ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

ASSESSING THE PRACTICE OF PROJECT CLOSURE: EVIDENCE FROM WATER SUPPLY AND SANITATION PROJECTS

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Masters Project Thesis Report for the Partial Fulfillment of the Requirements for Master of Arts (MA) Degree in Project Management

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Title of the Thesis

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Acronyms and Abbreviations

AA: Audit Authority

AAU: Addis Ababa University

AAUSC: Addis Ababa University School of Commerce

CP: Cohesion Policy

CRGE: Climate Resilient Green Economy

CV: Coefficient of Variance

EC: European Commission

EU: European Union

EIB: European Investment Bank

FEI: Financial Engineering Instrument

GTP: Growth and Transformation Plan

MA: Master of Arts, Managing Authority

MDG: Millennium Development Goals

MoFEC: Ministry of Finance & Economic Cooperation

MoWIE: Ministry of Water, Irrigation and Electricity

MS: Member States

NAO: National Authorizing Office

OP: Operational Program

PASDEP: Plan for Accelerated & Sustainable Development to End Poverty

SDG: Sustainable Development Goals

S.M.A.R.T: Specific, Measurable, Attainable, Realistic, Timely

TWSSO: Town for Water Supply & Sanitation Office

WSSO: Water Supply & Sanitation Office

ABSTRACT

This study is about the case of the Water Supply & Sanitation projects enabled to validate that the closure phase is the most neglected among the four main phases of project management, which requires the attention of specially project team. The study realized that projects practiced only signing of Provisional & Final Acceptance Certificates using financer's format, handing over outputs & holding retention fund. At project closure phase, both contractual and administrative closures need to be performed respectively. The interview results justified the absence of standard project closure practices, such as detailed closure planning, no termination report (fig 4.1.1), use of standard templates, draw & archive lessons, release of remaining resources, freeing or retaining project personnel, etc. To initiate the project closure, a closure report should first be created; followed by approval of customer. Delay of closure created 17% dissatisfaction of beneficiaries. There is no awareness about the benefits of lessons to be drawn; stakeholders could not able to learn from the projects' success or failures. The study enhances awareness & knowledge; where 83% of the respondents did not have knowledge about each benefit & developing training course manual for internal use. It needs to encourage project stakeholders to get the necessary feedback timely, as the study revealed that 73% of respondents were neutral about contractual closure. Further study may be important on the significance of financial implication on delayed release of resources during closure and study on the practices of knowledge transfer level from past lessons to current similar projects.

Key words: Project closure, project delay, project stakeholders, closure planning

I. CHAPTER ONE: INTRODUCTION

1.1 . Background of the Study

According to Project Management Institute (2018), project is a temporary intervention with specified starting & ending time, and distinct scope and resources. It is unique action, & specific set of operations intended to achieve a remarkable objective. A project management team usually comprises persons who sometimes come from different organizations and across multiple geographic locations to work in a team. Such teams to deliver quality results timely & within budget organizations need to knowledgeably manage projects. Project management, then, is the application of knowledge, skills, tools, and techniques in project executions to meet the project requirements. According to Gartner (2017), project closure phase is the fourth and last phase in the project life cycle (initiating, planning, execution, and closing) of project management which is the roadmap for achieving it.

Closure phase signifies the completed project. Contractors hired to work explicitly on the project are terminated at this time. Important team members are renowned. Some project managers even establish minor work events for people who involved in the project to acknowledge them for their energies. When a project is completed, a project manager will usually hold a meeting to evaluate what went right in a project and detect project failures. It is particularly useful to comprehend lessons gained so that improvements can be made for future projects. Once the project is complete, Project Managers still have a few tasks to complete. They will need to create a project punch-list of things that didn't get accomplished during the project execution and work with team members to complete them. Perform a final project payment and prepare a final project report. At the end it needs to collect all project documents and deliverables to store them in a separate place (Pradip 2018).

Many appear to think that closure of project is unnecessary phase in project management, which is not appropriate (Pradip 2018). The role of project closure is multi-folds; of which major ones includes identify reason for early termination of some unsuccessful projects, learn lessons from project & applies them to future projects throughout a business, confirm that the work is done to satisfy a set of agreed requirements, enables to complete the procurement & financial closure, to

gain financial acceptance, to transfer final deliverables to users, solicit feedback from the customer, to index and archive records, etc.

The application of the standard project management phases enhances the realization of important & complex projects such as water supply infrastructures. Access to safe water supply & sanitation services in Ethiopia are among the lowest in Sub-Saharan Africa, where the national water and sanitation coverage were 42% & 28% respectively in 2006. This situation was estimated to be improved during the PASDEP (2005-2010) and GTP I where its objective was to increase access to clean water to 84% in 2014/15. To curb such severe situations, subsequent, efficient & effective water supply & sanitation projects need to be implemented. Projects are to be closed after report is produced & approved to declare its formal closure by the client & financer. Closure action usually include the approval and transfer of the project deliverables to the user or customer by which a project be considered as closed. The aim of this phase is to communicate all stakeholders whether the project has met its intended objectives or not, and extra costs will be required or not of a project. Furthermore, the staff and other resources can be assigned to other projects, or released free. Delivering projects on time, quality and within budget is critical to a business success and project management knowledge/skill, therefore, is highly valued in graduates and managers alike. At a closure phase an evaluation report takes in to account checking project relevance, efficiency, effectiveness, sustainability and impact (AAUSC 2016).

As per the explanation from Westland (2006), more than 90% of projects implemented fail to independently review the extent of success at project termination. Project closure is neglected to avoid extra costs & time needed to formally close the project and to review an extent of achievement. If a project owner gives emphasis to complete the phase, he/she will not only close timely & efficiently, but get lessons that can benefit the next projects. In a construction' project, the project life cycle includes awarding of a contract to a contractor for a building. The project life cycle ends when the output is handed over by a contractor to the owner of a building & pays all bills.

Contractual closure should come first and followed by administrative closure. It involves accepting all completed works, releasing guarantees and licenses from all subcontractors and

vendors, resolving all disputes, paying bills. For physical assets, it marks the point where the asset is handed over to the accounting department for depreciation purposes. It also marks the point where all contract accounts should be closed out so that no more time/money can be charged against the project and any excess funds turned back.

Administrative closure is primarily an internal process, only done once per phase, after procurement closure, whereby the project manager, hands over the completed output to the end user, provides the necessary training and starts any guaranty work. In both instances, there should be a final capture/review of lessons cultured (Akshata, Bergh, Brady, Tristan & 2015).

The Water Supply and Sanitation Projects are part of MDG 7 and Growth & Transformation Plan for sustainable access to safe drinking water & sanitation. Potable water which is critical for human life can adequately developed and made available for people through efficient project execution (MoWIE 2008). These projects were aimed to provide potable water that were planned to be implemented in 2014 at 15 selected towns (Bonga, Demidollo, Holeta, Sodo, Motta, Injibara, Shoa-Robit, Ataye, Kemissie, Mersa, Wereillu, Fiche, Gebre-Guracha, Adigrat & Maychew), which suffered from shortage of safe drinking water and water-borne diseases. The number of beneficiaries is about one million people living in these small rural towns. The total projects cost was about 38 million euros financed jointly by the European Investment Bank (EIB) loan and European Union (EU) support. The client of the projects is Ministry of Water, Irrigation & Electricity and the respective towns Water Supply & Sanitation Offices. The work supervising firm is Nicholas O'Dwyer Ltd. The original contractor was an Italian based company called Mathioli. The projects executions were commenced in 2014 and completed in May 2017, with a delay of about two years from their original plans after the change of the poor performance of the contractor (MoWIE 2007).

In May 2017, most of the civil works and installations completed and then Provisional Acceptances Signed in August 2017. Handover of these projects' water supply services was the necessary closure practice for the beneficiaries to use of safe water. This study dealt with describing the level of emphasis given to closure practices of the projects. The study also motivated by the practices of overlooking projects closure phase, lessons that could be gained,

timeliness of use output/water, & resource release which considerably can impair beneficiaries satisfaction (Pradip 2018).

1.2. Statement of the Problem

For a project to deliver successfully an intended objective, it needs to properly follow the standard project management lifecycle, including closure phase. Failure to perform proper project closure can result in missing to confirm satisfying set of agreed requirements, unable to transfer final deliverables, miss readiness of handover, tying up a contractor's guarantee & payment of balance, lead to interest fee and overlooking lessons to be gained. If a project management fail to give due emphasis to project management from initiation to closure, it is unlikely to achieve its desired objective, rather it may lead to incur additional costs (Westland 2006). By the time the project is over, many stakeholders, including the project team, turn their attention to the next project neglecting closure practices. Clients, sometimes lose focus by the time there is confidence that the bulk of the work has been done and deliverables have been received. According to Brockmeier (2017), closing projects is one of the most overlooked processes in the discipline of project management. For a project to be successful, it needs to properly identify/initiate, plan, execute & close it. The required impact of the Water Supply and Sanitation Project for 15 Towns will not be achieved and will not add value to the community as it failed to respect schedule in providing safe water. It also not enables to overcome water born disease problems as closing and handing over get delayed. Failure to proper closure hinders release of remaining resources. Lessons will not be gained from the project as proper closure report preparation & recording be overlooked. Absence of proper closure will delay handing over of the water facilities leading to lose the benefits of proper project closure. Hence, this study examined the level of emphasis given to project closure.

People are often inclined to archive information, especially communications, for defensive purposes. But this is not about archiving simply to have a record or paper trail as proof of some evidence. Project information and data are likely to be helpful in the future often goes beyond the thoughts and reflections captured as part of a lessons learned exercise. Without some intention about gathering that data, communications, records, etc., there is a missed opportunity to easily go back to refresh memories on what happened in order to answer questions or get input into new decisions.

Project proper closure identifies reasons for early termination of unsuccessful projects, learn lessons from project & applies them to future projects throughout a business, confirm that the work is done to satisfy a set of agreed requirements, enables to complete the procurement & financial closure, gain acceptance of the right expenditure, to transfer final deliverables to users, solicit feedback from the customer, release remaining resource, avoid extra expenses that may arise by delayed release of finance, index and archive records and relevant for the sustainability of the project output. Therefore, the study identifies how much attention and care were provided for proper closure.

The unknown gap is based on the analysis of knowledge gaps (i.e., the gap between what we should know in order to succeed in the project and what we really know). It seems there is huge gap between principles practices of closure. The practices are not because of principles, but might be due to financer's requirement. It is expected there is no adequate knowledge, experience and facilities at project team. Moreover, awareness gap in capturing lessons learned & transfer, valuing gap of timely transferring deliverables, interest on delayed payment contract, knowledge gap on the difference between contract & administrative closure, every elements of steps specially in both closure type are not well known by most project team, it may signifies to teach project teams about details of closure as one key requirement for project sustainable benefits.

1.3. Research Questions

This study gave answer to the following specific questions

- What is the tradition and practice of project closure in the context of Water Supply & Sanitation Projects? (experience)
- Does the project management team/client have, closure plan, the necessary facilities and knowledge for performing proper project closure? (schedule, expertise & experience)
- What are the benefits of conducting proper project closure and were project team and client aware of the benefits? (merits & awareness)

1.4. Research Objective

1.4.1. General Objective

The overall aim of the study is to assess the practices of project closure and make recommendations for sustainable project benefits.

1.4.2. Specific Objectives

Specifically the study tries to address the following key research objectives:

- To explore the project closure tradition and practice in the context of Water Supply & Sanitation Projects,
- To assess the closure plan, facilities and knowledge of project team/client for conducting proper project closure,
- To evaluate the benefits & its awareness of standard project closure,

1.5. Significance of the Study

- The study provides an understanding of the traditional closure practice in the context of Water Supply & Sanitation Projects and standard project closure practices in Ethiopia
- To analyze the traditional and standard project closure principles and contribute to public policy formulation
- The study tries to contributes to the development of academic knowledge for better future project management.

1.6. Scope of the Study

Conceptually the scope of this study concentrated on evaluating the current practices of project closure in the context of the Water Supply and Sanitation Projects. The lessons drawn from the project are very important for the sector in particular and project closure practices in general. This study is conducted on the sample from the fifteen towns where the Water Supply and Sanitation Projects were implemented based on the information collected from these project coordinating offices, MoWIE, financers, other relevant institutions and beneficiary communities.

The period of the study based mainly on the time when the original project contract signed for commencement of construction work in October 2014 (which was terminated in 2015 due to poor performance) to the completion of works of the second contracts in May 2017, where provisional acceptance were followed August 2017.

