	2	5	1			8	1.88	0.38
5	Consultant As-built drawings obtained and certified.	5	3				8	1.38	0.28
6	Specialized know is inadequate.				3	5	8	4.63	0.93
7	In construction projects, there is a scarcity in competence, expertise, and practice.			1	5	2	8	4.13	0.83
II.	Administration								
1	Correspondence is inadequate.		1	1	4	2	8	3.88	0.78
2	After the clearance of the consultant, the construction site was acquired.	6	1	1			8	1.38	0.28
3	After earlier queries have been resolved, the sponsor's approval/sign-off is required.	6	1	1			8	1.38	0.28
4	There is a shortage of project participants quality.	5	2	1			8	1.50	0.30
5	Closure instruction in standards and contractual arrangements are obscure.	5	2	1			8	1.50	0.30
6	Project management and collaboration between partners .	4	3	1			8	1.63	0.33
7	There is a lag in the ruling process.			1	2	5	8	4.50	0.90
8	Extending of consultancy contract is being delayed.			2	1	5	8	4.38	0.88
9	Knowledge management practice	6	1	1			8	1.38	0.28
III.	Financial								
1	Slow Billing to the contractor				6	2	8	4.25	0.85
2	Slow in billing to the consultant.			1	5	2	8	4.13	0.83
3	Sponsor's budgetary shortage	2	3	2	1		8	2.25	0.45
IV.	Psychological								
1	Project team members' excitement in pending works, such as paperwork, has declined.			1	1	6	8	4.63	0.93

2	Lack of intensity on the part of the project sponsor.	3	3	2			8	1.88	0.38
3	Disruption of dedication			1	1	6	8	4.63	0.93

Technical factor difficulties

As per table 4.7 project supervisor have accepted that they have inadequacy on specialized knowhow particularly to perform project closeout phases with 4.63 mean value. Project supervisors also agreed that a variation works is not completed as the project client requested reported a 4.25 mean value and they believe in their scarcity in competence, expertise and practice to perform the closeout phases. Like project consultant, project supervisors have also accepted that inspection and certification of the project devices did not done with 1.88 mean value and did not obtain the as built drawing as well with 1.38 mean value.

Administration factor difficulties

Project supervisor were also disagreed that construction site was not received, project sponsors' don't sign-off, construction instruction in standards & contractual arrangement are obscure, the presence of project management & collaboration between partners and the presence of knowledge practice with a reported lower mean value below 2.00. Nevertheless, they accepted that there is a delay in decision making process and extending of consultant contract score a 4.5 & 4.38 mean value respectively.

Financial factor difficulties

According to table 4.7 project supervisors have agreed that there is a slow billing process to both the project contractor and consultant with 4.25 & 4.13 mean value respectively. These factors might be the counter reason to motivate engaged parties to work toward the close out phases as it's expected. However, the slow billing issue is not due to the client budgetary shortage as it reported with 2.25 mean value. Thus, such instance might be the loss of the client dissatisfaction on the project close out phases which this in turn make the client to be hesitant in discharge permission and warranty.

Psychological factor difficulties

As per table 4.7 eight of the project supervisor agreed that project team members' excitement in pending works such as paper work has declined and also in interruption of dedication with 4.63

mean value each. On the other hand, they disagree on the lack of intensity on the part of the project sponsor with reported 1.88 mean value.

4.4.5 Project other stakeholders' based

Table 4.8: Other stakeholders' based project closure challenge

S.N	Other Stakeholders' Based	1	2	3	4	5	Total respondents	Mean	RII
I.	Contractual closure								
1	The device was put to the inspected	7	32	3	2	1	45	2.07	0.41
2	Most payments have been settled.	5	6	28	4	2	45	2.82	0.56
3	Obtain a discharge permission and a warranty.	35	6	4			45	1.31	0.26
4	The asset has been repossessed in its entirety.	30	6	4	1	4	45	1.73	0.35
5	There are no underlying problems.	32	4	4	1	4	45	1.69	0.34
6	Spending increases have been injected.	32	3	5	1	4	45	1.71	0.34
7	Product has been received.	36	1	3	2	3	45	1.56	0.31
8	Proving that all projects have been acknowledged.	37	6	2			45	1.22	0.24
9	Purchasing has been examined.	35	8	2			45	1.27	0.25
II.	Administrative closure								
1	The device was put to the inspected	39	4	2			45	1.18	0.24
2	Most payments have been settled.	41	4				45	1.09	0.22
3	Obtain a discharge permission and a warranty.	42	3				45	1.07	0.21
4	The asset has been repossessed in its entirety.	43	1	1			45	1.07	0.21
5	There are no underlying problems.	41	2	2			45	1.13	0.23
6	Spending increases have been injected.	44	1				45	1.02	0.20
7	Project has been received.			19	12	14	45	3.89	0.78
8	Proving that all projects have been acknowledged.	40	3	2			45	1.16	0.23
9	Purchasing has been examined.	40	3	2			45	1.16	0.23

Source: Own survey (2022)

Contractual closure difficulties

As per table 4.8 other stakeholders disagreed with all issue asked in relation to contractual closure with a mean value of below 2.00 except issues in relation to inspection of devices and bill settlement reported 2.07 and 2.82 respectively. As per the table, other stakeholders believe

that there is an underlying problem in the construction closure which this reflected in an increment in project spending. In addition, proving that all the project hasn't been acknowledged and received the project are the other two that other stakeholders are disagree with these points.

Administrative closure difficulties

Like the project client does, 45 of the other stakeholder respondents disagreed with all issues asked with a mean value below 2.00 except one that the project has provisional accepted with 3.89 mean value. According to 4.8 table, respondents didn't accept that the project devices was put in to inspection, most payment have been settled and proving of the project acknowledgment. Thus based on the analyzed data, none of the eight projects that passed substantial construction work completion and received provisional acceptance had a successful project closure practice or experience.

4.5. Exterior difficulties of construction project closure

The participants were also enquired about exterior difficulties of the institutions project closure process and their perspectives in relation to the construction project completion. The responses were measured by a five point Likert scale; 1. Strongly disagree, 2. Disagree. 3. Neutral, 4. Agree, and 5. Strongly agree.

Table 4.9: Exterior project closure challenge

I.	Exterior challenge	1	2	3	4	5	Total respondents	Mean	RII
1	Political Ruler criteria desire in completing the project as soon as possible.	26	12	2	4	4	48	1.92	0.38
2	Power delivery is not being provided in a timely manner.	2	6	0	2	38	48	4.42	0.88
3	Injuries that occur when closure phase that occur after considerable accomplishment to humans	39	5	2	0	2	48	1.35	0.27
4	Floods are a type of natural calamity.	46	2	0	0	0	48	1.04	0.21

The study found out that 40 (83.3%) of the respondent agreed that a power delivery service is not provided in a timely manner. This factor is the highest reported exterior difficulties of the institution project closure. Another finding in this study was that 44 (91.6%) of the participants disagreed that the closure phases may face some difficulties owing to human injuries that occur when the process endures significant accomplishment to humans or material. This could be

explained by the participants that they may unaware of the catastrophic recordings that occurred during the closure stage.

4.6 Major challenges of the institutions project closure

Participants were questioned about the interior and exterior difficulties of construction project closure, as well as their thoughts on project closure. The results were tallied by a five-point Likert scale; 1. Strongly disagree 2. Disagree. 3. Neutral, 4. Agree, and 5. Strongly agree. The study examined that the main difficulties of project closure in this portion of the analysis are that RII valued above 0.81 indicated a high relative importance level, as detailed below.

Table 4.10: Relative importance index level

No	RII value	RII-Level
1	0 up to 0.20	Low
2	0.21 up to 0.40	Low-Medium
3	0.41 up to 0.60	Medium
4	0.61 up to 83	Medium- High
5	0.83 up to 1	High

The Following are the main difficulties of the institution's project closure, as determined above.

Table 4.11: Main difficulties of the institutions project closure

Variable Category	No of Variables	Challenges Description	Mean	RII
I. Main Interior Difficulties				
A. Respondent-Consultant				
Technical	1	Specialized know is inadequate.	4.67	0.93
	2	Consultants validate the project closure paperwork late /ascertain the accuracy and substance of the contractor's report/.	4.33	0.87
Psychological	3	Short of intensity on the part of the consultant	4.17	0.83
	4	Qualified consultants are in short supply.	4.17	0.83
Administrative	5	Slow in drawing conclusion	4.17	0.83
B. Respondent-Contractors				
Administrative	6	Closure forethought and planning by the contractor were insufficient.	4.50	0.90

	7	Closure paperwork are gathered and sorted	4.38	0.88
Financial	8	There is a controversy on the amount of extra effort	4.13	0.83
Psychological	9	There is a loss of intensity in the effort, as well as excitement and drive among the persons concerned as a result of completing a significant portion of the project	4.88	0.98
	10	Top employees, such as the project manager, are unreachable.	4.38	0.88
	11	Worry of being laid off in the future.	4.25	0.85
	12	Absence of desire for basic activities like reporting.	4.13	0.83
Technical	13	Most outstanding tasks were not identified and agreed upon in a detailed manner.	4.38	0.88
	14	No defined succession clear plan.	4.25	0.85
	15	Defects and inconsistencies in design papers, as well as ambiguous elements in sketches	4.25	0.85
	16	Professionals from the contractor/subcontractor are shifting to new initiatives, and there is a lack of manpower at the closure stage.	4.25	0.85
	17	In the closure stage, there is a deficit / delayed provision of supplies, such as labor, supplies, and devices.	4.25	0.85
	18	Inspection of apparatus and technical components after major completion is prolonged.	4.13	0.83
C. Respondents-Project Supervisors				
Administrative	19	There is a lag in the ruling process.	4.50	0.90
	20	Extending of consultancy contract is being delayed.	4.38	0.88
Financial	21	Slow Billing to the contractor	4.25	0.85
	22	Slow in billing to the consultant.	4.13	0.83
Psychological	23	Project team members' excitement in pending works, such as paperwork, has declined.	4.63	0.93
	24	Disruption of dedication	4.63	0.93
Technical	25	Specialized know-how is inadequate.	4.63	0.93
	26	Project sponsor-requested work variation	4.25	0.85
	27	In construction projects, there is a scarcity in competence, expertise, and practice.	4.13	0.83
II. Main Exterior Difficulties				
Exterior	28	Power delivery is not being provided in a timely manner.	4.42	0.88

The researcher identified 28 major challenges in construction project closure on the selected universities based on the RII highest rating. There are 27 inner difficulties out of the total of 28 main difficulties. According to the assessment, contractors report 48.15 percent of interior challenges, while project supervisors and consultants claim 33.33 percent and 18.5 percent, respectively. However, even if Project Sponsor and other stakeholder's responses is ranking lower by both mean value and RII, consideration is put into account to the kind and sorts of negative questionnaires offered and the result produced is almost a disagreement with each of the variables questioned.

I. Main Interior Difficulties

A. Consultant-based response

According to the responses of six project consultants, project closure is challenged due to a lack of specialized know-how and late validation of project closure in paper works, which are graded 0.93 and 0.87 RII, respectively. According to the consultant's reaction, the main difficulties indicated based to psychological and administrative reasons scored 0.83 RII and were also the highest-ranking challenges. The main difficulties for the project closure process from an administrative aspect are a lack of focus on the side of the consultant and a shortage of qualified consultants due to a psychological element.

B. Contractor-based response

As per the responses of the eight contractors, they were confronted with all of the main project closure variable categories stated below: -

- The contractors insufficient closure forethought & planning, and a gather & sort of closure paperwork are the highest rank in RII in administrative factor of closure activity.
- In addition, the contractors are also strongly agreed on the fact that there is a disagreement on the dispute with regards to the amount of extra effort given as it scored 4.13 of mean value.
- All four psychologically based questions posed of the eight contractors were deemed major challenges. The loss of intensity in the effort, as well as excitement and drive among those involved, as a result of completing a significant portion of

the project, top employees, such as the project manager, are unreachable, fear of being laid off in the future, and lack of desire for basic activities such as reporting are the major challenges considered as psychological factors.