1.7. Limitation of the Study

The limitations of the study which impacted the depth of assessing literature review for critical analysis was in the projects progress reports some data were incomplete and not used standard tables for data presentation and many unrelated data were put in one table (appendix III). There was lack of respondents on phone calls during an interview on top of network interruptions. Moreover, biasedness of some beneficiaries observed, who were overlooking the project shortcomings after getting clean water.

1.8. Ethical Consideration

Ethics is a standard behavior which guides moral choices about human behavior and relationship with others. Hence, in conducting this study no one is penalized/suffers adverse consequences or accused as a result of this research. There will be no violation of non-disclosure and breaking respondent confidentiality & misrepresenting results.

1.9. Organization of Research Report

The study report comprised five main chapters. Chapter one dealt with introduction which discussed about the background of the study, statement of the problem, & research questions. It also identified research objective, significance of the study, the scope, limitations of the study and ethical considerations. The second chapter presented review of related literatures where internet websites, reports of the projects, other sources were examined. The third chapter contains research methodology which specified area of the study, research design, data type, source, target population sampling, data collection methods, data analysis & presentation. The fourth chapter is about the results and discussions of the analysis. Finally, the study included conclusion and recommendations in chapter five.

II. CHAPRET TWO: LITERATURE REVIEW

2.1. Theoretical Review

Today, where competition is high and technologies are changing fast, businesses need to continuously update themselves if they are to operate sustainably. Such competitive interventions necessitate the development of project approaches. A project can be defined as peculiar set of coordinated activities, executed by an individual or company to meet specific objectives with definite starting & finishing time (AAUSC, 2011). It is also defined as a scientifically grew action plan intended to achieve a unique objective within specified shedule. In general a project is a set of proposals for an investment of resources in to clearly identified set of actions which are expected to produce future benefits of a specific type. A project is a sum series of activities being the subject of separate planning & scrutiny before being adapted and implemented within a sole overall financial & managerial structure. According to Project Management Institute (2018), a project is temporary intervention with defined starting & ending time, and distinct scope and resources. It is unique action, & specific set of operations aimed to achieve a notable objective. To deliver project outputs within time, budget and quality, organizations need to manage skillfully. Project management, then, is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. The four main phases of project management provide a high-level view of projects; which are the roadmaps for achieving objectives. If projects are to sustainably deliver the required result, it needs to follow proper management of the four project phases, i.e. initiation, planning, execution and closure (Gartner 2017).

The four main phases of project management:

a/ Project initiation is the starting point of a project, and the aim of this phase is to define the project at broad level. This phase mostly begins with a business case; where study will determine whether a project is feasible and would be undertaken. If viability testing desires to be done, this is the stage of the project in which it will be finalized.

b/ Project planning phase is critical to effective project management and stresses on formulating a roadmap that everyone will follow. This phase classically deals with setting goals. One of the

common approaches for setting goals is Specific, Measurable, Attainable, Realistic & Timely. In this step, the scope of a project defined and a project management plan is established. It involves identifying the cost, quality, available resources, and a realistic timetable. The project plans also include establishing baselines or performance measures. These are generated using the scope, schedule and cost of a project. A baseline is important to determine if a project is on track. Roles and responsibilities of stakeholder are clearly defined at this point; so everyone involved knows what they are accountable for. Scope statement, work breaks down, milestone gantt-chart, communication plan, risk management plan & closure plan are some of the documents a project management needs to create during this phase for ensuring a project objective.

c/ Project execution is a phase where deliverables are established and completed. This often finalizes the body of the project as a lot happen through this time, like progress reports & meetings, development updates, and performance reports. A "kick-off" meeting usually marks the commencement of project execution phase, where the teams involved are informed of their responsibilities. During this step it needs to develop project team, assign resources, execute project management plans, procurement, and tracking systems, update project schedule, gather data for lessons, etc.

d/ Project closure is the last phase where a project team needs to give emphasis same to all other project phases in managing it. Specifically this phase is the most neglected phase which needs project team to pay attention for better benefit (Westland 2006). Project closure is a phenomenon of every project which is last phase in the cycle. It can be applied at early-termination or at project completion. Early-termination may occur, because parties may agree to stop the project before its planned activities completion; a negotiated settlement may take place. Default often results from a problem with the project's cost, schedule, or performance. Buyer can also decide to terminate a project early because he or she has lost confidence in the contractor who is performing the project which encountered by these case study projects. The convenience of the buyer can also happen through no fault of the contractor as the buyer may faces unexpected difficulties or changing priorities. It might decide that the resources assigned to a project could be more profitably applied to a different project. Project managers need to present the facts of project progress and make recommendations for early termination, if they feel it is warranted. If a decision is made to terminate a project early, the project manager owes it to his or her team to communicate quickly and honestly.

Care needs to be taken to ensure that no unjust blame is placed. Once a decision is made and communicated to terminate a project early, much of the remaining work is similar to that for a project that finishes as planned. The project manager may need to negotiate with the customer if some of the deliverables or documentation is not completed. At project closure phase, both contractual and administrative closures need to be performed, where the former precedes. Contracts made for work explicitly on the project are terminated. Some project managers establish minor work events for people who involved in the project to acknowledge them for their energies. At project completion, a project manager will usually hold a meeting to evaluate what went right in a project and detect project failures. It is particularly useful to grasp lessons gained so that improvements can be made for future projects. Once the project is complete, project managers still have a few tasks to finalize. They need to create a project punch-list of things that didn't get accomplished during the project and work with team members to complete them. Perform a final project payment and prepare a final project report. At the end, it needs to collect all project documents and store them in a separate place.

2.1.1. Termination Phase

In most cases project managers or clients overlook the importance of project closure phase when implementation ends; they turn their attention to the next project (Brockmeier, 2017). Project closure encompass vital elements such as turnover of deliverables to operations, redeployment of resources (staff, facilities, equipment) closing financial accounts, archiving projects records, documenting success & lessons gained and carryout post implementation review. These important tasks can be executed when implementation is over & decision is made for closure. Before any employee is officially transferred all project equipment turned over, outstanding issues particularly financial bills settled. However, as per Westland (2006) findings, more than 90% of projects implemented fail to independently review the extent of success at the end of termination. This could be to avoid cost & time additionally needed to formally close the project and review its extent of achievement. If a project owner allocates fund & time to complete the phase, he/she will not only close timely & efficiently, but get lessons that can benefit to the next project. The purpose of a lessons learned process is to define the activities required to successfully capture and apply lessons learned. Often organizations have a defined process for capturing lessons but do not include activities to ensure lessons are used. To initiate the project

closure, a project closure report should first be created. This report lists all of the closure activities and identifies the resource responsible for each activity listed. Following the approval of the report by the customer, the activities identified are actually undertaken to close the project. For a closeout reports and archiving project records, some organizations have formal procedures. The closeout report usually includes a summary status of the project that can be gathered from progress reports. Usually lessons learned included in the closeout report. Finally, the closeout report often contains a review of the project's original justification and check if a project accomplishes what it was originally approved to do. This is important issue because many projects change along the line. The exact timing, costs, and deliverables may have changed, but if the project still accomplish its goals. Finally, the project manager needs to ensure that the records are in a workable format and stored in a manner that will allow others in the organization access for lessons learned, financial audits, or other uses. Organizations often create templates for closeout reports such as the one in figure 2.1.1.

This deliverable, required for each small project, contains the project charter, the original work breakdown structure, summary of monthly progress reports, and client feedback summary.

Project Summary Report for Project …….

Task Description	Satisfactory	Unsatisfactory	Comments
i. Project charter updated and included			
ii.Original WBS included			
iii.Monthly progress report summary included			
iv.Client feedback summary included			

Fig. 2.1.1. Closeout template

After lessons learned are captured, they should be reported to project stakeholders. Different types of reports should be produced based on the audience. Some lessons may have to be restricted to specific reports because of their sensitive nature. The report could be of various types depending on its purpose. The comprehensive lessons learned report consists of the data captured during the lessons learned session and any additional input from participants who were

not able to attend. The facilitator should distribute the detailed lessons learned report to all participants with enough time to respond to the accuracy of the report. After the report is finalized, the project team should receive a copy. Report is a one-page brief for management summarizing the findings and providing recommendations for correcting the findings. It should present an overview of the lessons learned process and a summary of project strengths, what went right, project weaknesses, what went wrong and recommendations, what we need to improve & specifics can also be included by category. The detailed report can be included as an attachment or made available in the event leadership needs more information. The findings which are summary of the issues need to be available during the review process. Recommendations are actions to be taken to correct findings. The approved actions should be documented and tracked to completion. In some cases the approved action may become a project due to high level of resources required to address such specific finding and end within certain period. Summarized reports can be presented by facilitator to executives and more detailed reports to the project manager or team. Lessons learned can also be shared with other project teams during learning sessions. Newsletter articles, white papers, or other communication vehicles can be used to share project successes. The lessons learned reports with the other project documentation need to be kept in safe place by project team. The termination phase typically involves disbandment of the project team, personnel and tools to be reassigned to new duties, resources released back to parent organization and project transferred to intended users.

Stakeholders validate that scope is complete with interim deliverables throughout the project and with final deliverables near the end. When the stakeholders formally accept the final project deliverables, the project finishes the executing stage and proceeds into the closing and realizing stages. Often, a few things are not yet finished, and these can form a “punch list” of items to complete. If the punch list is small enough, as a customer agree to formally take possession of an output subject to the contractor finishing the punch list items. Once formally agree the work is complete and agree to take possession, the output becomes an accepted deliverable. However, if there are major concerns and/or a long punch list, we may decide not to formally accept the output until certain things are complete. Most projects are like this: The customer only formally accepts the deliverables once he or she is convinced they will work as planned. At that point, the buyer provides the seller with a formal written acceptance, and the project transitions from the

executing stage to the closing stage. Project managers need to ensure that all work on their project has been successfully completed. They can refer back to the charter, scope statement, WBS, schedule, and all communications plans to verify that everything they said they would do is actually done. Many organizations also use project closeout checklists that itemize typical project activities and/or deliverables. These can be used to assign responsibility to each item concerning project closeout.

According to Livingston (2018), good project closures are typically born from the successful delivery of the final product or service. After the party, team members generally delight the opportunity to engage in post-project reviews and update organizational processes, since it provides a means of highlighting individual accomplishments and through doing so gathering recognition. It is also possible to use this generally affective behavior to cross pollinate other project teams. As successful project teams are disbanded, the members carry with them their positive experiences and knowledge to their new assignments, often stimulating teams that are struggling with motivation or teamwork. In the absence of achieving the primary deliverables, project closures are often intuitively considered a bad outcome whether the closure results from impossible technical challenges, changes in the company's financial condition or changes in the competitive business environment. Such decisions can be demoralizing, especially if the project is closed when the team is working effectively toward an agreed upon milestone. However, "bad" can be a misnomer and in fact, definitive project termination combined with directed closeout processes can have broad beneficial effects.

One of the most significant positive impacts of decisive project closure is the release of personnel and funding for other projects. Individual projects are typically but a piece of an organization's portfolio; strategically analyzing the overall resource capacity, prioritizing projects and closing some as needed to balance business needs can be critical to ensure must-win projects have the necessary budget and staffing support continued progression. Failure to proactively manage program breadth is financially inefficient and creates stress on personnel. This can impact team performance, not only the ability to perform tasks but the team environment as well.

While project closure is not inherently negative, human nature often drives team members to distance themselves from the work and herein lays the challenge for project managers engaging in closeout processes. Stress reactions vary among individuals but can be manifested by less participation and reduced willingness to work cooperatively. Communicating the reasons for project termination will mitigate the prevalence of deleterious behavior. Gaining comfort with the project closure process develops a resilient workforce where individuals are secure in the knowledge that there is new life after a project ends. In addition, understanding the root cause of closure can empower other project teams to better manage similar issues that might arise in the future; as an example the reason for early-termination of these study projects can be mentioned. Consequently many organizations will measure the time from project initiation to closure and encourage teams to adopt fast failure strategies as a means of managing resource demand, promoting technology development and ensuring portfolio balancing.

Demonstrating the value proposition for closure activities is paramount; in the absence of communicating the benefits individuals are not motivated or may not be provided the time by management to contribute to the process. Definition of the closeout deliverables will facilitate team and stakeholder engagement by establishing a vision of end results. Foremost among these is documentation. Final reports serve as a key reference on project status at closure and should function as a roadmap for archived information such as technical documents, risk assessments, decision logs and inventory disposition. Final reports are especially critical when the project may be reactivated in the future. Often considerable time may have passed from closure to reactivation and the staff that originally worked on the project are no longer available or capable of serving as a source of institutional memory. In such circumstances, a comprehensive final report is the best means to avoid repeating work or reinvesting budget to replace materials.