- The researcher's other finding from the above analysis is that contractors face technical obstacles. Six of the nine technical questions are recognized as the main difficulties, with RII scores ranging from 0.83 to 0.88. Most outstanding tasks were not identified and agreed upon in a detailed manner score the highest RII 0.88 value from technical variable. The inexistence of a defined succession clear plan, defects, and inconsistencies in design papers, as well as ambiguous elements in sketches, shifting to new projects/initiatives by professionals from the contractor/subcontractor, and a lack of manpower at the closure stage, a deficit / delayed provision of supplies, such as labor, supplies, and devices in closure stage all these three ranked 0.85 RII measure are the main difficulties assessed from the list. In addition, the survey shows that there is a prolonged inspection of apparatus and technical components installed in the project recorded a 0.83 RII after the major completion.

C. Project Supervisors-based response

All eight project supervisors, like the contractors, replied to nine main difficulties from a list of 22 quires that encompassed administrative, financial, psychological, and technical aspects.

- There is a lag in the ruling process and delayed in extending of consultancy are the two high ranked RII with .90 and 0.88 respectively out of the total of 9 administrative variables requested.
- Slow in billing to the contactor and consultant are also the two high ranked RII with 0.85 & 0.83 respectively out of the total financial variables requested.
- A decline in project team members' excitement in pending works such as paper work and a disruption of dedication are also the other 2 high ranked RII with 0.93 out of 3 psychological variables.
- The final high-ranking main construction closure challenges grouped under technical factors are inadequacy of specialist know-how reported with RII 0.93, a work variation requested by the project sponsor with RII 0.85, and a scarcity in

competence, expertise, and practice with RII 0.83. Three of the seven needed variables are listed as a main construction closure difficulty.

D. Client and other stakeholders-based response

The researcher designed and distributed similar questionnaires for both project clients and other stakeholders which helps to triangulate respondents' variables. Accordingly, the collected respondents' data and its analysis show that both the client and other stakeholders have an almost similar response with most of them disagree. As per the other stakeholders' assessment, the respondent has replied with a lower RII and mean value of less than 2 except for some variables such as the most payment have been settled in contractual closure with a 2.82 mean value and the project has been received 3.89 mean in the other stakeholder respondents. On the other hand, such exceptions were reported differently by the project sponsors with 1.67 mean value (most payment have been settled) and 2.67 mean score (project has been received) respectively. Such variance between the two respondents might be due to short of information by other stakeholders with regard to bill paid and different benchmarking applied to measure project objective met.

II. Main exterior Difficulties

Only the project sponsor and other stakeholders were chosen as respondents for these exterior difficulties variables since other participants have no direct substantial impact on the case subject. The selected participants were asked four basic questions by the researcher. However, according to the data acquired and evaluated, the only variable that scored 0.88 RII as the main construction project closure difficulty out of the four is a delay in the provision of power service.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This section includes a summary of the research main findings and also conclusions. Finally, appropriate recommendations are provided on the basis of the study's findings.

5.1. Summary of the major findings

The study major objective was to determine the institutions' project closure challenges. Prior to moving on to the main analysis of the research, a reliability test was run to see if the questionnaire was credible. not. As shown in Table 3.1, all of the questionnaires were trustworthy and acceptable, with a Cronbach's Alpha score of 0.767. The significant findings are organized in to interior and exterior challenges in accordance with the study queries asked.

I. The interior main difficulties of project closure

▪ Project closure documents organization and collection

The consultant-based response shows that technically the delay in consultant validation of the project closure paperwork which includes ascertaining the accuracy and substance of the contractor's report scored 0.87 RII is one of the main difficulties in organizing and collecting documents relevant to the project closure. Contractors also reflected the same kind of challenges reported in the administrative factors ranking 0.88 RII. In addition, psychological lack of motivation in basic activities like project closure reporting ranked 0.83RII also remarked as another challenge for project closure documentation works. The nonexistence defined succession clear plan scored 0.85 RII is also one of the determinant factors in contractors' technical that affects the organization and collection of necessary project closure documents. This is also even exacerbated by the contractor's insufficient closure forethought and planning ranked 0.90 RII. The project supervisor's declined excitement in pending works such as documentation which is classified as psychological factor scored the highest of all RII 0.93 in document-based issues.

- **Change in orders, testing & commissioning of systems as per specifications.**

The consultant-based difficulties with this subject matter both technically and psychologically are the inadequacy of specialized know-how with the highest RII of 0.93 and the short supply of qualified consultants with RII of 0.83 respectively. The contractor's based difficulties response shows that there is most outstanding tasks were not identified and agreed upon in a detailed manner with 0.88 RII; defects and inconsistencies in design papers as well as ambiguous elements in sketches with 0.85 RII; and inspection of apparatus & technical components after major completion is prolonged with 0.83 RII are the three main difficulties that hinder to complete a change on orders and to make the testing & commissioning systems as per specifications. The project supervisors also reply that the project sponsor's request for work variation and the scarcity of competence, expertise, and practice in construction project closure scores of 0.85 & 0.83 RII respectively are the two main difficulties in technical factors to ascertain all the changes orders completed and accomplishment the testing & commissioning systems done as per the specifications.

- **Project sponsor closure signoff and approval**

The responses of both the project sponsor and other stakeholders revealed that they disagree on the following list of factors: obtaining discharge permission and a warranty, receiving the project, proving that all projects have been acknowledged, the formal transition was completed on time, generating a project output statement, and authorization of project closure statement with all mean values of less than 2.00. Despite the fact that project sponsors acquired their respective sites, project sponsor closure sign-off and approval is complicated due to the aforementioned six significant issues.

- **Archive project closure lessons.**

Lessons learned were rated with a mean value of 1.33 (0.27 RII) and a mean value of 1.09 (0.22 RII) by all respondents in both the project sponsor and other stakeholder groups respectively. As a result, of the archived lesson learned to review, all three project sponsors and 45 other project stakeholders disagree that such failures do not provide opportunities to learn from the past.

- **Other potential challenges that hinder the construction closure phases**

As per the survey collected and analyzed, six of the project consultants has agreed on the slow in drawing conclusion scored 4.17 mean value which it has impacted the project closure process.

Contractors, on the other hand, have agreed to a 4.25 mean value on the assumption that there is a transfer of employees to other projects, leading to a staffing scarcity at the closure stage. They also agreed that there is a deficit/delay in the provision of resources such as labor, materials, and devices, with a mean value of 4.25. Both of these contractors' responses to the case are classified as technical factors that pose a threat to the project's completion.

According to the project supervisor's response, a lengthy rule-making process, a delay in extending the consultant contract, and slow billing to both contractor and consultant scores of 4.5, 4.38, 4.25, and 4.13 respectively played a significant role in posing a threat to the construction project closure stage. A disruption of dedication, according to their responses, has a higher mean value of 4.63, which makes it more difficult for them to work on project closure tasks.

▪ **Benefits and awareness of standard construction project closure phases**

According to the survey, consultants replied that there is a short of intensity on the part of the consultant with the mean value of 4.17 is reported as a difficulty in project closure phases.

Contractors replied that a lack of intensity in the effort, as well as excitement and motivation among those involved, as a result of completing a significant portion of the project earned a mean value of 4.88 as a challenge in project closure.

Most of the fundamental project closure tasks received a mean score of less than 2.00 from the perspective of the project sponsor and the project supervisor. This means that both parties are unaware of the need of conducting the conventional construction project closure phases and the benefits that can be realized as a result.

II. The Exterior main difficulties of project closure

Only the project sponsor and other stakeholders were chosen as respondents for these exterior difficulties aspects since additional respondents have no substantial impact on the

case subject. The selected respondents were asked four basic questions by the researcher. According to the data acquired and evaluated, the only variable that ranked 0.88 RII as a major construction project closure out of the four is a delay in power supply.

5.2 Conclusion

Construction project closure is a critical and frequently challenging step in project delivery, and nearly every organization surveyed expressed some unhappiness with this stage. As a result of the prolonged general conditions, slow closure might result in lost administrative time, end-user perceptions of slowness, and increased project costs. As indicated by the literature analysis, research data, and personal experience, the closure phase of construction projects is a difficult process. While there is agreement on the significance of some criteria, there is also disagreement on others, according to this study.

- Majority of respondents agreed with the following statements: contractors' loss of intensity in the effort, as well as excitement and drive among the persons concerned as a result of completing a significant portion of the project; insufficient closure forethought and planning; a decline excitement in pending works such as documentations; and the nonexistence defined succession clear plan. On the other hand, most consultant has also agreed that there is a delay in consultant validation of the project closure paperwork which includes ascertaining the accuracy and substance of the contractor's report as a foremost difficulty to organize and collect documents relevant for project closure. Thus, from the collective resultant outcome of the above findings marked by both the contractors and consultants implied that governmental higher educational institution projects faced difficulties in organizing and collecting relevant documents that are crucial to perform the project closure process.
- The researcher discovered, based on the acquired and evaluated data, that project consultants face significant challenges in providing technical experience in both quantity and quality in order to complete project closure. Such consultant-identified issues would have an impact on some contractor-identified issues, such as most outstanding tasks being not defined and agreed upon in a specific manner; and inspection of apparatus and technical components following major completion taking longer. Meanwhile, project supervisors were hindered by the lack of competence, skill, and experience in project closure operations, as well as the project sponsor's request for a work variation. As a result of the aforementioned main project closure issues, the researcher concluded that

the duties required to ensure the completion of variation of works and inspection of apparatus and devices in accordance with the project specification could not be realized.

- Project sponsor closure sign off and approval as a final acceptance is almost one of the crucial activities expected to conclude the project and celebrate. However, the sign off and approval for the final acceptance is not as simple as it does for the provisional acceptance as it does following the site readiness for function. Almost all project sponsor disagrees to contractor license and guarantee, work accepted, confirming deliverables even after the defect liability period.
- According to the responses of the project sponsor and other stakeholders, archiving knowledge gained is not being considered. As a result, these institutions have a remote possibility of teaching project after project. This means that any mistakes made in previous projects could have a chance to happen again in the future, and the cost of remedial work will be unavoidable, increasing the project's cost in the future.
- Other potential problems that impede the completion of the construction project include a delay in decision-making on the consultant's part and a transfer of personnel to new initiatives on the contractor's part. In the closure stage, the problem is compounded by a scarcity of/late arrival of resources such as supplies and devices.
- According to the survey, the lack of consultant intensity in the project closure process makes project closure stage difficult. This indicates that they are either unable to work or are failing to do their assigned tasks in accordance with the standard. The lack of intensity in the endeavor, as well as passion and drive among those involved, as a result of finishing a large section of the project, was also cited as a challenge in project closure, which made it difficult to see the value of doing the usual project closure. Almost all of the fundamental project closure activities are not carried out, according to the responses obtained and assessed from the project sponsor and project supervisors, as documented by the literature review. This implies that both parties are unaware of the importance of conducting the typical construction project closure phases and the benefits that can be realized. Finally, the project sponsor and other stakeholders observed that a delay in provision of power service is another exterior barrier that prevents the construction closure process from being completed.

In general, neither the institutions nor the construction industry's involving parties follow the standards for construction closure. Instead, they're heavily piled with the standard construction project closure method, which is backed up and limited by a provisional and

final acceptance certificate.

5.3 Recommendation

Project closure is one of the most critical and final phases of project management, and it involves following a basic process to address all of the activities that must be completed before the project can be celebrated. The research shows that project closure is restricted by a number of interior and exterior constraints that can be characterized as technical, psychological, administrative, and financial in detail. Unlike exterior issues that arise during the project closure phase, most interior challenges are believed to be handled with thorough planning from the start of the project to the end. However, such planning necessitates close monitoring, reporting, and evaluation of project progress with the project's involved stakeholders, including the consultant, contractor, project supervisor, and project sponsor. Furthermore, awareness of the standard project closure, which includes both contractual and administrative closures, should be circulated among all parties involved, as the project closure process extends beyond what has actually been done on the ground, focusing on the issuance of provisional and final acceptance.