While writing final reports can be viewed as burdensome, it is possible to motivate contributors by using the information gathered to promote organizational and individual growth. For example, the technical sections of final reports can be used to author patent applications or publications in trade journals. Patents can play an important role in protecting technology long enough for an organization to complete product development or build value as a merger or acquisition target. Similarly, publications can be a powerful motivator for team members to commit to a closeout process since publication demonstrates individual expertise and in the unfortunate scenario

where project closure is associated with corporate downsizing can aid individuals in obtaining positions at new organizations.

While all experienced project managers know communication is a major focus of their role, ensuring the organization gains from the experience of doing the work on a project, no matter how it ends, is one of the key business values of project management professionals. Inconsistently by preparing for closeout from inception, project managers contribute to organizational success by building a flexible workforce capable of continuously improving business processes to make effective, data-driven decisions.

2.1.2. Types of Project Closure

The two major closure types are Contractual and Administrative closures, where the former need to precede and the later follow. Contractual closure involves testing outputs, accepting all works, monitors to ensure all activities are completed, paying bills, and release of license, guarantee, etc. Administrative closure involves commissioning of deliverables, approval of terminal report, official transfer, release of remaining resources, acknowledgement, celebrate, etc. (Brady & Jemmy, 2015). There are crucial activities during the project closure phase which should not be overlooked.

Project Management Institute provides the contract & administrative closure procedures to be performed as per closeout guide in order to close out an entire project or project phase. The benefit of these procedures is that we can use them to help transition of the project to a business and realize true project success. The difference between contractual closure and administrative closure includes, that contract/procurement closure is done before the project can be closed completely, and it may be done multiple times during the lifecycle of a project as many contracts can exist within a project. Administrative Closure is only done once per phase, or for the entire project and project closure cannot be complete without procurement closure. It is also used for project acceptance.

The project closure includes the following steps:

i/ Develop closing procedure - to facilitate a closure easily

ii/ Complete Contract closures - may be done multiple of times for each contract. No project can be closed before contracts being closed.

iii/ Verify product scope requirements – essential step before the user signed-off.
iv/ Gain formal acceptance from the key stakeholders – to ensure sustainable use
v/ Submit the final performance reporting –to ensure the documentation
vi/ Conduct post-project or phase-end review – enhance lessons learning
vii/ Index & archive relevant documents in project MIS- for future & references
viii/ Document lessons learned - apply updates to firms' assets
ix/ Hand off completed product - to the customer or stakeholder.

x/ Release resources back to Functional Managers - in case of matrix organization.

A project life cycle incorporates everything from planning to closing activities that complete the work as projects are temporary, restricted by specific end dates for completion. The project closure period also allows reviewing the successes and inadequacies for future reference. The project closure phase is vital to ensure that the project has been completed, and the resources may be re-assigned, or released when no more required for related project activities. The closure phase also implies that no succeeding funds may be assigned to the project. A project closure requires analysis which involves the project participants looking back over the project successes and drawbacks. Conduct a group discussion or individual interviews of the people who involved in project execution. In addition to finding out how the participants felt were barriers in the process it uses the discussion to review a project outcome. Suggestions can be sought in conducting future projects more successful based on the process and outcome of the closing project.

The project closure phase consists of the processes that are performed to formally complete and close all the assignments in a project which will usually include the approval and transfer of the deliverables to the user or customer. It is important that all actions that are included in the closing group are performed thoroughly, since only then will a project be considered as closed. The essence of this group is that all the stakeholders agree that the project has met its intended objectives, and additional charges will not be assigned to the project. Furthermore, the staff and other resources can be assigned to other projects, or released. At the end of a project, staff members with free time need to be reassigned to other projects or duties in the workplace. If contract workers were used rather than full-time staff, the closing phase gives a chance to determine if one able to offer the contributors a different contract position on another project. Acceptance of deliverables is one of the most important actions that need to be performed during

the project closure phase. The customers review of deliverables according to the agreed acceptance criteria, and formally accepted.

Before the project team is assigned to other projects, or relieved, it is important to formally complete lessons learned from a project. In order that the lessons learned are properly documented, a questionnaire may be circulated to the stakeholders for completion. Ideally, the need is to obtain unbiased views, and include the critical success achieved during the project execution, and the factors that contributed to the achievements. Likewise, the difficulties faced, and the activities that could have avoided this situation need to be explained which will be an important guide for succeeding projects. The knowledge used, acceptance criteria of the deliverables, monitoring of the project, internal and external communications, involvement of user, and the execution of the project schedule are other dimensions that may be incorporated in lessons learned.

Project report completed at the project closure phase that is to be submitted to project sponsor basically includes the project summary, starting from initiation to closure. This report includes the critical points such as project purpose, objectives, plan, timetable, and a comparison of the initial baseline schedule and the actual schedule with details regarding the changes incorporated, processes tailored, financial aspects & their effects on the project. This post execution examination is an assessment of the project's effectiveness, and its preparedness for future projects.

The finalizing documentation in all projects include records of the process, including the initial project requirements, documentation of the development phases, and the testing records should be retained for future reference as needed. Creating a cover sheet for all of the documentation that provides a brief overview and outline of the project and a list of participants need to be performed. Chronologically well-organized documentation starting from initiation as the project advanced to closure enables others to easily locate information in the future. These documents are extremely useful with updating when planning and executing future projects, and act as a useful template. Efforts undertaken during the project in preparing the project plans, and other documents are beneficially utilized for future projects, and thus repetition is avoided.

2.1.3. Benefits of Project Closure

According to Brockmeie (2017), an effective and standard project closure will help in documenting the experience and lessons learned from the project executed and enable to release remaining resources for other projects/uses, to clear outstanding issues, celebrate success, create motivation, etc.

A project manager may decide to create a transition plan to help the customer successfully use the project deliverables. Project transition plan is a sort of instruction manual on how the customer should use the project deliverables once the project team has completed its work. A transition plan can ensure that all responsibilities are considered and all deliverables—whether complete or not—are given with appropriate documentation to the people who will use them. If any activity remains incomplete when the deliverables are transitioned, they should be itemized, and responsibility for each should be clearly identified. A punch-list of remaining items would be determined, and the contractor would agree to complete them.

Applying lessons learned contains three process groups; analyze, store, and retrieve. An organization identifies and document lessons, which is important to apply them to existing and future projects. Applying lessons learned is necessary in establishing and sustaining a culture of consistent project management improvement.

The team timely updates for their personnel records, honest recommendations, and help securing their next assignments, and rapid notification of any issues. Helping efficient workers secure follow-on work is one of the most important things a project manager must do near the end of a project. Many of these workers will be eager to work again for that project manager and will tell others of their good experience.

When people are reminded of their accomplishments, they realize they just met a large challenge and are motivated to undertake new challenges. The team members are frequently energized to finish the last few administrative tasks so they are done. The team members exert themselves to finish the last few items. Celebration can persuade members to believe they can do just a bit more than they might otherwise think is possible. Celebration is excellent time to recognize and acknowledge both effort and results. Celebration marks transition points as people leave one

project and move on to another. Finally, celebration of success eases the stress of working hard for a prolonged period of time trying to accomplish a project.

One of the most important measures of project success is how well the customers are able to use the deliverables created by the project. When considering the full impact of the project results, project managers are encouraged to consider use by direct customers and other stakeholders and also how they contribute to the other parts of the triple bottom line—profit for the parent company.

The post-implementation review is conducted by closely reviewing the project's performance against the original plans, and conformance against the project management processes defined for the project. Its purpose is not only to assess the project's level of success but also to identify lessons learnt and make recommendations for future projects to enhance their likelihood of success. A post-implementation review results are recorded in a document which is retained by the business as the last record of the project. It includes: an assessment of how the project performed against the objectives, scope, deliverables, schedule, expense and resource targets identified during the project initiation and project planning phases; a rating of the level of conformance against each of the project processes including time, cost, quality, change, risk, issue, procurement, communications and acceptance management; a list of the project achievements and failures; any lessons learnt and recommendations for future projects.

A post-implementation review is undertaken at the end of the project closure phase, after the project closure report has been approved and all project closure activities completed. Some companies wait a number of weeks before undertaking the post-implementation review, to enable the benefits provided by the project to be fully realized by the business. A post-implementation review is classically completed by an independent body who offers an unbiased opinion of the project's level of success. It is presented to the project sponsor/customer for approval and is retained on file for future projects.

According to Prichard (1997), the use of a lessons learned repository will allow the teams to access lessons for future use. However, in order to easily access these lessons, the information has to be stored in a manner that is easily retrievable. Consistency of input information allows

for speedier identification of reoccurring issues and proactive resolutions. The lessons learned input form is a key tool. This document allows for more consistent data collection as well as providing a means for easier retrieval. The lessons learned template should include previously agreed to fields such as: category, lesson learned, action taken, how to arrive at the action taken, root cause and key words. Keywords are ultimately one of the determinants of success in utilizing lessons learned, and are essential for easy retrieval. The data on the lessons learned input form is transferred to the organization's lessons learned repository. The lessons learned input form can also be shared with the project team during the lessons learned session. As a team member identifies a lesson, that needs to be included in the repository, the necessary information can be captured while the team member is available.

As per the findings of Makar (2013), project failures may have been marketed as successes, yet the project goals were impacted by reduced scope, a strategic change in way resulting in a cancelled release, or just a large cash investment that failed to provide any real business value. When we are part of a failed project, it seems stressful and downright painful, but we have the opportunity to learn a lot of lessons that will help lead us to project successes.

2.2. Empirical Review

An empirical review was based on observed and measured prior research findings and derives knowledge from actual experience rather than from theory or belief. The aim is to explain about the importance of complete project closure practices and reviewed. The empirical review discussed the research findings based on publications on the area of the study and official reports of government, project financing institution & project advising consultant reports.

The document review was to show whether the project closure report contains at least important closure elements or not at closure phase. The review took about two weeks. The study documents were obtained from various libraries such as AAU, MoWIE, MoFEC, National Planning Commission, EU, Internet, etc.

According to Ferry & Kah (2013), who conducted research on the importance of closure, provided a comprehensive and systematic analysis of the closure process for programs funded under the European Regional Development Fund and the Cohesion Fund in 2007-13, explaining that program closure is often seen as a purely technical process. It involved shutting down the

operation of a program, finalizing the reporting and recording of results, and ensuring sound financial management. This included the preparation of a series of documents for each operational program that together forms the closure package- an application for payment of the final balance, a final implementation report and a closure declaration. The research signified that the quality of the closure process has been determined by the administrative capacity and governance approaches of program authorities. Closure should be perceived as an integral part of program implementation and this role is conditioned by financial absorption pressures, the type of operations included in programs and administrative capacities. Financial absorption pressures are prominent as closure approaches. As per this study, to communicate achievements it is important to strengthen linkage of closure more carefully to the reporting of program achievements and outputs.

The European Commission (EC)'s efforts to build capacity for closure found to be continue, closure is regarded as an issue for the lifetime of a program, not just for the final years, it should remain a priority for program authorities and project sponsors, and to ensure commitment from all those involved in closure, administrative tasks associated with closure are substantial, and program authorities must ensure that sufficient capacities are made available (training, recruitment, outsourcing etc.).

The formal obligations associated with closure are important for the need to ensure that programs are fully committed (i.e. all program funds are committed by the managing authority to projects, defined in Funding Agreements) and spent (i.e. expenditure incurred by projects is fully paid), while recognizing the tension between being able to spend for as long as possible and having enough time to organize closure. Settling of the final balance, which cleared all preceding expenditure to operations or the recovery of sums paid in excess by the EC, is the aspect of closure emphasized in the Financial Regulation. The process of terminating a program consist the submission of 'closure package' of documents.

Silverman (1976), explained that release cannot be simply done, it require careful operations of how to keep project personnel from losing their spirit de-corps. As projects do not operate in the same way as implementation at the end, it is complicated due to the fact that the manager is losing the spirit de-corps, that kept all working atmosphere together. The project team starts to

think about the next project than the closing. But customers still highly concerned with the project as requirement for logistics, field support, maintenance & spare parts last long with them after the end of the project. A sudden disorderly end of project can cause trouble to manager as no one give attention to any request as transferring to the other hotspots.

The manager may need to deal with other team than the one was working on the project which requires properly documented myriad data left to newly assigned personnel. On the other hand if experienced personnel retained, the hotspot will suffer in quality control. This challenged to balance the needs. It is not like action of bankruptcy, but requires another switch in management method, back to supportive style used during kickoff project.