To achieve a good project closure within the time specified, cost, and standard of work, all key stakeholders for the project, such as project supervisors, contractors, consultants, and the power company, should work together. As a result, a successful construction project closure necessitates broad involvement and actively contribute that result in a optimal cost and value-added outcome. In accordance with the aforementioned finding, the author makes the next recommendation, which should be addressed by all project stakeholders in order to minimize project closure problems. Among them are: -

- Consistent monitoring and follow-up of the project working documentation by both the contractor and the consultant is strongly recommended as a pre-requisite for successive approval and sign-off of work execution beginning on day one. Institutions should make adhering to such practices and organizing and providing these essential documents a mandatory requirement before paying their service rendering charge.
- Because project sponsors (institutions) will have a professional responsibility to supply the correct competent employees with a marginal number of consultants, they should screen out the project consultant early on. Furthermore, employing a project consultant with caution would help to reduce mistakes and conflicts in design papers, making it

easier to complete any possible variation of works and inspection of devices as required by the requirements.

- Project closure signoff and approval are required as part of the project handover from the contractor to the project sponsor and require professional assistance from the designated project consultant. In doing so, the project sponsor places a high value on the consultant's and project office's –project supervisor's work approval. As a result, project sign-off and approval activities should be taken seriously and consistently at each significant milestone, allowing the project sponsor to readily sign and approve the project closure report at the end.
- Capturing lessons learnt is a critical stage in project knowledge management, since it allows you to avoid making the same mistakes on future projects. At milestones and at the end of a project, lessons should be recorded. Because people may not recall what happened months ago, it is generally beneficial to document lessons often on long-term initiatives. As a result, the institutions would have done better to construct databases or shared files to preserve lessons learnt and then successfully disseminate them as needed.
- Consultants are required to make good choices at all times, which would otherwise add to the project's cost. The existence of the contractor's main staff, who were responsible for the majority of the construction work, would make the consultant's job of overseeing the contractors' work execution even easier. As a result, the contractor would be better off entering into an enforceable obligation to retain and present the designated on-site engineer, allowing them to quickly complete the project closure works. Furthermore, resources such as supplies and devices that are required prior to the final closure stages should be delivered on time and according to the predetermined plan.
- Last but not least, for project closure phases, both the consultant and the contractor should come to a specific contractual agreement that either promotes or enforces them to use an incentive or punitive measure to work toward project closure activities in a timely manner.

5.4 Next Survey

The survey puts emphasis on project closure problems in governmental higher education institution projects; however, in the coming, it may be advantageous to include a variety of projects and research to acquire a more comprehensive picture of the entire sector. Exogenous difficulties, such as growing costs and innovative adaptation, may be included as a difficulty in anticipated study by other scholars, who would then investigate their

consequences throughout the project closure phases. The following are some other topics that could be researched further.

1. As this survey solely addressed project closure issues, the author suggests that upcoming research emphasis on the implications of project closure hurdles from one of involved construction standpoint.
2. Would it be possible that companies do not spend sufficient attention to closure planning during the initial phases of a project, but that they do so as the work proceeds? How often do companies realize that they need to deal with the closure stages immediately?
3. Do organizations devote considerable period for project closure planning while the project work proceeds if they don't spend enough period planning at the initial phases? When do companies recognize that they expect to start working on the closure stage right away?

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APPENDIXES

Appendix 1

Ranks of Universities Project Closure Challenges

S.N	Respondents	Challenges	Variable Category	Mean	RII
1	Contractor	There is a loss of intensity in the effort, as well as excitement and drive among the persons concerned as a result of completing a significant portion of the project	Psychological	4.88	1
2	Consultant	Specialized know-how is inadequate.	Technical	4.67	0.9
3	Project Supervisor	Specialized know is inadequate.	Technical	4.63	0.9
4	Project Supervisor	Project team members' excitement in pending works, such as paperwork, has declined.	Psychological	4.63	0.9
5	Project Supervisor	Disruption of dedication	Psychological	4.63	0.9
6	Contractor	Closure forethought and preparation by the Contractor were insufficient.	Administrative	4.5	0.9
7	Project Supervisor	There is a lag in the ruling process.	Administrative	4.5	0.9
8	Contractor	Most outstanding tasks were not identified and agreed upon in a detailed manner.	Technical	4.38	0.9
9	Contractor	Top employees, such as the project manager, are unreachable.	Psychological	4.38	0.9
10	Contractor	Closure paperwork are gathered and sorted.	Administrative	4.38	0.9
11	Project Supervisor	Extending of consultancy Contractor act is being delayed.	Administrative	4.38	0.9
12	Consultant	Consultants validate the project closure paper works late /ascertain the accuracy and substance of the Contractor's report/.	Technical	4.33	0.9
13	Contractor	No defined succession clear plan.	Technical	4.25	0.9
14	Contractor	Defects and inconsistencies in design papers, as well as ambiguous elements in sketches	Technical	4.25	0.9
15	Contractor	Professionals from the Contractor/sub-Contractor are shifting to new initiatives, and there is a lack of manpower at the closure stage.	Technical	4.25	0.9
16	Contractor	In the closure stage, there is a deficit / delayed provision of supplies, such as labor, supplies, and devices.	Technical	4.25	0.9
17	Contractor	Worry of being laid off in the future.	Psychological	4.25	0.9
18	Project Supervisor	Project sponsor-requested work variation	Technical	4.25	0.9
19	Project Supervisor	Slow Billing to the Contractor	Financial	4.25	0.9
20	Contractor	Inspection of apparatus and technical components after major completion is prolonged.	Technical	4.13	0.8

21	Contractor	Absence of desire for basic activities like reporting.	Psychological	4.13	0.8
22	Contractor	There is a Controversy on the amount of extra effort.	Financial	4.13	0.8
23	Consultant	short of intensity on the part of the consultant	Psychological	4.17	0.8
24	Consultant	Qualified consultants are in short supply.	Psychological	4.17	0.8
25	Consultant	Slow in drawing conclusion	Administrative	4.17	0.8
26	Project Supervisor	In construction projects, there is a scarcity in competence, expertise, and practice.	Technical	4.13	0.8
27	Project Supervisor	Slow in billing to the consultant.	Financial	4.13	0.8
28	Contractor	The budgetary control is ineffective.	Financial	4	0.8
29	Consultant	Assistance of the project sponsor's handover of the construction project.	Technical	4	0.8
30	Consultant	At important turning moments, relevant employees must be replaced.	Psychological	4	0.8
31	Project Supervisor	Correspondence is inadequate.	Administrative	3.88	0.8
32	Other stakeholder	Project has been received.	Administrative	3.89	0.8
33	Contractor	Guidance by a consultant to pass the project to the owner	Technical	3.75	0.8
34	Contractor	Absence of competent skilled workers hinders completion of the checklist.	Technical	3.75	0.8
35	Contractor	Contractual closure documentation that is incorrect or late.	Administrative	3.75	0.8
36	Consultant	Inspection and certification of the device in line with the requirements	Technical	3.5	0.7
37	Contractor	Loss of dedication on the part of the Contractor to fulfill Contractual obligations (such as delivering replacement parts).	Administrative	3.25	0.7
38	Contractor	Filling up checklists in a specified area.	Administrative	3	0.6
39	Consultant	Differences of opinion with the Contractor about the checklist.	Technical	3	0.6
40	Contractor	Orders for Project sponsor changes have been fulfilled.	Technical	2.88	0.6
41	Other stakeholder	Most payments have been settled.	Contractual	2.82	0.6
42	Project Owner	The goal was accomplished.	Administrative	2.67	0.5
43	Project Supervisor	Sponsor's budgetary shortage	Financial	2.25	0.5
44	Consultant	The project sketch has been authorized as-as built.	Technical	2.17	0.4
45	Project Supervisor	Requests for changes were fulfilled as requested.	Technical	2.13	0.4
46	Other stakeholder	The device was put to the inspected	Contractual	2.07	0.4
47	Consultant	Lack of motivation in basic activities like reporting	Psychological	2	0.4
48	Consultant	Closure planning and preparation by consultants were lacking.	Administrative	2	0.4
49	Consultant	Ineffectiveness of the workmate	Administrative	2	0.4

50	Consultant	Delay in approval of Contractor payment	Financial	2	0.4
51	Project Owner	The asset has been repossessed in its entirety.	Contractual	2	0.4
52	Project Owner	Spending increases have been injected.	Contractual	2	0.4
53	Contractor	The design is developed and provided as-built.	Technical	1.88	0.4
54	Project Supervisor	Inspection and certification of the device in line with the requirements.	Technical	1.88	0.4
55	Project Supervisor	Lack of intensity on the part of the project sponsor.	Psychological	1.88	0.4
56	Other stakeholder	The asset has been repossessed in its entirety.	Contractual	1.73	0.4
57	Other stakeholder	There are no underlying problems.	Contractual	1.69	0.3
58	Other stakeholder	Spending increases have been injected.	Contractual	1.71	0.3
59	Project Owner	The device was put to the inspected	Contractual	1.67	0.3
60	Project Owner	Most payments have been settled.	Contractual	1.67	0.3
61	Project Owner	Product has been received.	Contractual	1.67	0.3
62	Project Supervisor	Closure files are gathered and sorted.	Technical	1.63	0.3
63	Project Supervisor	Project management and collaboration between partners are lacking.	Administrative	1.63	0.3
64	Other stakeholder	Product has been received.	Contractual	1.56	0.3
65	Project Supervisor	There is a shortage of project participants quality.	Administrative	1.5	0.3
66	Project Supervisor	Closure instruction in standards and Contractual arrangements are obscure.	Administrative	1.5	0.3
67	Contractor	Numerous check lists	Technical	1.38	0.3
68	Project Supervisor	Consultant As-built drawings obtained and certified.	Technical	1.38	0.3
69	Project Supervisor	After the clearance of the consultant, the construction site was acquired.	Administrative	1.38	0.3
70	Project Supervisor	After earlier queries have been resolved, the sponsor's approval/sign-off is required.	Administrative	1.38	0.3
71	Project Supervisor	Knowledge management practice	Administrative	1.38	0.3
72	Consultant	Consultants are in short supply as the project nears completion.	Psychological	1.33	0.3
73	Project Owner	Obtain a discharge permission and a warranty.	Contractual	1.33	0.3
74	Project Owner	Proving that all projects have been acknowledged.	Contractor actual	1.33	0.3
75	Project Owner	Purchasing has been examined.	Contractual	1.33	0.3
76	Project Owner	The formal transition was finished on schedule.	Administrative	1.33	0.3

77	Project Owner	Evaluation of the knowledge gained.	Administrative	1.33	0.3
78	Project Owner	The leftover material has been delivered.	Administrative	1.33	0.3
79	Other stakeholder	Obtain a discharge permission and a warranty.	Contractual	1.31	0.3
80	Other stakeholder	Purchasing has been examined.	Contractual	1.27	0.3
81	Other stakeholder	Proving that all projects have been acknowledged.	Contractual	1.22	0.2
82	Other stakeholder	The device was put to the inspected	Administrative	1.18	0.2
83	Consultant	The Project sponsor lacks steps in closure process.	Administrative	1.17	0.2
84	Other stakeholder	There are no underlying problems.	Administrative	1.13	0.2
85	Other stakeholder	Proving that all projects have been acknowledged.	Administrative	1.16	0.2
86	Other stakeholder	Purchasing has been examined.	Administrative	1.16	0.2
87	Other stakeholder	Most payments have been settled.	Administrative	1.09	0.2
88	Other stakeholder	Obtain a discharge permission and a warranty.	Administrative	1.07	0.2
89	Other stakeholder	The asset has been repossessed in its entirety.	Administrative	1.07	0.2
90	Project Owner	There are no underlying problems.	Contractual	1	0.2
91	Project Owner	Generated an output statement.	Administrative	1	0.2
92	Project Owner	The project closure statement has been authorized.	Administrative	1	0.2
93	Project Owner	Achievement has been recognized.	Administrative	1	0.2
94	Project Owner	Delighted.	Administrative	1	0.2
95	Project Owner	Victory is lauded.	Administrative	1	0.2
96	Other stakeholder	Spending increases have been injected.	Administrative	1.02	0.2