Establishment of phase out plan which is like other project phase tasks to be performed & who will do it must be outlined & planned. Phase-out plan pertain to project & customer infer interface which need to be approved by organization's management & customer respectively.
It needs to release first best personnel as they are most anxious to find other positions that are least helpful for closeout. And also first release lease qualified as they do not have capacity for thinned-out staff. Experienced personnel required to produce quality report. Unless properly managed to close it, contract management can exist even after no further duties. Any future questions that occur about a project can get answer from its documentation, it can serve as training guide for other project managers, it occurs for a manager's top achievement both positive & negative or blame.

To allow the concentration of closure capacities, including experienced staff involved in closure of past programming periods, EC needed dedicated closure unit. Closure matrix pools staff tasks in different locations with time used usually 10% in the devoted closure unit. For internal training courses of closure procedures manual has been prepared. The research indicates that financial absorption pressures have an impact on the efficiency of the closure process. The study identified administrative capacity & governance approach of program authority that determine the quality of the closure process. Efficient program closure has depended on the coordinated input of actors and structures. Bureaucratically difficult to implement and this can have an impact on efficient program closure. Phasing in Romania, involved several complex internal procedures, reviews of projects and submission for approval to the EC. A pending Major Projects

(MP) decision complicated the closure of an Operational Program (OP), as it was not known how to deal with expenses by the Managing Authority (MA) and Audit Authority (AA) when preparing the closure documents.

The auditing of Financial Engineering Instrument (FEI) has proven to be complex, requiring specific competences, particularly in the final phase of programs where assessments of the performance of the instruments is carried out. For most program authorities covered in the research, dealing with non-functioning projects was not seen as an important issue for the closure process. In most cases, non-functioning projects would have been closed down during the programming period.

Closure, particularly where the quality of governance is low can bring capacity challenges for MSs. Variation in the quality of governance can express itself as the creation of suitable closure-related structures; the ability to provide adequate human resources; and the use of systems and tools assisting with the closure process.

In Wales, a project closure group involves key stakeholders to strengthen ownership and track the way risks are being managed. In England, a Closure Technical Working Group operates at working level while a Closure Operational Policy Assurance Group takes strategic decisions on closure at the senior level. Effective program closure depends on the timely input of EU, national and program levels.

The research indicated challenges of managing the program closure process include the development of timetables and coordination arrangements across different levels and approaches vary, depending on existing administrative arrangements, the size and scope of programs etc. In Finnish, closure timetable was communicated to all involved bodies in a series of closure letters. In most cases, national government bodies responsible for coordinating Cohesion policy (CP) management and implementation were involved, feeding into the development of EC closure guidance, developing domestic guidance and coordinating the closure process across OPs.

A fundamental area of concern for closure related to capacity issues, covering both who is there to carry out the tasks, and how much accurate information there is to make sure the tasks are completed properly. The limited capacity causes delays in closure, which impact on launch of the next OP, which again creates delayed closure etc.as a vicious circle. For instance the six months delay in settlement of balance & closure of an awareness creation broadcasting on consumer protection in Ethiopia in 2017 of the Transformation Triggering Facility project, not only

complicated the final 60% payment, but also resulted in 100% cancellation of the second round intervention project planning. It is inevitable that the attention of program authorities, beneficiaries and other stakeholders turns to the opportunities and demands coming from the new period, leaving little capacity to execute closure processes correctly and efficiently. In other contexts, particularly where closure is difficult or delayed, focus on closure impedes the launch of new OPs. Closure of projects at risk of non-completion in Wales involved identifying a set of projects which were on the verge of closing, with all involved staff working in a dedicated way only on closure of those projects for that week.

This concentrated approach was found to be helpful. To avoid an excessive closure task at the end of the period, program authorities in Western Finland and Belgium have taken a proactive approach to closure and tried to close projects throughout the programming period stagger the closure. The EC has stated that most AAs have the capacity to provide reliable audit results for effective closure. However, it also emphasizes the need to ensure sufficient capacity, particularly during closure. For instance, Bavaria has produced a 'closure brochure' on the achievements of program. In Wales, a Welsh Government minister announced for the first time that 100% of the money earmarked in the program drawn down. This opportunity for positive communication is attributed to aspects of the closure provisions, notably the 10% flexibility mechanism. The research argues that beyond country specific formal process, closure should be perceived as an integral part of program implementation: influencing the allocation of remaining resources; in securing and raising awareness of program achievements and legacies; and, in supporting an efficient transition to the next programming period. The aim to absorb the maximum available funding before the spending deadline put pressure on the closure process. The use of annual closure reports were generally viewed as positive in simplifying the closure process, providing assurance to the EC and easing the burden on MAs and AAs at the end of programming periods. Beyond financial performance, closure processes should be more closely tied to the actual achievements of programs. For the MA, it is recommended that closure is seen as an issue for the lifetime of a program, not just for the final years; where as in Ethiopia, except a few huge investment projects involving foreign financers, it is rare to see it even at the end of implementation. There is a need to ensure that closure remains a priority for program authorities and project sponsors so that sufficient time is committed to the process. Closure must be seen as part of ongoing project management in the MA. Close coordination between program authorities

involved in closure is recommended. MSs and program authorities must ensure that sufficient capacities are available for closure. Given that administrative tasks associated with closure are substantial, and the fact that much of the work is concentrated in the key period of transition between programming periods when organizational flux and staff turnover often occurs, it is important that program authorities allocate sufficient resources to effective closure. The typical challenge encountered in Ethiopia was the Livestock Value Chain/Public Private Dialogue project (2011 – 2015) which released project team after completion, but before closure practice resulted in difficulty to settle outstanding financial issues over two years and liable to additional costs. The loss of skilled staff in key areas led to inability to deliver quality products and services.

There is considerable variation in the timetables set for closure, among EC Member States operational program and between program authorities. Given this, EC guidance should lay out closure steps with more clarity. This should incorporate differentiated timetables for different program authorities, recognizing the fact that the intensity of the closure work for MA and AA varies at different stages of the closure process. The EC's efforts to build capacity for closure should continue, especially for AAs. For instance, pressures on the capacity of AAs at closure should be eased by the requirement for programs in 2014-20 to close the accounts and submit the assurance package by a set annual deadline. This provides an incentive for MSs to address issues immediately in order to be able to include related expenditure in the accounts. This should facilitate closure in 2014-20. Nevertheless, the role of AAs in OP implementation, including closure increased significantly in 2007-13 and is likely to do so again in 2014-20 and this warrants dedicated capacity-building initiatives from the EU level.

Although program authorities were clear on lessons learnt from the Closure of the 2007-2013 Programing Period the potential financial consequences of errors or irregularities in closure documentation, the relationship between the reporting of achievements and the EC's approval of closure submissions was less clear.

MS guidance, support and structures should be established, building on or working alongside EU-level support for closure. The establishment of working groups (e.g. the Closure Group in Wales) helps to keep closure on the program management agenda. MS input is important in providing tailored support for closure in specific national and program contexts. This can involve

setting internal closure deadlines that take into account specific program architectures or the distribution of administrative responsibilities and capacities. It can also relate to the establishment of closure-related groups and/or the production of a closure 'pack' for OPs that coordinate program authorities and facilitate the dissemination of guidance and knowledge exchange. For the MA, it is recommended that closure is seen as an issue for the lifetime of a program, not just for the final years. Work to facilitate closure should begin at the start of the programming period, for instance by obtaining copies of project sponsor's document retention policy and ensuring that EU rules on document retention are understood and being implemented properly by project sponsors. There is a need to ensure that closure remains a priority for program authorities and project sponsors so that sufficient time is committed to the process. Closure must be seen as part of ongoing project management in the MA. For instance through: the early establishment of a program closure Group and/or 'champion' to keep closure on the program management agenda; developing a project plan to establish targets for numbers of projects the MA aims to close per month and for identifying 'problem' projects at an early stage. The issues can be discussed at regular project management meetings. It is useful to keep closure as a 'stand-alone' agenda item at meetings (for example, closure can be an agenda item for the MA's risk management group, with its own risk register in relation to closure). Close coordination between program authorities involved in closure is recommended. The availability of sufficient capacities for closure is required to be ensured by MS & MA. Given that administrative tasks associated with closure are substantial, and the fact that much of the work is concentrated in the key period of transition between programming periods when organizational flux and staff turnover often occurs, it is important that program authorities allocate sufficient resources to effective closure. This requires careful management of human resources in MAs and AAs: training of staff and the development of relevant systems and tools to facilitate closure (databases to track the progress of projects, guidelines, manuals, systems, procedures, forms etc.); or the engagement of external staff (e.g. experienced consultants) for fixed terms to facilitate closure.

The Ministry of Finance and Economic Cooperation (MoFEC) and the Ministry of Environment, Forest and Climate Change in collaboration with development partners have been supporting to operationalize the Climate Resilient Green Economy (CRGE) Strategy through the implementation of the Fast Track Investment Projects for the period July 2014 – February 2017.

The report mainly provides summary of key performance and achievements of the FTIs implementation. The ad-hoc Quality Assurance Missions validating Monitoring & Evaluation information conducted reflection meetings at regional and woreda levels, observations, decisions and action points arising from the mission, for learning timely corrective actions. The missions contributed to improved implementation and reporting of the Fast Track Investment at all levels, smooth communications between the federal and regional bodies, skills transfer as well as identifying key lessons from the successes and challenges for the upcoming projects/program phases.

According to the official correspondence letters from the Contracting Authority (National Authorizing Office) to the supplier AGMIN ITALY SRL the Agricultural Marketing project was implemented by the Ethiopian Conformity Assessment Enterprise from 2012 – 2015. The project purchases of laboratory equipment through international bid and purchase from AGMIN supplier carried out for 496,529.66 euros contract. The company was able to deliver only equipment with value of 98,068 euros. The supplier defaulted to complete its contractual obligations. The early-termination closure and the required recovery of pre-financing amount of 385,201.16 could not be timely performed due to delayed proper closure of the project. The issue may lead to litigation and additional costs due to negligence of timely closure.

2.3. Conceptual Framework

For a project to be successful a project team needs to give emphasis to all project phases in managing it. Specifically the most neglected closure phase requires attention as equal as other phases (Westland 2006). At project closure phase, both contractual and administrative closures need to be performed sequentially starting from contracts. Contractors hired to work on the project at completion of their obligation, contracts should be terminated. Important team members are renowned. Some project managers even establish minor work events for people who involved in the project to acknowledge them for their energies. When a project is complete, a project manager usually holds a meeting & evaluates what went right in a project and detect project failures. It is particularly useful to comprehend lessons gained so that improvements can be made for future projects. Once the project is complete, project managers still have a few tasks to complete. They need to create a project punch-list of things that didn’t get accomplished

during the project and work with team members to complete them. Perform a final project payment and prepare a final project report. At the end collect all project documents and deliverables and store them in a separate place.

The conceptual framework is constructed using the framework of project closure principles and customer satisfaction relationship as shown in Fig. 2.3. It is adopted from theoretical concepts showing the relationship between key project closure practices. As it has been indicated in fig. 2.3, closure planning is a road-map for proper and timely closure, testing & acceptance including official hand over and celebration of success enable to use the fruits of the project output timely which lead to customer satisfaction. Feedback and approval of prepared closure reports create ground to sustain project benefits & capture lessons for subsequent projects, which can satisfy project clients and financers. The feedback has an impact on further improvement & actions creating understanding through this communication.

The Water Supply & Sanitation projects execution commenced in 2014 and completed in May 2017, after delay of more than two years from its original contract which terminated due to poor performance (MoWIE 2007). In May 2017, most of the civil and electro-mechanical works have been completed. Due to less emphasis given to the closure phase, beneficiaries could not able to timely use safe water as transfers were delayed. This study focused to analyze the level of emphasis given to closure practices of the project. The study has also been motivated by the problems encountered due to overlooking the project closure practice, lessons that could be gained, timeliness of use output/water, & resource release which considerably can impair beneficiaries satisfaction (Pradip 2018).

The specific objectives of the study as indicted in section 1.4.2. above included exploring the project closure tradition and practice, assessing the facilities and knowledge of project team/client for conducting proper project closure, evaluating the awareness of the benefits of proper project closure. It is analyzing the benefits of properly closing projects for better result, examining project closure practices in use with acceptable closure standard & investigating the effect of neglecting proper project closure. An example of the conceptual framework adopted from theoretical concepts showing the relationship process between key project closure principles and customer satisfaction is indicated in Fig. 2.3.

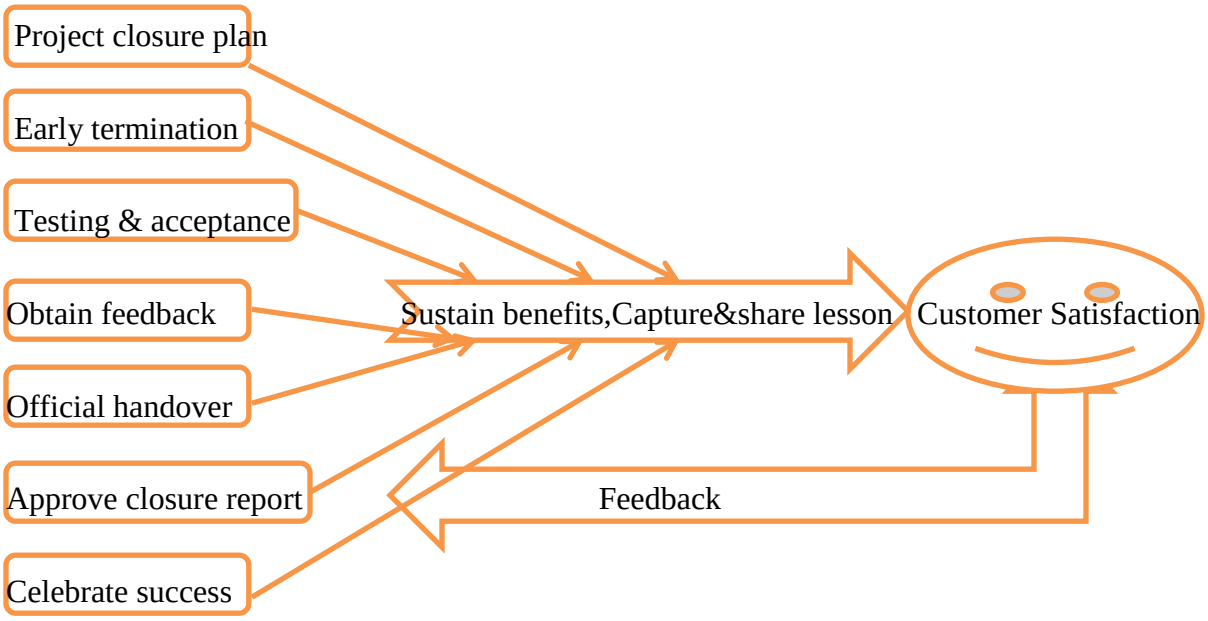

Fig. 2.3. Key project closeout principles and customer satisfaction relation

- Independent variable: elements of project closure principles listed in fig 2.3 (both contractual and administrative) can influence project deliverables.

Dependent variable: benefits/consequences of project closure depend on the level of applications and practices of standard project closure principles mentioned in fig 2.3.

III. CAPTER THREE: RESEARCH METHODOLOGY

3.1. Introduction

In this study the Descriptive Research design is used. According to Fox & Bayat (2007), descriptive research can be explained as a statement of affairs as they are at present with the researcher having no control over variable. The study problems analyzed and described through collection of both primary and secondary data that enabled to explain the situation more comprehensively than was possible without employing this method. Descriptive studies are used to describe various aspects of the phenomena. In its popular format, descriptive research is used to describe characteristics and/or behavior of sample population of the Water Supply & Sanitation project. The study was conducted using document reviews, mail questionnaire and interviews as popular data collection methods used in descriptive studies (Ethridge, 2004).

3.2. Description of the Project

The study project is the Water Supply and Sanitation Projects in some selected towns to reduce the shortage of potable water supply owned by Water Supply & Sanitation Offices. It was implemented from 2014 to 2017 and coordinated by the Ministry of Water, Irrigation & Electricity. The ministry is mandated to develop and manage the water resources of the country mainly in terms of potable water development, irrigation schemes and hydroelectric power generations.

3.3. Research Approach and Design

The approach adopted by qualitative researchers tends to be inductive which means develop a theory or look for a pattern of meaning on the basis of the data collected. This involves a move from the specific to the general. However, most research projects also involve a certain degree of deductive reasoning. Qualitative researchers do not base their research on pre-determined hypotheses. Nevertheless, they clearly identify a problem or topic that they want to explore and may be guided by a theoretical lesson - a kind of main theory which provides a framework for their investigation (Fox and Bayat, 2007).

The approach to data collection and analysis is methodical but allows for greater flexibility than in quantitative research. Data is collected in textual form interaction with the participants' interviews and e-mail. Qualitative research often involves a smaller number of participants. This may be because the methods used such as in-depth interviews are time and labor intensive but also because a large number of people are not needed for the purposes of statistical analysis or to make generalizations from the results. The smaller number of people typically involved in the qualitative research studies and the greater degree of flexibility did not make the study in any way "less scientific" than a typical quantitative study involving more subjects and carried out in a much more rigid manner (Ethridge, 2004).

Descriptive research designs help to provide answers to the questions of who, what, when, where, and how associated with a particular research problem; a descriptive study cannot conclusively ascertain answers to why. It is used to obtain information concerning the current status of the phenomena and to describe what existed with respect to variables or conditions in a situation (Fox & Bayat, 2007). Hence, it is Cross-sectional research design specifically a reliance on existing differences selection. The cross-sectional design can only measure differences between or from among a variety of people, subjects, or phenomena rather than a process of change. As such, researchers using this design can only employ a relatively passive approach to making causal inferences based on findings.

3.4. Data Type and Source

3.4.1. Data Type

The type of data used included both primary and secondary data which also served as a triangulation for the same topic. This is a way of assuring the validity of research through the use of a variety of data collection methods. However, the purpose of triangulation is not necessarily to cross-validate data but rather to capture different dimensions of the same phenomenon. The primary data have been collected through interview of face-to-face and phone calls and e-mail questionnaire.

The primary data is raw data which have been collected from the source; in this case it was planned and conducted an interview and questionnaire completed.

The secondary data were collected from the review of projects progress and/or closure reports produced by the projects consulting firm.

3.4.2. Data Source

The sources of the primary data were from projects coordination ministry, financer, Water Supply & Sanitation Offices of the sample projects towns, beneficiaries and National Authorizing Office/MoFEC.

The secondary data have been gathered from review of the Water Supply & Sanitation projects implementation progress reports; as the focus is mainly to explore how the project closure report was organized in managing proper closure.

3.5. Target Population and Sample

3.5.1. Target Population

The target population is the entire population (the Water Supply and Sanitation projects), that a research has been interested in investigating and analyzing. In this case it is the Water Supply and Sanitation Offices towns which owned the projects deliverables. A sampling frame has been drawn from the target population.

3.5.2. Sample Size Determination

The sample size was determined using both Purposive (non-probability) and Systematic (probability) sampling methods. A homogeneous purposive sampling was used in determining interviewees in the five systematically selected project towns' beneficiaries as the sample selected have a shared characteristic or set of characteristics on the interest of the project closure practice (Crossman, 2018). Systematic sampling method was used to select the five towns' sample projects. The method is one of the probability/random sampling technique frequently chosen by researchers for its simplicity and its periodic quality/ assurance that the population was evenly sampled.

In using the systematic sampling/quazi-random number method, I have followed the next steps:

- Determine the sampling interval K

- One unit between the first and Kth in the population list is randomly chosen
- Add Kth unit to the randomly chosen number.

Hence, K=N/n, where K is sampling interval, N is population and 'n' is sampling unit

First unit is randomly picked, and then the next units will be calculated as: first unit+K.

3.5.3. Sampling Selection Procedure

Using the above formula: population size (projects list arranged in alphabetical order by name) from which I have chosen 5 units (projects), then,

Calculated K = 15/5 = 3 then

To select the first unit, I randomly picked one number between the 1st and K, i.e. 2.

So the sample started with number 2, then the next sampling units continue by adding three (2+3=5), 8, 11, 14 in the list and interviewee persons from the five towns projects beneficiaries.

3.6. Data Collection Methods and Tools

3.6.1. Method

Cross-sectional surveys were conducted using document review from secondary data and interview data collection; through telephone interviews. A cross-sectional survey collects data to make inferences about a population of interest (universe) at one point in time. Cross-sectional surveys have been described as snapshots of the populations about which data gathered.

3.6.2. Data Collection Tools:

Using interviews for primary data: it has been conducted through an interview of telephone calls to the respondents. It was expensive than questionnaires, but they were better for quick data collection, some complex questions, low literate beneficiary community members of those rural towns. Reviewing secondary data: the main alternative to making an interview is to review reports of the project.

3.7. Data Analysis and Presentation

3.7.1. Data Analysis

In the analysis of qualitative data, there was systematic and rigorous ways in analyzing records from interviews, e-mail and review of reports. Qualitative analyses of the content of these records are used to identify results and variations across respondents and secondary data sources.

Descriptive statistics, in short, help describe and understand the features of a specific data set, by giving short summaries about the sample and measures of the data. From the most recognized types of descriptive statistics mean and sample standard deviation (**s**) were used during the analysis.

In many cases, it is not possible to sample every member within a population, requiring that the equation below is the modified one; so that the standard deviation was measured through a random sample of the population being studied. A common estimator for population standard deviation (**σ)** is the sample standard deviation, typically denoted by **s**. The important change is "N-1" instead of "N"

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \overline{x})^2},$$

Where
$\mathbf{x_i}$ is one sample value
$\bar{\mathbf{x}}$ is the sample mean
N is the sample size

Generally, calculating standard deviation is valuable any time it is desired to know how far from the mean a typical value from a distribution can be.

x = individual scores
M = mean
n = number of scores in group

Steps

Create two columns: x & $(x- \bar{x})^2$

1. Put the raw data in the *x* column
2. Calculate the mean
3. Calculate deviation scores by subtracting each score from the mean and squaring it and put these in the second column
4. Sum the squared deviation scores
5. Set up the formula
6. Calculate ***'s'***

General discussions, charts and tables were employed to help readers understand the meaning of the data being analyzed.

The Coefficient of Variance is used to measure the relative dispersion between Early-Termination & Administrative Closure and Contract Closure & Administrative Closure. The analysis used Coefficient of Variance formula (CV) = ***S***/ $\bar{x}$(100)%. Where, ***S*** is sampling standard deviation and weighted $\bar{\mathbf{x}}$ is the sample mean.

3.7.2. Data Presentation

The data has been collected, analyzed, interpreted and then presented in a narrative, charts and tables form. The report included discussion/result, conclusion and recommendations. Finally references and appendixes for various items are also incorporated.

IV. CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1. Results and Discussions

Ethiopia is endowed with both surface and ground water which can serve the needs of the population if adequately developed. However, the provision of clean/potable water and sanitation which is basic need of human beings is least in the world and even in the Sub-Saharan countries. The country's water and sanitation coverage were 42% & 28% respectively in 2006 (MoWE 2008). Due to this many people suffers from shortage of drinkable water and water borne diseases. To improve the situation, there have been many long & short-term efforts made & still underway through various ways, of which the MDG/SDG, PASDEP and GTP strategies and program/projects including the current Water Supply & Sanitation projects are to be mentioned.

The Water Supply & Sanitation projects were initiated in 2007, designed and executed from 2013 to 2017 with an estimated cost of 38 million euros of which about 50% was loan from European Investment Bank and the balance was granted by the European Union (MoWIE, 2007). The projects were planned to provide potable water for about one million people living in these fifteen towns. The execution, involved feasibility studies & supervision through service contracts, supplies & construction contracts managements. To meet the objective of these projects within intended quality, cost & timeframe it required to complete the standard cycle. The process would have followed the four project management standard phases namely initiation, planning, implementation and closure.

However, like many other projects, where projects closing are one of the most overlooked processes in the discipline of project management and these projects also encountered same (Brockmeier 2017). This study focused on the process of the closure phase by taking sample size of about 30% from the fifteen geographically disbursed projects throughout the country. The sample of five projects was systematically selected from the target population. The study used descriptive type of research analysis. Secondary data were collected from the projects' implementation reports. For primary data both closed and open-ended interview guide questionnaire was developed and telephone interviews were conducted with mainly primary

stakeholders which included the MoWIE, EU Delegation, MoFEC, the five towns WSSO managers and five beneficiaries in each project town.

The analysis included computing the Sample Mean ($\bar{\mathbf{x}}$), Sample Standard Deviation (***s***) and Coefficient of Variance (CV) in percent for relative measure of dispersion. The result of the analysis was based on the review of secondary data from the projects' reports and the primary data collected through e-mail questionnaire & telephone interviews on the practices of early-closure, contract closure and the administrative closure.