Appendix 2

QUESTIONNAIRE

AAU-School of Commence

Department of Management

Post Graduate Program in Masters of Project Management Questionnaire

Dear Sir/Madam,

I am currently pursuing my Master's Degree in Project management with AAU-School of Commence. Currently, I am writing my final project titled ***“Assessing the major challenges in construction project closure in governmental higher education institutions: in the case of selected universities around Addis Ababa.”*** The purpose of the study is to identify the challenges associated with closure of construction project in the case of AAU, AASTU and CSU. This questionnaire is meant to solicit information regarding the topic. Information provided will be used for academic purposes only, thus your responses are strictly confidential and anonymous.

Thank you for participating in this survey. Your feedback helps me to enrich my study report. I appreciate your time, any input and responsiveness in advance.

Henok Tadesse

Section 1:- General Information Please TICK [✓] where appropriate

Demographical information of the respondents

1. Gender: Male ☐ Female ☐
2. Employment history in Construction sector/Project Management/General construction know-how/
0-6years ☐ 7-11years ☐ 12-16Years ☐ 17 & above Years ☐
3. Course of Specialization: -
Civil-Engineer ☐ Mechanical-Engineer ☐ Electrical-Engineer ☐ Other ☐
4. Academic status: - Degree ☐ Masters ☐ PhD and above ☐
5. Hired Company you are working for: - Client/Project owner ☐
Contractor ☐
Consultant University Project office ☐
Other Stakeholder ☐

Questionnaire-01:ForContractors

The below are some of the most often asked questions about the completion of construction projects. The construction closure phase occurs between the provisional acceptance of the project and its final acceptance. In this regard, please try to evaluate your experiences using the scales that correspond to the queries listed below.

Rate	Scale
1	Not at all true= strongly Disagree
2	Rarely true = Disagree
3	Neither Agree Nor Disagree = Neutral
4	Mostly true = Agree
5	Almost always true = strongly agree

No	Contractor based challenges	1	2	3	4	5	Total Respondent
I.	Technical						
1	No defined succession clear plan.						
2	Inspection of apparatus and technical components after major completion is prolonged.						
3	Guidance by a consultant to pass the project to the owner						
4	Orders for Project sponsor changes have been fulfilled.						
5	The design is developed and provided as-built.						
6	Numerous check lists						
7	Defects and inconsistencies in design papers, as well as ambiguous elements in sketches						
8	Professionals from the contractor/subcontractor are shifting to new initiatives, and there is a lack of manpower at the closure stage.						
9	Most outstanding tasks were not identified and agreed upon in a detailed manner.						
10	In the closure stage, there is a deficit / delayed provision of supplies, such as labor, supplies, and devices.						
11	Absence of competent skilled workers hinders completion of the checklist.						
II.	Psychological						
1	Absence of desire for basic activities like reporting.						
2	Worry of being laid off in the future.						

3	Top employees, such as the project manager, are unreachable.						
4	There is a loss of intensity in the effort, as well as excitement and drive among the persons concerned as a result of completing a significant portion of the project						
III.	Administration						
1	Closure forethought and preparation by the contractor were insufficient.						
2	Closure paperwork are gathered and sorted.						
3	Filling up checklists in a specified area.						
4	Loss of dedication on the part of the contractor to fulfill contractual obligations (such as delivering replacement parts).						
5	Contractual closure documentation that is incorrect or late.						
IV.	Financial						
1	There is a controversy on the amount of extra effort.						
2	The budgetary control is ineffective.						
V	General-Attitude						
1	The closure stage is more hard to accomplish than the other stages of construction.						
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.						
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.						
4	The closure stage of construction projects is focused heavily in the institution project.						
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.						
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.						
7	For monitoring and performing project closure, the institution project has a standard approach.						

Questionnaire-02: For Consultants

The below are some of the most often asked questions about the completion of construction projects. The construction closure phase occurs between the provisional acceptance of the project and its final acceptance. In this regard, please try to evaluate your experiences using the scales that correspond to the queries listed below.

Rate	Scale
1	Not at all true= strongly Disagree
2	Rarely true = Disagree
3	Neither Agree Nor Disagree = Neutral
4	Mostly true = Agree
5	Almost always true = strongly agree

S.N	Consultant Based	1	2	3	4	5	Total Response	Mean	RII
I.	Technical								
1	Specialized know-how is inadequate.								
2	Consultants validate the project closure paper works late /ascertain the accuracy and substance of the contractor's report/.								
3	Inspection and certification of the device in line with the requirements								
4	Assistance of the project sponsor's handover of the construction project.								
5	The project sketch has been authorized as-as built.								
6	Differences of opinion with the contractor about the checklist.								
II.	Psychological								
1	At important turning moment, relevant employees must be replaced								
2	Short of intensity on the part of the consultant								
3	Qualified consultants are in short supply.								
4	Consultants are in short supply as the								

	project nears completion.								
5	Lack of motivation in basic activities like reporting								
III.	Administration								
1	Closure planning and preparation by consultants were lacking.								
2	Ineffectiveness of the workmate								
3	Slow in drawing conclusion								
4	The Project sponsor lacks steps in closure process.								
IV.	Financial								
1	Delay in approval of contractor payment								

V	General-Attitude								
1	The closure stage is more hard to accomplish than the other stages of construction.								
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.								
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.								
4	The closure stage of construction projects is focused heavily in the institution project.								
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.								
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.								
7	For monitoring and performing project closure, the institution project has a standard approach.								