Mean ($\bar{x}$): $\sum x/n$, calculated for each inquiry; where x = individual scores, N is the sample size

$\bar{x}$ is mean and n = number of scores in a group

Mean ($\bar{x}$) = (1+7+11+5+1)/5

= 5

$$s = \sqrt{\frac{1}{N-1}\sum_{i=1}^{N}(x_i - \overline{x})^2},$$

$S = \sqrt{1/25-1}\sum(1-5)^2+(7-5)^2+(11-5)^2+(5-5)^2+(1-5)^2$

$S = \sqrt{1/24}\sum(16+4+36+0+16)$

$S = \sqrt{1/24}(72)$

$S = \sqrt{3}$

$S = 1.73$

C.V. = $S/\ \bar{x}(100)$. Where, ***S*** is sampling standard deviation and $\bar{\mathbf{x}}$ is the sample weighted mean.

a/The average C.V for Early-Termination = 1.63/5.2 x 100 = 31.34%

b/ The average C.V for Contractual Closure = 1.82/5.2 x 100 = 35%

c/ The average C.V for Administrative Closure = 1.7/5.2 x 100 = 32.69%

The relative measure of dispersion of the three groups has been measured using the Coefficient of Variance. The C.V. of the Administrative Closure (32.69%) and the C.V. of Early-

Termination (31.34%) are less than the C.V. of Contractual Closure (35%) or the CV of the later is higher than both of the Early-Termination & the Administrative Closure. These indicate that the stakeholders are less variable/more consistent for Early-Termination and Administrative Closure than Contractual Closure. This is due to better concern for Early-Termination and Administrative Closure than Contractual Closure; focus is on an output than complete process & steps. From this it possible to conclude that, attention should be given to applying standard steps. The project team needs to focus on adequately communicating on the importance & careful management of specifically contractual closure.

Here, contractual closure probably becomes the concern of only the contractors to get all bills paid and/or released retention guarantees, release of license.

Administrative closure on the other hand, is the concern of relatively many stakeholders mainly the direct beneficiaries of water supply, project team that need to be freed & reassigned, client interested to move to the next projects. Project team does not want to hear/read lessons learned which indicate deliverables went wrong (Brockmeier, 2017).

4.1.1. Early-Termination

Originally the construction contract for the 15 projects in the geographically distantly located in fifteen towns was signed with a single foreign company in October 2014. Due to poor performance of the contractor the contract terminated early before the work completed. After early-termination the works of the 15 projects were redesigned and retendered by clustering the work in to six lots and awarded to six local contractors nearby their geographical locations (Appendix IV). This expedited resource mobilization and increased efficiency in execution. From this contract arrangement lessons can be drawn, where it was difficult to manage projects located in far distant areas (Adigrat project 898 km from Addis north of the country to Dembidolo 652 km from Addis in the West) by the single contractor at a time. These projects were expected to be completed and supply drinkable water to the community in one year of their commencement. The likert-scale data analysis realized that the early-terminated original contract didn’t properly closed, which lacked closure report and documentation that would have enabled to draw lessons (Fig 4.1.1). Except terminating the contract almost nothing was done on the closure practice at this level. About 38% of the respondents supported the early-termination after the failure of the contract to perform. The 19% of the respondents were found to be neutral about

early-termination and the interview results on likert-scale also justified the inadequacy of early-termination/closure practice of contracts (Fig. 4.1.1).

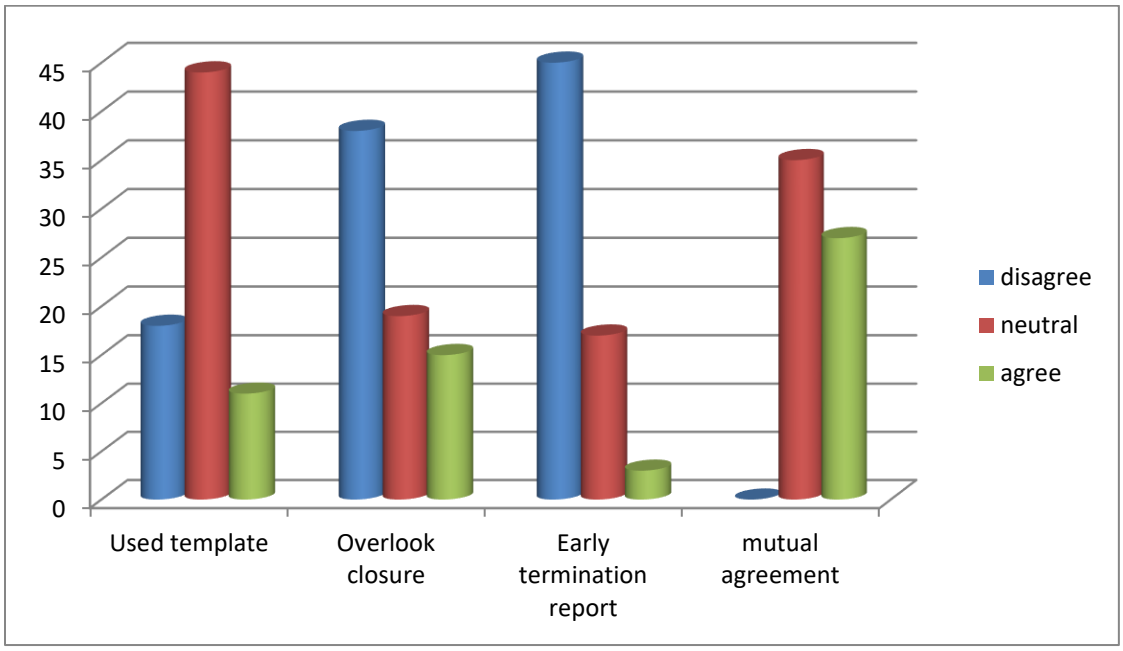

Fig. 4.1.1 Early-Termination of contract (in %)

4.1.2. Contractual Closure

After signing the second round six contracts in 2015, able to provide water in 2017 which was completed with an extension of an average of 4.5 moths. The data obtained from the five sample projects reports produced by the supervising company realized that Provisional Acceptance were made in August 2017, where pinch-list of refining and corrective activities were yet to be completed. The sample study showed that there was delay of about two years, the projects able to provide drinking water, except where weak power supply hindered to adequately pump water to few hillside sites of some towns. The electric power supply is not only weak but also delayed the testing the system & supply of water in some towns (table 4.1.3). This was due to lack of detailed closure planning, including adequate power supply. In principle it is advisable to close contracts in step wise through the projects execution at every contract completion of projects and document reports. The study also revealed that 44% of respondents were neutral about contractual closure; that means considerable amount of the study population has no information about contractual closure (Fig. 4.1.2).

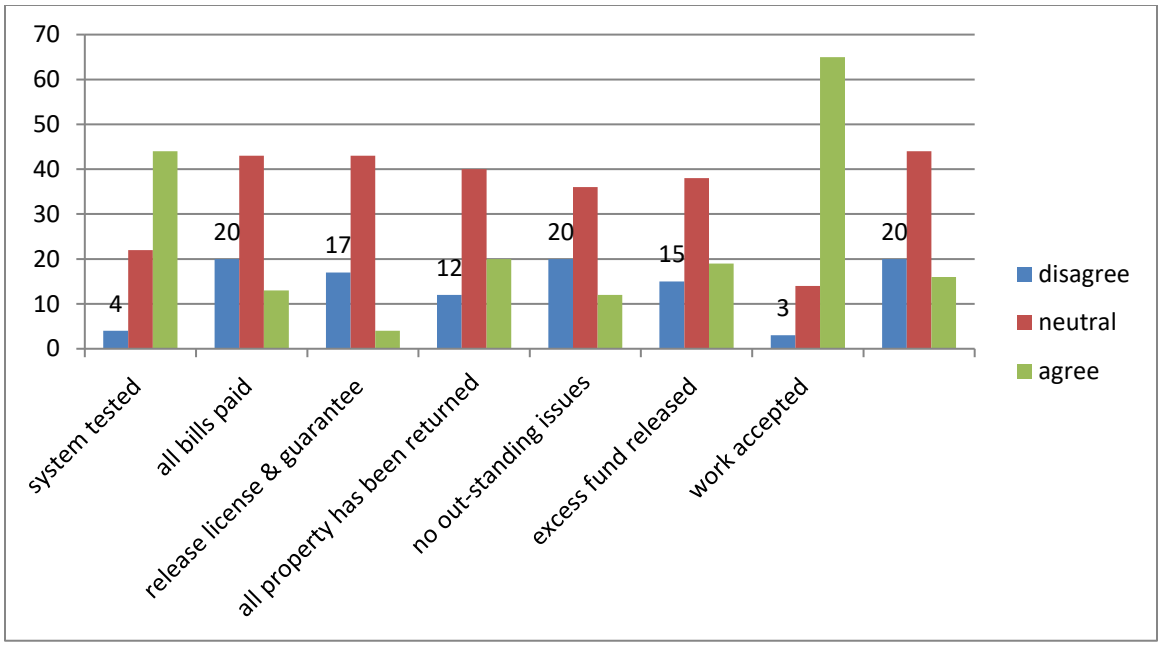

Fig. 4.1.2. Contractual Closure Practices (in %)

The financial performance of the projects indicated that, some projects suffered cost overruns for instance the contractual prices of Ataye & Mersa have been increased by 5.6% of their original budget (table 4.1.1). After eight months of the projects provisional handover, no closure report was produced & approved (table 4.1.1).

Table 4.1.1 Works Contract Data Summary for Sample Units

Project Location	Ataye – town	Fiche- town	Injibara –town	Mersa –town	Sodo –town
Contract Signature date	October 6th 2014	1 October 2014	08 October 2014	October 6th 2014	10th October 2014
Contract Amount	4,188,554.95 less contingency	3,627,807.59 euro for lot D	3,607,795.16 euro	4,188,554.95 less contingency	50,005,174.93 birr
Amended Contract value	4,422,132.51euro for lot C	3,154,615.3 euro for lot D	2,408,060.90 euro	4,422,132.51euro for lot C	33,355,819.45 birr
Performance Period	12 months	12 months	17 months	12 months	6 months
Start Date	20th November 2014	20 Nov. 2014	20 Nov. 2014	20 Nov. 2014	26 Nov. 2014
Completion Date	20 Nov. 2015	20 Nov. 2015	20 Nov. 2015	20th Nov. 2015	26 May 2015
Contract Time Extended	2 months	3month &10 days	7 months	2 months	8.5 months
Revised Completion Date	5th February 2016	March 12,2016	April 2016	5th February 2016	February 9th 2016
Total Payment	4,241,716.94 euro for lot C	3,188,685.7 euro for lot D	3,638,591.26 euro	4,241,716.94 euro for lot C	35,339,061.4 bir
Works & accepted	all	all	all	all	all

4.1.3. Administrative Closure

The study analysis showed that projects deliverables were completed 100% after four months behind the schedule. Such condition of the projects created 14% dissatisfaction to beneficiary communities. Some WSSO managers were not also ready both mentally & materially to fully take responsibility of the projects deliverables or operations for sustainable use. This was witnessed at some projects absence of electric power readiness both for testing the functionality of the system & weak water pumping (Injibara & Mersa). Among the project stakeholders, 37% were neutral about lessons to be drawn, which indicate that projects stakeholders may not able to learn from the projects' success or failures. About 37% of the respondents were not aware whether the remaining resources were released or not (fig 4.1.3). This implies that the bulk of the stakeholders were not worried about releasing & enabling the remaining resources use and ignorance of consequences of possible interest burden.

In the context of these study projects, the management life cycle was found to be incomplete. The project closure tradition and practice at the end of project execution is limited to signing Provisional Acceptance Certificate and transfer of ownership. In addition to the construction component of the projects withhold 5% of the contract value for one year after provisional acceptance for possible defects and cracks maintenance, which followed by signing final acceptance certificate.

From this study it is possible to conclude that**,** the only facility available for project closure is the templates for issuing the Provisional and Final Acceptance Certificate (Appendix VIII) which is designed by the financing institutions (the European Commission and the European Investment Bank). The project team and client knowledge is limited to signing the acceptance certificates, handing over of deliverables and release final/retention guarantee payment. Closure practice for the contractors is a question of securing remaining or retention payments; whereas 60% of the respondents were not aware of it. No data have been gathered and recorded using formats for learning in formal meetings (appendix IX).

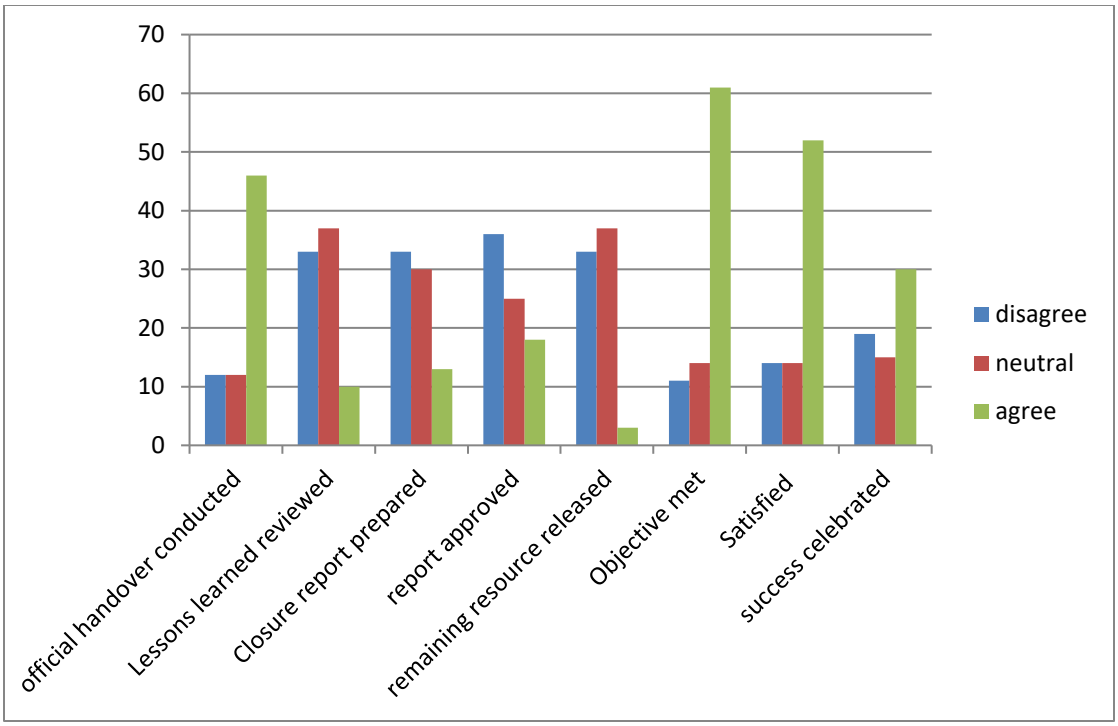

Fig 4.1.3 Administrative Closure (in%)

Even though, proper project closure has multi-folds benefits, such as lessons learning, timely release of remain fund, freeing workers, sustaining project benefits etc., based on the findings of this case study and practices assessed, it is difficult to say that there is awareness about those benefits. About 36% of the respondents witnessed that no closure report was approved (table 4.1.2). Learning lessons from the projects can serve to apply them for future projects throughout a business. Project closure confirms that the work is done to satisfy a set of agreed requirements, enables to complete the procurement & financial closure, to gain financial acceptance, to transfer final deliverables to users, solicit feedback from the customer, also to index and archive records, etc.

The current closure project practice examined in this study, which is limited to signing acceptance certificate, transfer of project deliverables to final beneficiaries and performing settlement of last payments, is far behind acceptable closure standard & principles detailed above. The existing practices are unable to realize the multi-fold benefits mainly due to lack of awareness & knowledge. The projects were unable to use standard project closure templates which would have facilitated documentation of lessons learning information (appendix XII).

The repercussions of neglecting proper project closure includes, reduced efficiencies of subsequent/future projects by repeating similar errors, absence of project management improvements, resulting business incompetency, demotivate experienced workers due to miss-management in timely freeing or retaining, limiting sustainable use of project deliverables due to inadequate/absence of data gathering meetings for proper documentations, additional costs of interest due to delayed repayment of remaining fund, loss of opportunity cost of tied finance, chance of missing feedback, etc.

Table 4.1.2. Analysis of Administrative Closure

	Likert Scale (strongly disagree, disagree, neutral, agree, strongly agree 1 – 5 respectively)										**Descriptive**			
Item	**1**		**2**		**3**		**4**		**5**		**Total**		**Mean**	**SD**
Administrative closure	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%		
official handover conducted	1	4	3	12	3	12	12	46	7	27	26	87	5.2	1.75
Lessons learned reviewed	4	15	9	33	11	37	3	10	0	0	27	90	5.4	1.76
Closure report prepared	6	20	10	33	9	30	4	13	1	3	30	100	6	1.36
report approved	6	21	10	36	7	25	5	18	0	0	28	93	5.6	1.4
remaining resource released	8	27	10	33	11	37	1	3	0	0	30	100	6	1.9
Objective met	2	7	3	11	4	14	17	61	2	7	28	93	5.6	2.47
Satisfied	1	3	4	14	4	14	15	52	5	17	29	97	5.8	2
success celebrated	3	11	5	19	4	15	8	30	6	23	26	87	5.2	0.77
Average for Admn. Closure	**31**	**13.5**	**54**	**24**	**53**	**23**	**65**	**29**	**21**	**10**	**224**	**93**	**5.6**	**1.7**

Responses to Questionnaires through E-mail

For the question about preparing detailed plan, no detailed closure plan was indicated from the mail response and 40% respondents were not aware of closure plan (table 4.1.3). Concerning awareness on project closure activities, it was understood that the respondents knew only about the need for preparation of financial report, provisional acceptance/handover and retention fee for defect liabilities. About 60% of respondents gave emphasis to closure not because of project management principles, but to be able to transfer water supply facilities (table 4.1.3). It was realized that more than 80% of the respondents did not have knowledge about each benefit (table 4.1.3). Very few of them said handing over enabled them using the project deliverables and upon approval of acceptance certificate remaining bills can be settled. Therefore, benefits of proper project closure include identifying reason for early-termination of unsuccessful projects, where the case study projects revealed no record on the early-termination.

Table 4.1.3 Responses to Questionnaires through E-mail

No	Questions	No. of people communicated	Respondents (in %)	Responses
1	Tell me about project closure practice both technically & financially	5	100	To phase out the projects, the final report needs to be prepared. These reports are expected to indicate whether the initial objectives are met and there are no remaining activities to be done by the contractors. To handed over to the beneficiaries.
2	How you detail your project closure plan and steps followed?	5	60	The representative of the consulting firm said that there was detailed plan; but didn't indicate the steps. The rest (40%) of respondents do not know detailed plan.
3	Can you explain to me the main project closure activities?	5	40	40% of the respondents were aware of some of the closure activities such as final reports to be prepared, 5% retention to be retained for correcting possible defects and provisional & final acceptance certificate signed.
4	Why do you practice project	5	100	An expert replied "to ensure whether the project has achieved its intended objectives. For a payment

	closure? If not why?			approval, closure emanates from loan & grants agreement & also prepare checklist, based on specification, drawing, bill of quantities. For release of retention". 80% respondent managers do not have knowledge about.
5	Do you think your organization give due emphasis in project closure practices?	5	100	60% of the respondent said "yes, Since it involves both external and domestic resources (MoWIE, MoFEC, and Consultant)".
6	What are the greatest accomplishments of the project?	5	80	40% of the respondents said "support to the ongoing effort of the government provide access to potable water and hence improve the health status of the beneficiary in the 15 Towns Water supply and Sanitation Projects".
7	How was the satisfactions/dissatisfactions condition of all stakeholders?	5	80	Two respondents guessed that the beneficiaries of each town are very much satisfied since they have been waiting for long to have potable water (MoFEC, MoWIE).
8	Please explain the lessons drawn from this project execution?	5	100	Projects deliverables delayed for reasons a) poor design of the project, b) Weak organization of contractors – understaffing, lack of equipment/ machinery c) lack of foreign currency for timely importing materials and electromechanical equipment. d) Weak synchronization of activities e) delayed handover of sites & f) in adequate electric supply, etc. Original terminated contract would have not been signed with only one contract as projects locations are geographically widespread which delayed project implementations by one year.
9	Were all expenses recorded in an expense register?	5	100	The respondents who said yes as financers, all expenses are included in every progress report. No records were found at TWSS Offices. As a result they could not understand how their loan debt become to be 52 million (Ataye) and 105 million (Fiche).
10	Did regular quality control take place?	5	100	As per the respondents of 60% interviewees, quality control is conducted by the resident engineers on a daily basis during the execution of the project.

				At Fiche project conducted by committee
11	Were all deliverables recorded in a quality register?	5	80	80% of the respondents said that all measured works are recoded and payments are made accordingly.
12	Were clear acceptance criteria outlined in the acceptance plan?	5	100	Only one respondent replied positively. At the five projects no criteria were mentioned
13	Was customer acceptance requested for all completed deliverables?	5	100	Among the respondents, only 40% responded positively.
14	Was the customer involved in all acceptance reviews?	5	60	60% of the respondents negatively responded.
15	Is there anything you would like to add?	5	60	Poor design of projects brought in enormous delay in schedule and hence, low satisfaction of customers. Early loan repayment required before generating income, unforeseen vehicle requirement are some of issues raised by respondents.

V. CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5. 1. Conclusion

Ethiopia, having adequate water resources, the level of drinkable water supply and sanitation coverage was remained for many decades under 42% & 28% respectively until 2006 (MoWE, 2008). Due to this many people suffered from shortage of drinkable water and water borne diseases. To improve the situation many long & short-term efforts are underway through various interventions such as MDG/SDG, PASDEP and GTP strategies, program and the Water Supply & Sanitation projects. These case study projects have been initiated in 2007, designed and executed from 2013 to 2017 with an estimated cost of 38 million euros of which about 50% was loan from European Investment Bank and the balance was granted by the European Union. The projects were intended to serve about one million people dwelling in these towns. The required impact of these projects was hardly achieved and did not fully satisfy the community as it failed to provide safe water on time. The projects were delayed by about more than two years from its original plan & half a year after completion. The early-termination experienced by the projects due to failure of performance by the original contractor was not properly closed and there are no termination report/documentations which could have served as base for learning lessons. They were also unable to overcome water born disease problems as closing and handing over was delayed. Failure to proper closure stalled release of remaining resources.

The Water Supply and Sanitation projects activities consisted purchase of pipes & fittings, electromechanical equipment, digging boreholes, constructions, installations, pipe laying, supervision, testing, electric power line connection, etc. After the failure of the first contract, redesigned & re-planned contract & deployed six contractors and executed. During execution the schedule has been extended, price adjustment was also made and then implementation completed in mid-2017. Provisional acceptance was signed in August 2017. Throughout the execution period and mainly end of execution meeting for gathering data for documentation was not conducted. Such activities could have been made for future project lessons learning throughout the life of the project. It also used to confirm that work is done to satisfy agreed requirement & enable to complete procurement. The financial closure, transfer of final output and soliciting feedback are important functions. However, considerable amount of activities including

communication were not given attention under these projects. The projects closure tradition & practice in the context of this case study projects include only signing of Provisional Acceptance Certificate, handover of outputs, retaining 5% of the contract value to enable a correction of possible defects. Lessons to be learned, risk of sustainable use of project benefits were not given attention. The use of standard project closure templates which can facilitate documentation of important lessons learning information would have not been overlooked. Project need to use standard project closure templates which facilitate documentation easy access of important lessons learning information.

5. 2. Recommendations

From the study we can realize that communication planning in project closure is important as one element to make ready & aware the owners about final deliverables, how implementation was carried out, comment to fit their interest & ready to take over responsibilities & obligation at the end. Project closeout is performed when user accepts project deliverables (AAUSC, 2011).

Knowledge management should occur throughout the project life, but it may be most apparent as a project comes to closure. Learning gained at large from the process of performing the project. We learn from our own project experiences as well as the experiences of others. Sharing lessons learned among project team members prevents an organization from repeating the similar errors and also allows them to take advantage of organizational best practices. Learning should be deliberate, which was not the case for this study project. The case study project sector in particular and projects managing organizations in general can be prepared to take advantage of the key learning opportunities that projects provide.

Lessons learned session need to focus on identifying project successes and failures, to improve future performance of projects.

Project managers have a professional obligation to conduct lessons learned sessions for projects with key internal and external stakeholders, particularly if the project yielded less than desirable results.

The case study analysis revealed that lack of knowledge and awareness hindered to practice standard project closure principles. As a result, developing training course manual for internal use has considerable importance as an action point.

The electric power supply not only weak but also delayed the supply of water & testing the system in some towns (table 4.1.3). Project teams need to prepare detailed closure planning which can be taken as a lesson. A project team would not put aside project closure detailed planning including its good governance and capacity.