Questionnaire-03: For Project Sponsor

The below are some of the most often asked questions about the completion of construction projects. The construction closure phase occurs between the provisional acceptance of the project and its final acceptance. In this regard, please try to evaluate your experiences using the scales that correspond to the queries listed below.

Rate	Scale
1	Not at all true= strongly Disagree
2	Rarely true = Disagree
3	Neither Agree Nor Disagree = Neutral
4	Mostly true = Agree
5	Almost always true = strongly agree

S.N	Project Owner/Client Based	1	2	3	4	5	Total respondents
I.	Contractual closure						
1	The device was put to the inspected						
2	Most payments have been settled.						
3	Obtain a discharge permission and a warranty.						
4	The asset has been repossessed in its entirety.						
5	There are no underlying problems.						
6	Spending increases have been injected.						
7	Product has been received.						
8	Proving that all projects have been acknowledged.						
9	Purchasing has been examined.						
II.	Administrative closure						
1	The formal transition was finished on schedule.						
2	Evaluation of the knowledge gained.						
3	Generated an output statement.						
4	The project closure statement has been authorized.						
5	The leftover material has been delivered.						
6	Achievement has been recognized.						
7	The goal was accomplished.						
8	Delighted.						
9	Victory is lauded.						
III.	General-Attitude						
1	The closure stage is more hard to accomplish than the other stages of construction.						

2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.						
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.						
4	The closure stage of construction projects is focused heavily in the institution project.						
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.						
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.						
7	For monitoring and performing project closure, the institution project has a standard approach.						
IV. Exterior challenge							
1	Political Ruler criteria desire in completing the project as soon as possible.						
2	Power delivery is not being provided in a timely manner.						
3	Injuries that occur when closeout phase that occur after considerable accomplishment to humans .						
4	Floods are a type of natural calamity.						

Questionnaire-04: Project Supervisor

The below are some of the most often asked questions about the completion of construction projects. The construction closure phase occurs between the provisional acceptance of the project and its final acceptance. In this regard, please try to evaluate your experiences using the scales that correspond to the queries listed below.

Rate	Scale
1	Not at all true= strongly Disagree
2	Rarely true = Disagree
3	Neither Agree Nor Disagree = Neutral
4	Mostly true = Agree
5	Almost always true = strongly agree

S.N	Project Supervisor Based	1	2	3	4	5	Total respondents
I.	Technical						
1	Project sponsor-requested work variation						
2	Closure files are gathered and sorted.						
3	Requests for changes were fulfilled as requested.						
4	Inspection and certification of the device in line with the requirements.						
5	Consultant As-built drawings obtained and certified.						
6	Specialized know is inadequate.						
7	In construction projects, there is a scarcity in competence, expertise, and practice.						
II.	Administration						
1	Correspondence is inadequate.						
2	After the clearance of the consultant, the construction site was acquired.						
3	After earlier queries have been resolved, the sponsor's approval/sign-off is required.						
4	There is a shortage of project participants quality.						
5	Closure instruction in standards and contractual arrangements are obscure.						
6	Project management and collaboration between partners are lacking.						
7	There is a lag in the ruling process.						
8	Extending of consultancy contract is being delayed.						
9	Knowledge management practice						
III.	Financial						
1	Slow Billing to the contractor						
2	Slow in billing to the consultant.						
3	Sponsor's budgetary shortage						
IV.	Psychological						

1	Project team members' excitement in pending works, such as paperwork, has declined.						
2	Lack of intensity on the part of the project sponsor.						
3	Disruption of dedication						

V	General-Attitude						
1	The closure stage is more hard to accomplish than the other stages of construction.						
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.						
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.						
4	The closure stage of construction projects is focused heavily in the institution project.						
5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.						
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.						
7	For monitoring and performing project closure, the institution project has a standard approach.						

Questionnaire-05: Other stakeholders

The below are some of the most often asked questions about the completion of construction projects. The construction closure phase occurs between the provisional acceptance of the project and its final acceptance. In this regard, please try to evaluate your experiences using the scales that correspond to the queries listed below.

Rate	Scale
1	Not at all true= strongly Disagree
2	Rarely true = Disagree
3	Neither Agree Nor Disagree = Neutral
4	Mostly true = Agree
5	Almost always true = strongly agree

S.N	Other Stakeholders' Based	1	2	3	4	5	Total respondents
I.	Contractual closure						
1	The device was put to the inspected						
2	Most payments have been settled.						
3	Obtain a discharge permission and a warranty.						
4	The asset has been repossessed in its entirety.						
5	There are no underlying problems.						
6	Spending increases have been injected.						
7	Product has been received.						
8	Proving that all projects have been acknowledged.						
9	Purchasing has been examined.						
II.	Administrative closure						
1	The device was put to the inspected						
2	Most payments have been settled.						
3	Obtain a discharge permission and a warranty.						
4	The asset has been repossessed in its entirety.						
5	There are no underlying problems.						
6	Spending increases have been injected.						
7	Project has been received.						
8	Proving that all projects have been acknowledged.						
9	Purchasing has been examined.						
III.	General-Attitude						
1	The closure stage is more hard to accomplish than the other stages of construction.						
2	The closure stage is normally completed as per the timetable on such projects where the effort goes as per plan.						
3	In contrast to certain comparable projects, the institution projects' managed the closure stage of construction projects well.						
4	The closure stage of construction projects is focused heavily in the institution project.						

5	During the initial phases of any project, the institution devotes sufficient effort and time to project closure planning.						
6	When project closure is delayed, it is often due to the acts or failure to act of some other partner instead of our organization.						
7	For monitoring and performing project closure, the institution project has a standard approach.						
IV.	Exterior challenge						
1	Rulemaking criteria desire in completing the project as soon as possible.						
2	Power delivery is not being provided in a timely manner.						
3	Injuries that occur when closeout phase that occur after considerable accomplishment to humans or material.						
4	Floods are a type of natural calamity.						