Project implementation efficiencies of subsequent projects by learning from such similar project failure, for improving project management system will enhance business competencies,

Motivate experienced workers and avoid miss-management in a timely freeing or retaining,

Enhance sustainable use of project deliverables by introducing adequate data gathering meetings for proper documentations,

Avoid/reduce additional costs such as interest on delayed loan repayment and opportunity cost of money left idle. Encourage project stakeholders to get the necessary feedback, timely. Project need to use standard project closure templates which facilitate documentation easy access of important lessons learning information.

For sustainable use of a project it is important for a project team to pay attention to standard/complete phases of projects than only immediate outputs.

Further study may be important on the significance of cost-benefits or financial implication of release of resources in project closure.

Study on the culture of knowledge transfer from past project lessons to current similar project records seem to be helpful.

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APPENDIXS

Appendix I: Key informant Mail and Interview Guide

A. Standardized open-ended mail questionnaire on knowledge to get facts about a topic.

First of all thank you for agreeing to be willing to receive and respond to this study questionnaire. The purpose of this questionnaire is to explore information for academic research and knowledge development (master's partial fulfillment thesis). The research will focus on project management specifically to know the practice of project closure phase. This study e-mail information respects confidentiality of the respondent and the subject will not lead to accusation of any interviewee. If quotes are used it will not be communicated without the permission of the respondent. It is possible to ask questions related to this study if any at the end. It is possible to contact the researcher using this business other time when needed.

- Tell me about yourself and your role in the project management:
  _____
  _____
- Tell me about this project closure practice both technically & financially:_____
  _____
- How you detail your project closure plan and steps followed?_____
  _____
- Can you explain to me the main project closure activities?_____
  _____
- Why do you practice project closure? If not why?_____
  _____
- Do you think your organization give due emphasis in project closure practices?_____

- What are the greatest accomplishments of the project?_____
  _____
  _____
- How was the satisfactions/dissatisfactions condition of all stakeholders?_____
  _____
- Please explain the lessons drawn from this project execution?_____
  _____
- Were all expenses recorded in an expense register?
  _____
- Did regular quality control take place?
  _____
- Were all deliverables recorded in a quality register?_____
- Were clear acceptance criteria outlined in the acceptance plan?
  _____
- Was customer acceptance requested for all completed deliverables?
  _____
- Was the customer involved in all acceptance reviews?
  _____
- Is there anything you would like to add?_____
  _____

B. Interview Questionnaire

Likert scale of 1 – 5 points (strongly disagree, disagree, neutral, agree, strongly agree)

Town____	Likert scale of 1 – 5 points (strongly disagree – stro. Agree)				
Questions	Strongly disagree	disagree	Neutral	Agree	Strongly agree
Erly-Termination					
Used template					
Overlook closure					
Early termination report					
mutual agreement					
Contractual closure					

system tested					
all bills paid					
release license & guarantee					
all property has been returned					
no out-standing issues					
excess budget released					
work accepted					
confirming completed deliverables were accepted					
procurement audited					
Administrative closure					
official handover conducted timely					
Lessons learned reviewed					
terminal/closure report prepared					
report approved					
remaining resource released					
Success acknowledged					
Objective met					
Satisfied					
success celebrated					

Appendix II: Research Schedule (time frame)

Activity	**Period in Weeks**									
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
Review literature	x	x								
Conduct interview			x							
Validate data				x						
Analyze data					x	x				
Report Writing						x	x			
Amend report								x		
Finalize report								x		
Prepare ppt									x	
Present									x	

Appendix IV: general information of the 15 towns' project

Town	Region	Km from A.A.	No. of beneficiaries	Contract value	Name of contractor	
1.Adigrat	Tigray	898				
2. Ataye	Amhara	269				
3. Bonga,	SNNP	449				
4.Demidollo	Oromia	652			Bigeta Busi Plc	
5. Fiche	>>	170				
6. Gebre-Guracha	>>	156			GTB Engin with Bigeta	
7. Holeta	>>	45			>>	
8. Injibara	Amhara	452				
9. Kemissie	>>	325				
10.Maychew	Tigray	662			United Const	
11. Mersa	Amhara				Abebe Negash with NKH	
12. Motta	>>	368			Wegeret Con. plc	
13. Shoa-Robit	>>	222			Abebe Negash with NKH	
14. Sodo,	SNNP	383			SWWCE	
15. Wereillu	Amhara	481			Abebe Negash with NKH	

*The towns grouped in to lots and contract value is also for lots. Lot A (Sodo & Bonga= bir 27,531,604), Lot B (Motta & Injibara=euro 2,403,657.9), Lot C (Shoa-Robit, Ataye, Kemissie, Mersa & Wereillu=euro 4,266,901.98), Lot D (Holeta, Fiche & GerbeGuracha= euro 3,137,893), Lot E (Adigrat & Maychew = euro 2,550,731.5) Lot F (Dembidollo=bir 704,346).

Appendix V. Works Contract Data Summary for sample units

Item	Ataye	Fiche	Injibara	Mersa	Sodo
Location	Ataye town		Injibara Town	Mersa town	SNNPR Sodo town
Employer	MoWIE	MoWIE	MoWIE	MoWIE	SNNPR Water and Irrigation Development Bureau
Consultant	Nicholas O‟Dwyer with MSC	Nicholas O‟Dwyer with MSC	NOD with MS	Nicholas O‟Dwyer with MSC	Nicholas O‟Dwyer with MSC
Contractor	AbebeNegash in JV with NKH	GTB Eng. with Bigeta	Wegeret Construction PLC	AbebeNegash in JV with NKH	SWWCE
DATE OF SIGNING OF CONTRACT	October 6th 2014	1 October 2014	08 October 2014	October 6th 2014	10th October 2014
CONTRACT VALUE ORIGINAL AND ADDENDEMS	4,422,132.51euro for lot C	3,154,615.3 euro for lot D	2,408,060.90 euro	4,422,132.51euro for lot C	33,355,819.45 birr
TOTAL CONTRACT AMOUNT	4,188,554.95 less contingency	3,627,807.59 euro for lot D	3,607,795.16 euro	4,188,554.95 less contingency	50,005,174.93 birr
PERIOD OF PERFORMANCE	12 months	12 months	17 months	12 months	6 months
COMMENCEMENT DATE	20th November 2014	20 Nov. 2014	20 November 2014	20th November 2014	26th November 2014
COMPLETION DATE	20th November 2015	20 Nov. 2015	20 November 2015	20th November 2015	26th May 2015
EXTENSION OF PERIOD APPROVED	2 months	2 months + 40days	7 months	2 months	8.5 months
REVISED COMPLETION DATE:	5th February 2016	March 12,2016	April 2016	5th February 2016	February 9th 2016
PERCENTAGE OF WORK PLANNED	100%	100 %	100 %	100%	100%
PERCENTAGE OF WORK DONE TOTAL	98.81%	99.01%	99 %	98.81%	96.6%
ADVANCE SUM PAID	399,012.05	0	217,232.81 euro	399,012.05	10,006,745.84.
Total payment	4,241,716.94 euro for lot C	3,188,685.7 euro for lot D	3,638,591.26 euro	4,241,716.94 euro for lot C	35,339,061.4 bir
WORK COMPLETE	All	all	None	All	

Appendix VI. Analysis of Closure Practices

	Likert Scale (strongly disagree, disagree, neutral, agree, strongly agree 1 – 5 respectively)										**Descriptive**			
Item	**1**		**2**		**3**		**4**		**5**		**Total**		**Mean**	**SD**
Early termination	Count	%	Count	%	Count	%	Count	%	**Count**	%	Count	%		
Used template	1	4	7	28	11	44	5	20	1	4	25	100	5	1.73
Didn't overlook closure	6	23	10	38	5	19	4	15	1	4	26	87	5.2	1.3
Early termination report prepared	7	29	10	41	5	21	1	4	1	4	24	99	4.8	1.6
Closed by mutual agreement	0	0	0	0	9	35	7	27	10	38	26	87	5.2	1.9
Average for Early termination	**17**	**15.5**	**28**	**25**	**31**	**29**	**15**	**14**	**17**	**16**	**108**	**90**	5	1.63
Contractual closure														
system tested	0	0	1	4	6	22	12	44	8	29	27	90	5.4	1.95
all bills paid	5	20	6	24	12	48	2	8	1	4	25	100	5	1.77
release license & guarantee	3	13	4	17	10	43	1	4	5	22	23	77	4.6	1.43
all property has been returned	2	8	3	12	10	40	5	20	5	20	25	83	5	1.25
no out-standing	1	4	5	20	9	36	3	12	7	28	25	83	5	1.29

issues														
excess fund released	0	0	2	8	15	62	6	25	1	4	24	96	4.8	2.36
work accepted	0	0	1	4	4	17	14	58	5	21	24	96	4.8	2.07
procurement audited	0	0	1	4	16	64	6	24	2	8	25	100	5	2.47
Aver. for Contract Closure	**19**	**9**	**29**	**14**	**73**	**35**	**53**	**24**	**36**	**17**	**210**	**87**	**4.95**	**1.82**
Administrative closure														
official handover conducted	1	4	3	12	3	12	12	46	7	27	26	87	5.2	1.75
Lessons learned reviewed	4	15	9	33	11	37	3	10	0	0	27	90	5.4	1.76
Closure report prepared	6	20	10	33	9	30	4	13	1	3	30	100	6	1.36
report approved	6	21	10	36	7	25	5	18	0	0	28	93	5.6	1.4
remaining resource released	8	27	10	33	11	37	1	3	0	0	30	100	6	1.9
Objective met	2	7	3	11	4	14	17	61	2	7	28	93	5.6	2.47
Satisfied	1	3	4	14	4	14	15	52	5	17	29	97	5.8	2
success celebrated	3	11	5	19	4	15	8	30	6	23	26	87	5.2	0.77
Average for Admn. Closure	**31**	**13.5**	**54**	**24**	**53**	**23**	**65**	**29**	**21**	**10**	**224**	**93**	**5.6**	**1.7**

Appendix VII. Project Closeout Checklist
Company XYZ

Project Name:_____ Closeout Date: _____

Project Team: _____

Project Manager:_____

Sponsor:_____

Item	Responsible	Target date	Completion date
Punch List Complete			
Notice of Punch List Completion			
Certificate of Substantial Completion			
Utilities Transferred to owner			
Notice to owner on Insurance			
Facility Manual			
As-Built Drawings			
Attach Job Files to Database			
Update Projects Database			
Final Retainage Building			
Release of Subcontractor Retainage			
Complete Subcontractor Evaluations			
Team Close-Out Meeting			
Send Out Owner Survey			
Bond Release			
Estimating Feedback Cost Report			

Approved for Closeout:

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Project Manager Sponsor Vice President

Figure 2: Example of Project Closeout Checklist

Appendix VIII.

To be completed by the Project Manager upon acceptance of the final report for every works contract over EUR 5,000,000

CONTRACTOR ASSESSMENT FORM FOR WORKS CONTRACTS

<Contract title> <Location>
<Contract reference code>

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1 CONTRACTOR

	Name(s) of firm(s)
Leader*	
Partner 2*	
Etc … *	

*add/delete additional lines for partners as appropriate.

Note that a sub-contractor is not considered to be a partner for the purposes of this assessment form.

2 IMPLEMENTATION PERIOD

From	**< Commencement date of the contract >**	**To**	**< Date at least 1 year after the date of final acceptance >**

3 PERFORMANCE RATING OF CONTRACTOR

Factor	Rating	Comments (if rating is not 3)
Achievement of contract objectives (as per the Technical Specifications)		
Ability to meet deadlines		
Quality of work		

4 PERFORMANCE RATING OF KEY PERSONNEL

Name	Client relations	Written communication	Verbal communication	Drive & determination	Job management	Personal effectiveness	Technical competence	Overall

5 PROJECT MANAGER

Name	
Signature	
Date	

Source: EC website

Appendix IX. Performance Baseline

Documenting how the project performed against each established goal in the plan

Project Business Objective	Performance Goal	Results

Appendix X. Budget Baseline

State the planned cost as approved in the initial cost baseline & project charter. Document and explain all costs, variances including approved changes. (in $ 000)

Items of expenditures	Planned	Actual	Variance	Explanation

Appendix XI. Schedule Baseline

WBS elements activities	Planned start date	Actual start date	Planned finish date	Actual finish date	variance	Explanation of variance

Appendix XII. Project Documentation

Report/document	Media used	Storage location	Disposition